Mapping mHealth Success: The ReMiND project

UTTAR PRADESH

Bakshi Ka Talaab

Kaushambi district

Uttar Pradesh

INDIA

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COVER
Accredited Social Health Activists, or ASHAs, are volunteer community health workers in India who act as the key links between rural households and the health system. CRS' Reducing Maternal and Newborn Deaths (ReMiND) project developed a mobile application for ASHAs and their supervisors.
Photo by Jen Hardy/CRS
Map by DK Siva Kumar

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Contents

Acronyms

ANC	Antenatal Care
ANM	Auxiliary Nurse Midwife
ASHA	Accredited Social Health Activist
AWW	Anganwadi worker
HEO	Health Education Officer
BKT	Bakshi Ka Talab
CHW	Community Health Worker
CRS	Catholic Relief Services
DALY	Disability-adjusted life year
GoI	Government of India
HBNC	Home-based Newborn Care
ICT	Information and communications technology
IFA	Iron-folic acid
IPC	Interpersonal communication
KPC	Knowledge, practice and coverage
MCTS	Mother and Child Tracking System
MOIC	Medical Officer In-Charge
MNCH	Maternal, newborn and child health care
MTE	Midterm evaluation
NCD	Noncommunicable disease
NHM	National Health Mission
NHSRC	National Health Systems Resource Centre
NRHM	National Rural Health Mission
PHC	Primary Health Centre
RDW	Recently delivered woman
ReMiND	Reducing Maternal and Newborn Deaths
RI	Routine immunization
SC	Sub-Center
SF	Sector Facilitator
SIM	Subscriber Identification Module
SMS	Short Message Service
SO	Strategic objective
TT	Tetanus Toxoid (injection)
UP	Uttar Pradesh
USAID	United States Agency for International Development
VHIR	Village Health Index Register
VHND	Village Health and Nutrition Day

Executive Summary

Introduced in 2006, Accredited Social Health Activists, or ASHAs, are volunteer community health workers who act as the key links between rural households and the health system. While this new cadre has a huge amount of potential to improve health outcomes, its impact is undermined by uneven performance; low levels of literacy; poor role clarity and inadequate management structure. CRS' Reducing Maternal and Newborn Deaths (ReMiND) project developed a mobile application for ASHAs and their supervisors. Its introduction to the ASHA cadre at the community level in select districts in the state of Uttar Pradesh (UP), India, has demonstrated how improved interpersonal communication and supportive supervision can strengthen community health systems by addressing key bottlenecks, including limited skills, low levels of confidence and lack of role clarity among ASHAs.

The project was conceived to increase ASHA coverage; the frequency and quality of counselling by ASHAs to their clients; client knowledge of danger signs during and after pregnancy; and adoption of key maternal, newborn and child health and nutrition practices by clients.

ReMiND has a number of key intersecting components that work together to strengthen community-level systems around maternal and newborn health:

- **The ASHA app:** A phone-based counselling job aid to support the ASHA mobilize the beneficiary to access health services (implemented in two blocks[1] of UP).
- **The Sangini app:** An app that helps the ASHA supervisor, called a Sangini[2], supervise and support the ASHA's work according to a 10-indicator list (implemented in nine blocks of UP).
- **Meeting platforms:** Existing meeting platforms are reworked to ensure they are an opportunity for problem solving, support and learning. There are meetings for ASHAs and Sanginis and one for Block Health Education Officers (implemented in nine blocks of UP).
- **A training program:** To build interpersonal counselling skills and phone literacy (described in the *Deploy* section).

Both apps were developed on CommCare, an open source mobile platform. The apps come in the context of a move in mHealth globally, towards systems strengthening and away from a focus on health outcomes.

The impact of the project has been felt at different levels of the health system – the beneficiaries, their families, ASHAs, facilities, and systems. One of the most visible impacts has been to help the ASHA cadre achieve its potential in terms of increasing coverage and counselling performance. These benefits have accrued where the need is greatest, with the percentage of low-performing ASHAs dropping dramatically. Projections find that over a 10-year period, implementation of ReMiND would result in preventing 16,918 maternal (16.4 percent) and 119,646 infant (5.2 percent) deaths across Uttar Pradesh (Prinja et al. 2016a). Perhaps one of the strongest indicators of success is that the Sangini app is being considered for replication in the state of Meghalaya.

Photo by Amy Ellis/CRS

ASHAs are volunteer community health workers who act as the key links between rural households and the health system.

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1. District subdivision
2. *Sangini* means "companion" in Hindi

The design and implementation of the ReMiND project is described in six steps, including, along the way, ongoing iteration to ensure the project meets user needs. These six steps are described below:

Step	Details
1.	**Initiate:** The ReMiND project started as a testing ground for Dimagi's beta version of their CommCare app. NGOs CRS and Vatsalya provided project structure and asked Dimagi to build the ReMiND team's capacity in mHealth from the outset.
2.	**Develop requirements and architect solutions:** The ReMiND project worked with different stakeholders to understand system constraints and user needs, clearly defining the requirements for a phone-based solution. The CommCare ASHA counselling app provided a solution to systems bottlenecks by supporting improved, structured interpersonal communication between ASHAs and beneficiaries, and subsequently between ASHAs and their supervisors – the Sanginis.
3.	**Design:** The ReMiND team engaged in ongoing iteration based on user experience, feedback and emerging needs.
4.	**Deploy:** One of the key ways the ReMiND project catalyzes system transformation is through building capacity. This includes training, and follow up hand-holding and supervision.
5.	**Operate, maintain and improve:** The ReMiND project was unique in that there was constant and ongoing effort to understand the needs of ASHAs and Sanginis, and reiterate the solution design accordingly.
6.	**Capture results and share:** ReMiND has a comprehensive monitoring and evaluation system based on a theory of change, results framework and indicator tracking table. The ReMiND project was unique in its commitment to learning, and building the mHealth knowledge base. All along, it mobilized resources and built relationships with research partners to support additional studies and assessments, to understand what works in terms of ICT and community health workers.

The key lessons learned from the ReMiND project are provided in the concluding section. They are as follows:

- **Supervision for improved ASHA performance:** The project has clearly demonstrated the importance of supervision and support for improved ASHA performance. This occurs through two modalities: the project's own supervisory staff, the Sector Facilitators, supporting the ASHAs; and the Sangini app, that supports the government's own cadre of ASHA supervisors. Friendly and supportive supervision serves many functions. It clarifies role responsibilities; demonstrates key skills (such as convincing reluctant families to visit a health facility); gives actionable feedback on performance; and helps solve problems and challenges in the field. The roll-out of the Sangini app has helped clarify, and demonstrate, what effective supervision might look like.

- **Human processes first:** An important element of the ReMiND project is that it always gives primacy to human processes, with technology supporting but not usurping these.

- **Targeting project resources to those who need it most:** One of the most significant outcomes of the ReMiND intervention has been its equity effects: it consistently benefits those who need it most. This happened both through training and outreach efforts and the support of the data from the app.

- **Iterative design and ongoing learning:** The project benefitted from an iterative approach that included ongoing user feedback, research, analysis and reflection, to identify what was working and where there was room for improvement, and refine the app accordingly.

- **Potential of the ASHA cadre:** The ReMiND project leverages this potential by energizing the cadre through tools that helps them organize their workflow, communicate with beneficiaries and get support from their supervisor. All of these factors help increase ASHA coverage, and over time will result in improved health outcomes.

- **Systems alignment:** Using government guidelines as a starting point for intervention design, and close consultation with government stakeholders, meant that the intervention was always in line with government priorities, and interoperable with the government system.

An ASHA (right) counsels a mother with the help of a phone-based counselling job aid. *Photo by Neeraj Sharma/CRS*

Introduction

The ReMiND apps demonstrate how improved interpersonal communication and supportive supervision can strengthen service delivery and health systems in rural India. While it is implemented at the community level, the benefits it provides are replicable at all levels of the health system.

Uttar Pradesh is one of the largest and most populous states in India, with 215 million people.[3] It has traditionally had some of the worst maternal and child health indicators in the world. Over the last decade there has been some positive change – the National Rural Health Mission introduced a new cadre of community health workers – Accredited Social Health Activists, or ASHAs – focusing on bridging the gap between the health facility and the community. While this cadre has been successful in many parts of the country, its potential in Uttar Pradesh is not fully realized. Some of the reasons for the program's stalled performance have been lack of supervision and support, limited skills, low levels of confidence and lack of role clarity.

The ReMiND project seeks to meet these challenges by improving interpersonal communication between ASHAs and beneficiaries, and between ASHA supervisors (Sanginis) and ASHAs. In the first instance, the project gave the ASHAs a counselling job aid to help them counsel women and families about antenatal care, delivery and postnatal care. Based on government guidelines, the app helps ASHAs take women through a checklist of health behaviours, prompting them to counsel on any steps not being taken. A subsequent component of the app provides a tool to ASHA supervisors to help them monitor the ASHA's workload, identify any performance gaps, and problem solve around any challenges the ASHA faces (the scope of the app is described in figure 1, below). The app has been widely adopted by the ASHAs over the last 5 years of implementation, and by Sanginis over the last year-and-a-half. **This high uptake reflects both the utility of the apps and the intrinsic motivation of the ASHAs to learn and improve.**

Photo by Jennifer Hardy/CRS

The project gave the ASHAs a counselling job aid to help them counsel women and families about antenatal care, delivery and postnatal care.

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3. Projected from 2011 Census Data

Figure 1: Scope of the ReMiND project across continuum of care, care components and functions

PROJECT SCOPE ACROSS THE CONTINUUM OF CARE, CARE COMPONENTS AND FUNCTIONS

Block managers (project staff) support the government's Block Community Process Manager and Health Education Officer to provide supervision to ASHA Sanginis

ASHA Sanginis provide supportive supervision to ASHAs

ASHAs provide counseling and facilitate service uptake along the continuum of care

Pregnancy
- Pregnancy registration
- Antenatal care
- Nutrition

Delivery
- Institutional delivery
- Referrals for complications/ emergencies

Post partum
- Postnatal care

Maternal, infant and child health
- Immunization

The ReMiND project is a partnership between four organizations: Catholic Relief Services, an international NGO; Vatsalya, a state-level NGO working in the area of mother and child health; and Dimagi, a social business focussed on creating affordable technologies for resource-constrained environments. The Sangini app has been implemented with the support of the Sarathi Development Foundation, a state-level NGO focused on children, adolescent and women-centred development. In addition, the project has worked very closely with the government through the National Health Mission (NHM). The project has benefitted from this strong partnership, each organization bringing different strengths to bear to achieve project success.

Figure 2: The ReMiND project is a partnership between four organizations in collaboration with the National Health Mission of Uttar Pradesh

The goal of the report is to impart key lessons learned and promote replication. In several standalone sections, it seeks to answer two questions:
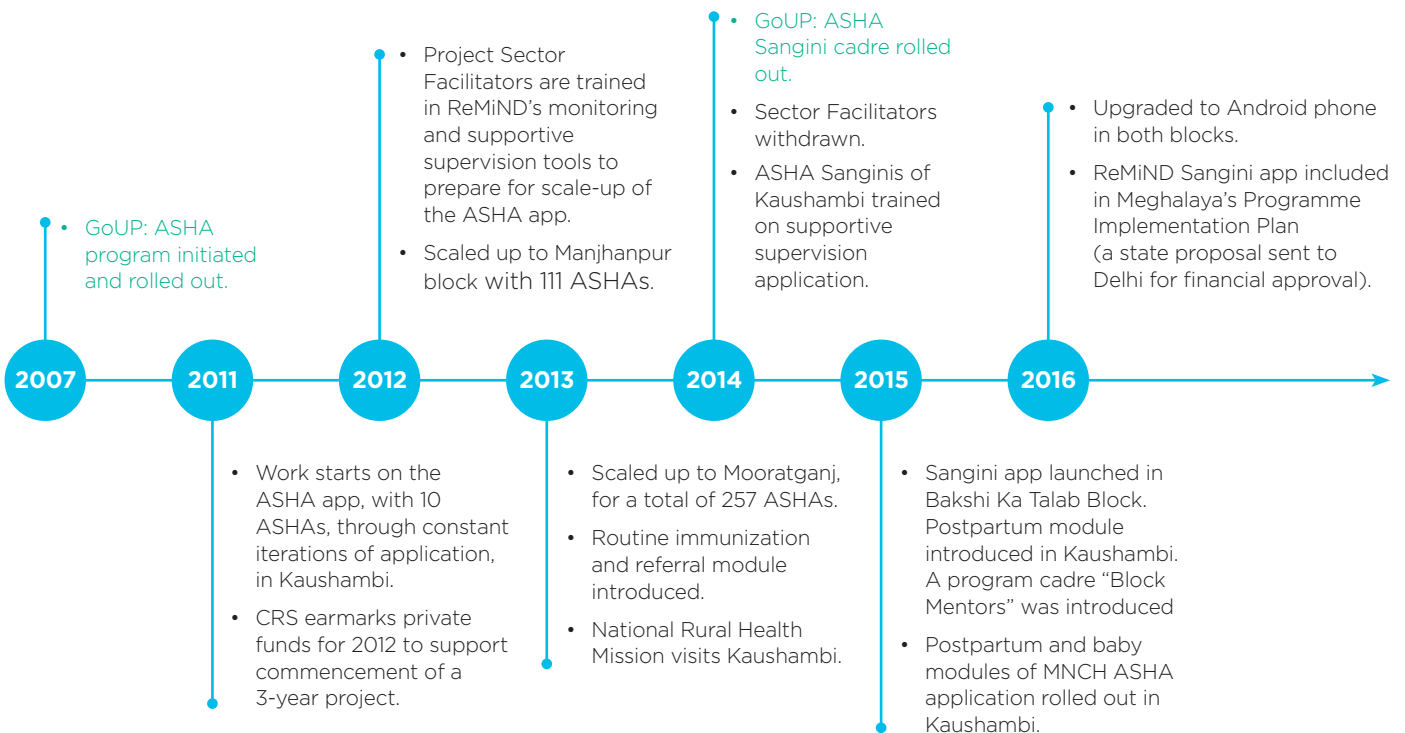
> **First, what does mHealth success look like?** To answer this, an overview of the program is provided, along with some of its impacts over the last five years (see timeline in table 1 below) – both at different levels of the health system, and along the continuum of care.
> **Second, how do you get there?** To answer this, six distinct design and development steps are described to achieve mHealth success.

Success is defined broadly; ReMiND is widely appreciated, has achieved strong impacts, has contributed to the global mHealth knowledge base, and is being considered for replication in other states. This helps decision-makers facing similar systems challenges appreciate the replicability of ReMiND across different contexts. Replication of ReMiND has already been proposed for the state of Meghalaya in the north east of the country, and we describe how ReMiND is anticipated to address specific challenges in that context. In the conclusions, we describe the key contributions from the ReMiND project to the mHealth knowledge base, carefully distilled from the many internal and external studies, reports, presentations, and key informant interviews with key stakeholders.

The document was compiled from existing literature about the ReMiND project, a review of external mHealth literature, alongside key informant interviews and anecdotes from project stakeholders – including staff, government officials, ASHAs and Sanginis. It is aimed at decision makers within the government, NGO sector, and donor community looking at possible solutions to strengthen community health systems. In the stories and anecdotes, names of ASHAs, Sanginis and beneficiaries have been changed.

ReMiND is widely appreciated, has achieved strong impacts, has contributed to the global mHealth knowledge base, and is being considered for replication in other states.

Figure 3: Timeline of ReMiND project rollout

2007
- GoUP: ASHA program initiated and rolled out.

2011
- Work starts on the ASHA app, with 10 ASHAs, through constant iterations of application, in Kaushambi.
- CRS earmarks private funds for 2012 to support commencement of a 3-year project.

2012
- Project Sector Facilitators are trained in ReMiND's monitoring and supportive supervision tools to prepare for scale-up of the ASHA app.
- Scaled up to Manjhanpur block with 111 ASHAs.

2013
- Scaled up to Mooratganj, for a total of 257 ASHAs.
- Routine immunization and referral module introduced.
- National Rural Health Mission visits Kaushambi.

2014
- GoUP: ASHA Sangini cadre rolled out.
- Sector Facilitators withdrawn.
- ASHA Sanginis of Kaushambi trained on supportive supervision application.

2015
- Sangini app launched in Bakshi Ka Talab Block. Postpartum module introduced in Kaushambi. A program cadre "Block Mentors" was introduced
- Postpartum and baby modules of MNCH ASHA application rolled out in Kaushambi.

2016
- Upgraded to Android phone in both blocks.
- ReMiND Sangini app included in Meghalaya's Programme Implementation Plan (a state proposal sent to Delhi for financial approval).

CONTEXT: MATERNAL, NEWBORN AND CHILD HEALTH IN UTTAR PRADESH

Uttar Pradesh contains a fifth of India's population, but lags far behind national averages in maternal, newborn and child health; threatening both national and global targets in reducing maternal and newborn mortality (such as Sustainable Development Goal 3, "Ensure Healthy Lives and Promote Wellbeing for People of All Ages") (UNDP 2016). Kaushambi district, one of the state's 75 districts, exhibits some of the worst health statistics, with neonatal, maternal and child mortalities much higher than national averages (see table 1 on page 8).

Figure 4: Uttar Pradesh

Maps by DK Siva Kumar
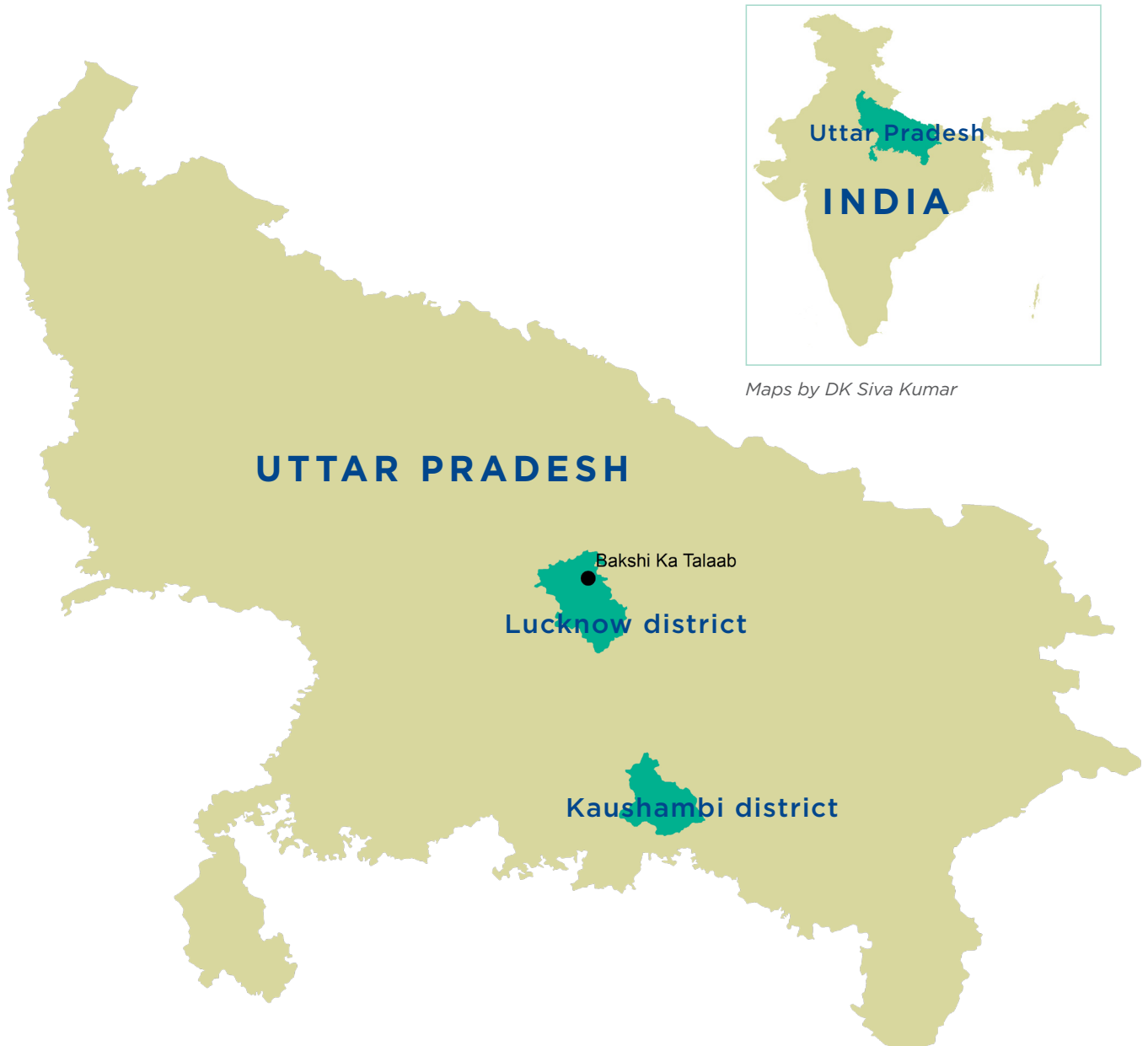
Kaushambi is a predominantly agricultural district, with rice and wheat being the main crops. People also raise buffalo, chickens and goats. In the villages, the poor live in houses made of mud, and the wealthier residents have houses made of brick. The main picture (above) shows a grove of Mahua trees; these provide fruit, shade, wood and a liquor is made from the flowers.

Photos by Elin Murless/CRS

Table 1: Key maternal, newborn and child health care indicators

	3+ ANC (%)	Institutional delivery (%)	Early initiation of breastfeeding (%)	Full vaccination (%)	Infant mortality rate	Maternal mortality rate
India**					39	167
Uttar Pradesh*	37.8	56.7	39.4	52.7	68	258
Kaushambi*	28.2	60.2	27.6	46.9	82	283

*Data source: Annual Health Survey 2012-3, Government of India
**Sample Registration Survey, 2011-3

To improve some of these health indicators, the Government of India introduced a new cadre of community health workers known as Accredited Social Health Activists, or ASHAs, in 2006. **ASHAs act as the critical link between rural households and the health system, and are the main source of essential health information to families.** A 2012 evaluation highlighted several challenges to ASHAs provision of effective community health services due to limited training and job aids, weak supervision structures, and low literacy of the ASHAs (NRHM 2012).

Table 2: Primary health care and community processes: Locations of service delivery

Location/facility type	Village	Sub centre	Primary health centre
Population served	1,000	5,000	30,000
Staff available	• ASHA • 1 ASHA Sangini to 20 ASHAs	• 2 auxiliary nurse midwives	• Medical officer • Staff nurses • Lab assistant
Care delivered	• Counselling on optimum health practices and care seeking • Referral and escort to health facility	• Vaccinations • Antenatal care	• Deliveries • Outpatient care • Referrals to higher facilities for secondary level care

REMIND AND THE MHEALTH KNOWLEDGE BASE

A review of the mHealth evidence base helps contextualize ReMiND's achievements within the larger global field of ICTs and health. The review included both journal articles and grey literature, including frameworks and reviews. Resources were collected through a structured search of online databases, and consultation with mHealth experts about what frameworks they found useful.

Despite this effort, a review of the evidence can feel unsatisfactory, with some evidence of increased service utilization (Sondaal et al. 2016, Larsen-Cooper et al. 2015), but no clear evidence of health outcomes (Sondaal et al. 2016, Lee et al. 2016) and several articles calling for the field-at-large to build a stronger evidence base, including identification of cost-effectiveness, and knowledge, behavioral and clinical outcomes (Hall et al. 2015, Lee et al. 2016, Braun et al. 2013, Sondaal et al. 2016).

Indeed, authors Labrique and Mehl highlight a trend of mHealth interventions stepping away from a focus on health outcomes and moving towards systems strengthening, with a focus on improved efficiencies (Labrique and Mehl 2014). For example, instantaneous data reporting from a rural area is changing health system dynamics when previously reporting took months. Using mHealth as a catalyst for systems strengthening requires an assessment of existing gaps, and then an analysis of how mHealth can overcome these gaps (Labrique 2013). This reflects the trajectory that ReMiND has also taken. Other examples of mHealth interventions for systems strengthening include developing point-of-care diagnostics and longitudinal electronic health records.

The results of interventions with such a focus will be best reflected in cost-effectiveness studies. However, cost-effectiveness remains challenging to assess as there are no standardized protocols for what costs should be accounted for (JHU 2016). This makes any cross-intervention comparisons difficult. However, cost savings are likely to occur due to task-shifting and improved systems efficiencies, facilitated by improved communication.

Instantaneous data reporting from a rural area is changing health system dynamics when previously reporting took months.

There is a trend for mHealth interventions to step away from a focus on health outcomes and move towards systems strengthening.

A review of different interventions for frontline workers highlights systems interoperability as an ongoing challenge (JHU 2016, Ritz et al. 2014). The challenge of interoperability has also been highlighted in other studies (Ashraf et al. 2015). While this has not been a challenge so far for ReMiND, it is likely there will eventually be a stronger call for interoperability between systems supporting Auxiliary Nurse Midwives (ANMs), Anganwadi[4] workers (AWWs), the Mother and Child Tracking System (MCTS), administration, and human resource and payment systems. To this end, the literature suggests there is a need to ensure programs are coordinated across different stakeholders – to prevent any silos that would undermine a systems-level impact. This coordination must include private players such as telecoms, as well as donors, government officials and NGOs. Authors agree this requires an aligned vision (Wilson et al. 2014, Ashraf et al. 2015). Labrique and Mehl also highlight the need for multiple touchpoints with the health systems, to achieve widespread impact (2014).

Another app using the CommCare platform, implemented by CARE in Bihar, a state of India, coordinates the efforts of the different frontline health workers (Balakrishnan et al. 2016).

The other area highlighted is user-centered design, currently the exception rather than the norm in digital development (Braun et al. 2013). Braun et al highlight that user-centered design provides an opportunity for community health workers to participate in the design and development of mHealth solutions.

There were many different frameworks mapping stages of mHealth program development and maturity, leading towards scale (Bailey et al. 2015, WHO 2015, Waugaman 2016, Keisling 2014). ReMiND features well in these publications: one in particular by Dimagi, describes the ReMiND project and another features ReMiND as a case study (Keisling 2014). However, we did not find any account of a program that had achieved significant scale – although scale is relative and India's huge size sets the bar very high.

One area that did not feature prominently in the literature review was gender – despite the gendered nature of phone ownership and usage, and interpersonal communication and decision making for maternal and child health. One relevant exception was Deshmukh and Mechael's *Addressing gender and women's empowerment in mHealth for MNCH: An analytical framework* (2013). This highlights phone access and usage as a key issue in women's empowerment. Authors also highlighted the importance of efforts towards women's empowerment engaging a wide variety of stakeholders, including men. The authors also warn project designers to take into account possible negative consequences of mHealth projects empowering women, such as an increase in violence against women.

Two resources that were very helpful were Waugaman's *From Principle to Practice* (2016) and Nethope's *Organizational Guide to ICT4D* (2014). Both were sponsored by CRS, and therefore reflect the organization's approach to designing digital solutions. These were adopted as guiding references for this document.

There is a need to ensure programs are coordinated across different stakeholders – to prevent any silos that would undermine a systems-level impact.

Photo by Jennifer Hardy/CRS

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4. An *anganwadi*, "courtyard shelter" in Hindi, is a basic village childcare center.

The Project: An Overview

Considering the poor health indicators in Uttar Pradesh, and seeing the unrealized potential of the ASHA program, in April 2011, CRS, Dimagi and local partner Vatsalya formed the ReMiND project, which has the following objectives:

1. Increase ASHAs' coverage (i.e., increase the number of pregnant women who are visited at least once by an ASHA).
2. Increase ASHAs' frequency and quality of counselling with their pregnant clients.
3. Increase client knowledge of danger signs during and after pregnancy.
4. Increase the adoption of key maternal, newborn and child health and nutrition practices of clients during and after pregnancy (e.g. number of antenatal care visits, Tetanus Toxoid injections, care seeking for danger signs, and appropriate breastfeeding).

ReMiND has a number of key intersecting components that work together to strengthen community-level systems around maternal and newborn health:

- **The ASHA app:** A phone-based counselling job aid to support the ASHA mobilize the beneficiary to access health services (implemented in two blocks[5] of UP).
- **The Sangini app:** An app that helps the ASHA supervisor, called a Sangini[6], supervise and support the ASHA's work, according to a 10-indicator list (implemented in nine blocks of UP).
- **Meeting platforms:** Existing meeting platforms are reworked to ensure they are an opportunity for problem solving, support and learning. There are meetings for ASHAs, Sanginis and one for Block Health Education Officers (implemented in nine blocks of UP).
- **A training program** – to build interpersonal counselling skills and phone literacy (described in the *Deploy* section).

The apps were developed on the CommCare platform. CommCare has been widely adopted across different sectors in 50 countries. Designed for low-resource settings, the platform empowers frontline workers to collect data and simplify their work.

While technology has created efficiencies throughout different stages of the project (data collection, supervision), **ReMiND is not primarily an ICT intervention. Instead, it is a counselling and interpersonal communication intervention that uses technology as a support**.

In this section, the key components of the project will be explained in detail. These are synergistic, supporting each other to reinforce sustainable program impact.

Photo by Jaya Menon/CRS

The unique thing about ReMiND is that it is a quality improvement project that uses a mobile app, not an ICT project that is trying to improve quality. At every step, we first looked at the quality of the interactions and the process, and only later looked at the numbers. This is the key to the project's success in terms of system strengthening, and the generally high uptake.

Jaya Menon
Monitoring Evaluation Accountability and Learning (MEAL) Manager, Health, CRS (Lucknow)

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5. District subdivision
6. *Sangini* means "companion" in Hindi

THE ASHA APP

The ASHA app includes a checklist of key health-promoting practices that the ASHA goes through with the pregnant woman, to see which are being practiced and which are not. In the checklist, if "yes" is selected for any danger sign, then a sub-case is opened up for referral. Once the checklist is completed, the app suggests three counselling topics relevant to the mother (according to her stage of pregnancy, and according to her current health behaviours), and the ASHA selects one to go through in depth.

Initially the multimedia app was launched on a basic mobile phone (Nokia C2-01), but more recently, in two project blocks, ASHAs have been upgraded to Android phones (MOTO E). **ASHAs have reported that CommCare makes their work easier and more efficient – they remember to follow up mothers, and it helps them sequence their visits and keep a check on all beneficiaries in a catchment area.**

THE SANGINI APP

To address low performance of ASHAs, a new cadre of ASHA supervisors – or Sanginis - was conceptualized. The National Health Mission (NHM) completed hiring and training of this new cadre in 2014, from the existing pool of ASHAs. In Uttar Pradesh, the model employed is that selected ASHAs now hold the dual role of ASHA and Sangini. In consultation with the National Health Mission and the National Health System Resource Centre, the ReMiND project devised the mobile health application to support this newly recruited cadre in performing their supervisory responsibilities.

The Sangini app facilitates mentoring and supportive supervision, enabling the Sanginis to avoid paperwork and spend more time with the ASHAs. **The app assesses ASHAs' performance according to a 10-indicator checklist, developed by the National Health Systems Resource Centre (NRHM 2014).** On the basis of these indicators, Sanginis can see whose performance is weak and whose is strong, and give feedback in real time, building ASHAs skills, confidence and knowledge.

The app also discourages false reporting and helps maintain the quality of the work and data collected. The app builds trust by creating very clear and achievable expectations; an ASHA knows her targets and the supervisor can clearly see if she has achieved them. **This trust and confidence built between the ASHA and the supervisor through the app is visible – and is at the heart of the project's success.**

The Expected Beneficiary Calculation Form is perhaps the most useful component of the app. It helps the Sangini know if all cases are being covered by the ASHA or not. This way, she can identify reasons for the ASHA's low-coverage – whether it is unwillingness to work, reluctance from the community, or some other problem. Sanginis are also using this data to help mobilize any families resistant to accessing health services.

The app is unique in the field of mHealth as supervisors are often overlooked in mHealth project design and yet are in a unique position to impact health worker performance.

Photo by Elin Murless/CRS

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The app has helped us do precise counselling. Previously, we used to forget some details and the families also used to forget. Now because there are pictures and audio they remember the key messages – I ask them to recall on subsequent visits and they remember everything. The app gives dates and everything very precisely.

**ASHA
Kaushambi**

....

Perhaps the best part of the Sangini app design is that it suits the systems context in Uttar Pradesh. While it would be too expensive for the state's government to give every ASHA a mobile phone, giving one to every ASHA supervisor (1 per 20 ASHAs) is feasible. It provides reach to all the ASHAs, but at a lower cost. The ASHA supervisor is an efficient touchpoint for intervention, to make quality improvements to the ASHA cadre, and an excellent entry point for future ICT interventions. For this reason, it has strong advocates at the state and national levels.

Meeting platforms

The project did not only include the app, but also improved meeting platforms to make sure the data from the app was utilized in program support. Previously, ASHA meetings were very large, with all the ASHAs in a block gathering at a block Primary Health Centre or Community Health Centre and government officials telling them about policy updates: communication was mostly one-way. ASHAs typically did not share problems they were facing or ask questions, and they did not get the support they needed. Furthermore, there were simply too many ASHAs (typically more than 100) to allow any problem solving or quality interaction (see the quote from a Block Health Education Officer, right). The team created smaller ASHA meetings in clusters of about 20, and used the activity reports from ReMiND as a review tool.

Figure 5: ReMiND supported improved meeting platforms at different levels of the health system.

Sangini and Health Education Officer meetings

ASHA Sangini meetings

ASHA meetings

Meetings were previously held regularly, but there was nothing to discuss except the ASHA diary – but most weren't completed because the ASHAs are mostly illiterate and so couldn't fill it out. We couldn't discuss what was happening in the field because we had no idea. The ASHAs did complain, but there was no problem solving or support. Now, because reports are available on ASHA performance, we can appreciate those who have performed well. For those that aren't working well, we can support them so they start working better.

Block Health Education Officer
Kaushambi

There was provision for Sangini cluster meetings in the national guidelines, but this had not been adopted at the state level. So the ReMiND project scheduled meetings at the sub-center once a month. The custom reports generated by ReMiND were used by the Sanginis during the regular meeting platforms to talk to the ASHAs about their performance and provide support and solve problems where necessary. The app makes any challenges visible, and therefore helps solve them. Prior to the app, this was all done manually – and it was slow and cumbersome.

The ReMiND team also ensured there were regular meetings with the Sanginis and the Health Education Officer. This contact improved the Sanginis' credibility and acceptability as a senior to the ASHA in her area.

The app makes any challenges visible, and therefore helps solve them. *Photo by Jennifer Hardy/CRS*

The Impact

Beneficiary impacts

Increased beneficiary knowledge: After 2 years of ReMiND implementation there was an increase in knowledge of pregnancy danger signs (from an average of 1.60 to an average of 2.57), and delivery danger signs (from an average of 0.86 to an average of 1.22) with the greatest increase among women who were less educated (CRS 2014).

Increased care-seeking: Women were 12 percent more likely to receive the recommended three antenatal care visits at midterm compared to baseline (CRS 2014).

Increased coverage of positive health behaviors: The changes in critical health behaviors increased by significantly more in ReMiND areas than comparable non-ReMiND areas:

- Iron-folic acid (IFA) consumption (12.7 percent)
- Identification and self-reporting of complications during pregnancy (12.5 percent) and after delivery (15.5 percent) (Prinja et al. 2016a).

Reduced maternal and infant deaths: An external study found that projected over a decade, implementation of ReMiND across UP would result in the prevention of 16,918 maternal (16.4%) and 119,646 infant (5.2%) deaths (Prinja et al. 2016a).

### Antenatal care sessions completed, by women's education level
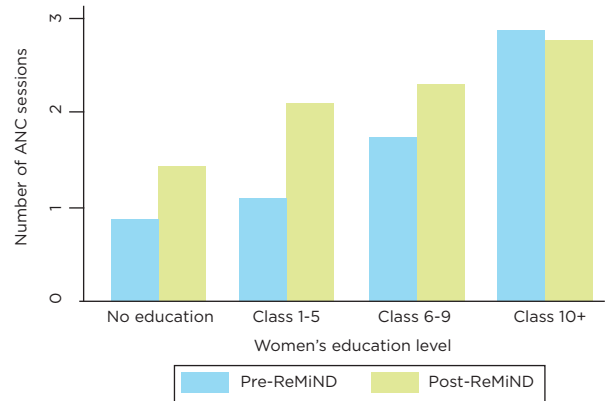
ASHA impacts

Wide adoption of the app: Baseline and midterm results showed that the app was widely adopted by ASHAs.

Increase in ASHA coverage: There was a 15 percent increase in the number of women who had received a visit from an ASHA during their pregnancy, during the first 2 years of the project. This was mostly among low-performing ASHAs, and across households of all education levels, as per below (CRS 2014).
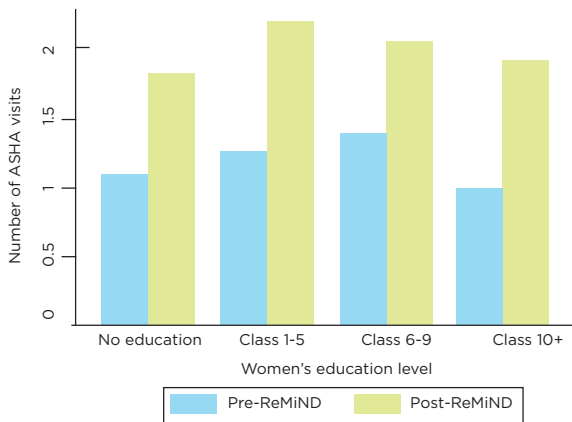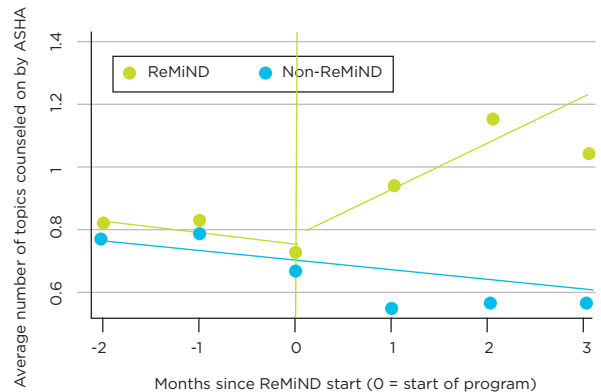
Low-performing ASHAs were helped most: The percentage of low-performing ASHAs decreased from 61 percent to 19 percent (CRS 2014).

Improved frequency and quality of ASHA counseling: After the app was introduced, women were 28 percent more likely to receive a counseling visit from ASHAs, on twice as many topics, and most of the increase was counseling on nutrition (37%). This coincides with increased use of the app. See below (CRS 2014).

Intervention entry point

Number of ASHA visits, by women's education level

Average number of topics ASHAs counseled on

Facility impacts

Increased quality of care: Women in the ReMiND catchment area received a greater average number of care components, including blood pressure checks (6.3 percent increase), ultrasound (8.6 percent increase), abdominal examinations (7.1 percent increase) and urine samples taken (9.3 percent increase) than in non-ReMiND comparison areas (Prinja et al. 2016a).

"I feel good when people give compliments for my work and this gives me inspiration to continue my work."

ASHA, Mooratganj (CRS 2014)
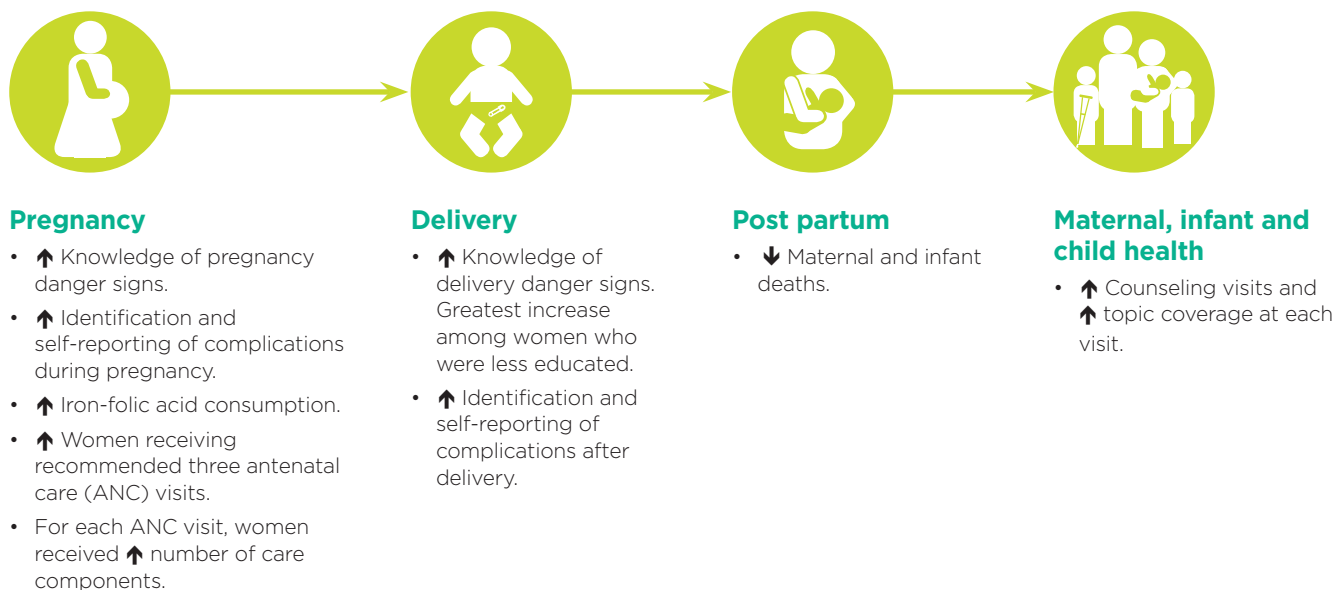
Finance and systems impacts

ReMiND is aligned with existing systems at the community level: ReMiND supports existing systems through improved interpersonal communication. This is supported both by the apps and the improved meeting platforms.

ReMiND is cost effective: An external study found that ReMiND is as cost effective as vitamin A and zinc fortification, measles immunization, case management of pneumonia, and oral rehydration therapy (Prinja et al. 2016a). Overall, ReMiND incurs an incremental cost of 6,078 Indian rupees (US$96) per disability-adjusted life year (DALY) averted and 176,752 rupees (US$2,792) for life saved.

ReMiND has manageable costs: Total project costs are projected to be 6 percent of the annual Reproductive and Child Health (RCH) budget – and the project is therefore financially sustainable (Prinja et al. 2016b).

Figure 3. Impacts along the continuum of care

Pregnancy
- ↑ Knowledge of pregnancy danger signs.
- ↑ Identification and self-reporting of complications during pregnancy.
- ↑ Iron-folic acid consumption.
- ↑ Women receiving recommended three antenatal care (ANC) visits.
- For each ANC visit, women received ↑ number of care components.

Delivery
- ↑ Knowledge of delivery danger signs. Greatest increase among women who were less educated.
- ↑ Identification and self-reporting of complications after delivery.

Post partum
- ↓ Maternal and infant deaths.

Maternal, infant and child health
- ↑ Counseling visits and ↑ topic coverage at each visit.

SANGINI APP

ASHA Sanginis make up the cadre of supervisors who support ASHAs. ASHA Sanginis began work in UP in early 2015. This app helped define what it is to be an effective Sangini: giving feedback to the ASHA, tracking the ASHA's progress and accompanying the ASHA on field visits.

Improved record keeping	When Sanginis visited ASHAs regularly and talked with them about their performance, this encouraged ASHAs to keep better records. This has also helped ensure that the Village Health Index Register (VHIR) survey is up to date, and improves the tracking of ASHA incentive payments.
Peer networks improve performance	ASHAs who named high performers as friends and family were also strong performers. Every such tie an ASHA named within the same sub-center was associated with her making an additional 35 visits per year, holding all other variables constant. This indicates that mentorship and strengthened peer networks improve performance (CRS 2014).
Value of multiple usage modes	ASHAs had strong preferences for using the web-based or voice-based interfaces, but the majority used both. Overall they accessed the voice-based mode the most (De Renzi 2016).

"The mobile also helps people with record keeping. When I visit ASHAs, and I see there is info missing from the ASHA diary, I ask them to open it right away and fill it in. There is now coverage of all pregnancies, and nearly all infants."

Sangini
Kaushambi

Capturing coverage: A Sangini's account

Sanginis can help ASHAs figure out how to reach everyone, once they know how many people "everyone" is.

Before ReMiND, it was difficult to calculate the expected number of beneficiaries in the catchment area. No one checked the ASHAs' records and no one supported us. ReMiND provided the Sanginis with a mobile-based job aid. This helps calculate the number of beneficiaries the ASHA is supposed to reach in her designated area. We put in the population number and the app calculates the expected number of pregnant women each month. Since I have been able to set targets like this, coverage has improved.

For example, I once went to visit an ASHA, Sujata, of Jalalpur village, and she had registered 16 pregnancies in the previous 3-month period. But when I looked at the app, I realized there was a coverage problem, she should have registered about 30. I asked her if she had covered everyone and initially she said yes, but then we discussed all the details of the village – and there were some people she had not been able to mobilize. Once she figured out who had been missed, I went with her to help convince these people, and eventually we registered everyone.

Now I have given Sujata that additional support, she has really established herself in the community; people know her and listen to her. She is better at mobilizing people and better at keeping records.

In this way, the app helps me do my work smoothly. If anyone asks a question, I can answer as I have the information immediately available on the phone. ASHAs, too, are improving their coverage and performance. As the coverage of the ASHA improves, she is also getting more incentive payments so her economic status is increasing, along with her respect in the community.

"I have had a very good experience with ReMiND, it's really added value for me. There are 100 ASHAs in this block. I can see their performance on my desktop or in hardcopy. This makes individual supportive supervision possible. Earlier, in the name of supervision, we used to focus on weaknesses and loopholes in peoples' performance. Now the focus is more on supporting them, not top down supervision."
Block Health Education Officer
Bakshi Ka Talab Block

Photo by Jennifer Hardy/CRS

Six Steps to mHealth Success:
How ReMiND catalyzes system transformation

INITIATE

DEVELOP REQUIREMENTS AND ARCHITECT SOLUTIONS

DESIGN

DEPLOY

OPERATE, MAINTAIN AND IMPROVE

CAPTURE AND SHARE RESULTS

The ReMiND project offers solutions to community-level health systems bottlenecks in India and globally. The six key steps in ReMiND's design and deployment are described below according best practices from the *Organizational Guide to ICT4D* (Nethope 2014). Some of these steps have been completed, and some are ongoing, as the project is still active.

1. INITIATE

Successful ICT4D interventions start with a common understanding among all stakeholders of the purpose and scope of the project, roles and responsibilities and the anticipated outcomes. **The ReMiND project started out as a testing ground for Dimagi's beta version of their CommCare app. CRS and Vatsalya provided project structure. The partnership allowed Dimagi to build the ReMiND team's capacity in mHealth from the outset.**

The team saw potential in a mobile-based approach.

CRS has worked in Uttar Pradesh in the area of maternal and child health for many years, with strong networks across a number of districts. Prior to ReMiND, CRS had an SMS reporting system for the Sure Start project. This was very small, but the team saw potential in a mobile-based approach. CRS and Vatsalya were also partners in USAID's Vistaar Project (2006-2012), working in Kaushambi, which had a strong focus on strengthening community-level systems through improved supervision. These past projects helped refine the team's focus for the ReMiND project.

Dimagi and CRS started working together when Dimagi used one of CRS's project sites to test a pregnancy checklist for eventual deployment in Afghanistan. Later, CRS had already started designing an mHealth project when they received a call to partner on testing Dimagi's beta CommCare app, providing an ideal opportunity for further collaboration. The CommCare app was tested in Kaushambi with 10 ASHAs in 2011, until mid-2012. Initially, Dimagi provided most of the support. A team member from Dimagi stayed in the district to keep working with the ASHAs, and adapt and refine the app to better meet their needs. CRS and Vatsalya helped with user testing and content development.

2. DEVELOP REQUIREMENTS AND ARCHITECT SOLUTIONS

At this stage, it's important to understand current practices and the requirements for change – including technical and functional requirements. **The ReMiND project worked with different stakeholders to understand system constraints and user needs – clearly defining the requirements for a phone-based solution.**

When the project started in 2011, the team reviewed a report from the National Health Systems Resource Centre/National Health Mission that identified some of the key reasons for the poor performance of the ASHA

program in Uttar Pradesh (NRHM 2011). There was insufficient capacity, no support, and no management structure. No one was responsible for checking the ASHA records. CRS also conducted additional assessments, which backed up these findings. In addition, from 2006 to 2011 (when the Sangini cadre was introduced), no one was checking the ASHA records, and they were largely left to themselves in terms of problem solving.

The CommCare ASHA counselling app provides a solution to these systems bottlenecks by supporting improved, structured interpersonal communication between ASHAS and beneficiaries, and consequently between ASHAs and their supervisors – Sanginis. Consulting with different stakeholders to assess needs and opportunities allowed the ReMiND team to get a thorough understanding of the requirements for an mHealth solution, and build broad commitment.

3. DESIGN

An agile incremental approach to designing, developing and testing the solution ensures an intervention that best meets the needs of users. **The ReMiND team created ongoing iterations based on user experience, feedback and emerging needs.**

Designing the ASHA app

The initial blueprint of the app was developed by CRS, based on government training modules that describe the ASHA's job role. It was then converted into an app-based format by Dimagi's US-based team. This blueprint was an Excel spreadsheet that mapped out all the definitions, questions and interactions on the app. It defines the fields for data entry and the sequence. The ReMiND team designed the initial ASHA app collaboratively with Dimagi over a year, working with 10 ASHAs on a daily basis; this made it easy to understand their roles and needs. The small number of ASHAs involved meant it was easy to keep adapting and changing the app in constant iterations, in a way that would be more difficult with a larger group.

This close working with ASHAs at the outset was in itself a big step away from traditional programming, as they were usually at the receiving end of a program – or may have been brought in for a token consultation at the end. All the content was taken straight from the government guidelines, and then converted into an app-based format by Dimagi. The app started with just the ASHA pregnancy module, because at that stage, the ASHAs themselves were only trained on that module.

Despite working so closely with the ASHAs, after a year of continual iteration the team found the app was still not suitable. At the first training, it was discovered that about 35 percent of the ASHAs were not literate. This shocked the team as their qualifications had all been checked and they all had the required qualifications (8th or 10th standard pass). The 10 ASHAs who we were working with at the design phase were high-performing ASHAs – and the team learned that what could work with them might not necessarily work with the whole cadre.

After the team realized the low literacy level, they had to include more voice components and additional visuals. Initially the voice of one of the Lucknow team members was used for the voice part. But it was quickly realized that it was more compelling to women if it was in a local person's voice, using local vernacular – so they recorded the voice of an ASHA. The

women felt like it was their friend talking to them, and when the phone was held up so they could listen, they all leaned their heads forward to hear better.

The project design and content all adhered closely to government guidelines, so the project was completely interoperable with existing systems. Even the level of supervisory contact the ReMiND Sector Facilitators had with the ASHAs was according to government guidelines; so this is doable with the available resources. This is key to the sustainability and scalability of the project. **The main difference is the ethic of support and mentorship.**

Designing the Sangini app

One of the key ways ReMiND catalyzes system transformation is through building capacity. The supportive supervision by the Sector Facilitators is a key pillar of this effort. ReMiND designed this position to help the government envision what an ASHA supervisor would look like, in anticipation of the new Sangini cadre (CRS 2014, Dimagi & CRS 2015). At the project's outset, the Sector Facilitators were ReMiND project staff, providing the main link between the ASHAs and the ReMiND team at headquarters. These project team members accompanied the ASHAs on field visits, helped them with technical issues with the phone, and provided ongoing handholding support. They supported the ASHAs in building their confidence and overcoming caste and social barriers, so they were able to extend their coverage (CRS 2014). Every morning and evening, the Sector Facilitators sat together and shared their experiences and, in this way, cross-learning took place.

To create the app that supports this supervisory job-role, the ReMiND team approached the staff of the National Health Systems Resource Centre in 2013 to ask them what they had in mind for the role of the ASHA Facilitator (or Sangini). The NHSRC had developed a list of 10 indicators to define whether an ASHA was functional or not (NHSRC 2014). The ReMiND team took this checklist and put it in an app-based format. They then developed the definition sheet and subsequent iterations were made internally. The app was initially deployed by the Sector Facilitators and then – once the Sangini cadre was introduced – handed over to them.

The Sector Facilitators were replaced by the Sanginis in 2014. ReMiND then created a new cadre of project staff called Block Mentors, who provide supervisory support to the Sanginis using another app – the Supervisory Monitoring app.

4. DEPLOY

*In deployment, an incremental approach that allows adequate time to address solution issues and respond to user feedback is preferable to a "big-bang" implementation approach. **In the ReMiND project, training became a strong focus in building user capacity, and enabled feedback on the extent to which the solution met user needs.***

Alongside the Sector Facilitators, ReMiND also built capacity through training. The training program best exemplified ReMiND's rigorous approach to implementation planning, with every aspect carefully mapped out in advance. A lot of logistics and planning goes into setting up such a training; phones, screen guards and SIM cards are required, the phones need to be configured, the app needs to be

Photo by Jen Hardy/CRS

"In such a big state with 820 blocks, and 150,000 ASHAs, costs can be very high. Giving every ASHA a 4,000-rupee [about US$60] phone is an expensive proposition and difficult to get approved. Instead, having one phone for every 20 ASHAs with the ASHA supervisors is more cost effective and will still improve ASHA performance. While there were many other apps on the market for ASHAs and community health workers, there were no other apps for supervisors."

Dr. Rajesh Jha
General Manager, Community Processes, NHM, Uttar Pradesh

"Smart-phone based applications are an idea whose time has come in healthcare at the frontline level. ASHA Sanginis, among all the ASHAs, can be treated as the first standard group for the introduction of this kind of ICT initiative."

Amit Ghosh
IAS, Mission Director, NHM

installed, and the SIM cards need to be activated and inserted. The team developed a rigorous training preparation process. Dimagi took the lead in developing the initial training materials, suggesting many components such as using local terms and metaphors for phone features (Dimagi 2012). In the following instance, Dimagi explained: "*Demo-mode should be used when we are learning or training, not when we are doing our real work in the field. For example, when we learn how to stitch and sew for the first time, we do not start sewing on the expensive cloth to begin with, we start with making stitches on paper.*" They had a training preparation checklist, which was combined with CRS' "seven steps" for planning a training, and tailored to the ReMiND project. These were captured in a facilitation guide developed collaboratively by all partners (this is included in the online ReMiND toolkit).

The capacity-building process started with helping ASHAs to simply feel comfortable with the phone and the new technology. There was a lot of initial discomfort with the phones.

After the first month, when the team members revisited the ASHAs, they found that many still had their phone kept safely in its box. The ASHAs felt their job was to keep the phone nicely, not necessarily to use it. The same thing was observed when the government gave the ASHAs weighing scales – they kept them in the box and on the shelf. No one wanted to be responsible for a breakage. So initially the team just followed up to understand what was stopping the ASHAs from using the phone.

In the first session, the ASHAs were not very vocal, but after multiple visits and after being treated respectfully, they spoke up. They came to realise that no one was going to scold them, so they became more confident. The confidence made it easier to identify their knowledge gaps and provide support.

However, adjustments also had to be made to the training along the way. The team had to thoroughly revise the training approach to accommodate the low literacy levels. They conducted literacy tests and then put the ASHAs into separate, small groups – literate and non-literate. For the non-literate ASHAs, family members were invited so they could also provide support. They also used a lot of visual material. The ASHAs were trained in small groups of about 15 so they could be given individual attention. Fast learners were paired with slow learners and small groups of 3s and 4s were set up to help people learn from each other. Supervisors were also included in the training so they could learn and provide follow-up support where required.

Now refined, **the training methodology is an essential component in how the project helps ASHAs realize their potential.** The first day covers counselling, and how important counselling is. On the second day, the phone is introduced as a counselling job aid, and the trainers explain how the phone can help them with interpersonal communication. Initially, many of the ASHAs did not even realize that they were supposed to do counselling and field visits as part of their role.

"People say to me 'I never thought you would have such a big phone!' They are proud of us. Earlier when I didn't have a phone, I was scared of phones. There was one phone in the family, but I hardly got to touch it. Very rarely, I would attend a call. At first, I didn't think I would be able to handle using the phone – but now I can. I can send forms to the server, put the phone on silent, and add contacts to the contact list.."

**ASHA
Kaushambi**

Photo by Umesh Gupta/CRS

Equity benefits through focusing on those who need it most

One of the significant achievements of the ReMiND project is the equity benefits: low-performing ASHAs benefit the most. This is achieved through individual attention and support.

ASHA Salma was a quiet, shy person and never talked much with other ASHAs or beneficiaries. Due to this, her performance as an ASHA was limited. During the first ASHA app training under the ReMiND project, there were group exercises and role plays. During these sessions, her fellow ASHAs and the ReMiND team focussed on supporting Salma. She was asked to lead different exercises, and slowly, with this support, she spoke up and interacted more. After this training her confidence level increased, she chatted with people happily; the other ASHAs were surprised to see the change. This confidence boost also led to increases in her home visits, and improved her relationships with the community.

Government liaison for scale-up

In April 2012, the ReMiND project scaled up to the whole of the Manjhanpur block in Kaushambi district. From the first day, the team liaised closely with government officials at the block and district level to build support for ReMiND, and ensure that they were committed to ReMiND's success.

Lesson learned: While liaison with the government happened from the outset at the block, district and state level, on reflection, members of the ReMiND team acknowledged that they probably needed to advocate at the state and national levels earlier and more frequently.

5. OPERATE, MAINTAIN AND IMPROVE

*Building and sustaining the capacity to operate, maintain, support and improve the ICT solution over its life cycle is critical. This includes adapting the solution to a changing context. **The ReMiND project achieved an unusually high level of agility and responsiveness through the team's commitment to ongoing learning.***

Usually in any program or project, there is an initial formative research phase, then a planning phase and then an implementation phase. However, **the ReMiND project made a constant and ongoing effort to understand the needs of ASHAs and Sanginis, and to revise the solution design accordingly.** At every step, the team regularly stops to reflect and learn about what is working and what is not working, seek various stakeholder inputs, and make necessary course adjustments. After every training, there is an immediate debriefing to address any challenges. This happened even at the scale-up phase where some components were dropped to streamline the scale-up process.

One example of how the app changed with feedback was a reduction in counselling topics. Initially, in the pilot, there was a checklist of health behaviors, and then the ASHAs were supposed to provide counselling on all the topics in the checklist. However, this was time-consuming and boring for both ASHAs and the mothers.

"The team are always gathering feedback and thinking of ways to improve the app to make it more relevant in the state."

Dr. Rajesh Jha
General Manager, Community Processes, Uttar Pradesh

ASHAs were struggling to hold mothers' attention. After ASHAs' feedback, the ReMiND team altered the app so that now, after filling out the checklist, the app provides three counselling topic choices, and encourages the ASHA to select one. This way they can go into more depth, and the mothers are more likely to remember the messages. Most ASHAs selected the first option, so they ensured the most important messages came first. Most importantly, this shorter protocol is easier and more comfortable for both the ASHA and her client, and the ASHA does not wear out her welcome.

This ongoing reflection is necessary in the pilot stage, to ensure the project is on track. Once all these lessons have been learned, the intervention has been institutionalized, and scale has been achieved, these iterations can be reduced for the sake of efficiency.

ReMiND dispelled doubts

Even to the ReMiND team, success was not a forgone conclusion. However, the project experience demonstrates what works in strengthening community health systems. This is an account by Satish Srivastava, Health and Nutrition Manager, CRS (Lucknow).

When ReMiND was in the planning stage, I was very doubtful that it could make an impact. I didn't think the ASHAs would be comfortable using the phone as a work-tool as many were illiterate. I saw the ASHAs were already overworked and overwhelmed, and by giving them a phone and asking that they visit pregnant women more often, we were giving them even more work without an additional incentive payment. I was sure they would not use it.

When we did the training and found that 35 percent of ASHAs were illiterate, this was a big setback, and our doubts increased – but still we adapted our training and continued on. I voiced my concerns to different people internally at CRS, but still we proceeded and we all put in our best effort to see how this would turn out.

Once the project was implemented, I was surprised by its success – surprised to see that we were able to train illiterate ASHAs to use the app, and surprised to see the frequency of the ASHA visits increase – even higher than our targets.

What was really eye-opening was that with the phone, the illiterate ASHA, who seemed overwhelmed and a bit lost, was transformed to someone with increased skills and confidence, who was effective in her work and respected in her community. The transformation I have seen through ReMiND highlights the untapped potential of all the other ASHAs who could do as well if they had support, such as through the ReMiND project.

"Once the project was implemented, I was surprised by its success – surprised to see that we were able to train illiterate ASHAs to use the app."

**Satish Srivastava
Health and Nutrition Manager,
CRS (Lucknow)**

6. CAPTURE AND SHARE RESULTS

Capturing results and lessons learned from the implementation of ICT projects is critical in accelerating adoption and ensuring future success. **In the case of ReMiND, lessons learned have not just helped internal improvements, but have also made strong contributions to the mHealth knowledge base.**

ReMiND has a comprehensive monitoring and evaluation system that feeds into ongoing quality improvements. The project team compiles monthly and quarterly reports against indicators, for sharing with the team, health managers, government counterparts and partners. This data is shared in monthly meetings and used for project refinements, performance management and resource allocation.

The lessons learned from ReMiND have not only been used for internal quality improvement. Experience from this project has helped CRS, Dimagi, the Ministry of Health in Uttar Pradesh, and other partners understand how to implement mHealth projects in different contexts, both within Uttar Pradesh and globally.

ReMiND was unique in its commitment to learning, and building the global mHealth knowledge base. All along, it mobilized resources and built relationships with research partners to support additional studies and assessments to understand what worked in terms of ICTs and community health workers. For example, USAID funded an impact evaluation carried out by the Post Graduate Institute of Medical Education and Research, Chandigarh (Prinja 2016). Another example is a study on how phones are used outside of work (Schwartz 2013). Case studies of ReMiND have been included in a number of toolkits and frameworks, such as Keislings the *mHealth field guide for newborn health,* and WHO's *The MAPS Toolkit: mHealth assessment and planning for scale* (see bibliography for details). Through these research and documentation efforts, the ReMiND project has established itself as a benchmark for mHealth success in the field of maternal and child health, and its lessons learned are applied all over the world.

Impacts diffuse to other blocks

ReMiND has demonstrated how motivated Sanginis can do well and will go out of their way to build their skills and get the support they need.

In Bakshi Ka Talab block, Nidhi, a Sangini, had settled into her role comfortably. Structured monthly review meetings were held regularly, and ASHAs were supported to collaborate to find solutions to work challenges. Nidhi was doing such a good job of supporting and mentoring her ASHAs; she was turning all the low-performing ASHAs into high-performing ones.

The ASHAs were happy, enjoying their work more because they were effective, respected and supported by the community. Word spread, and two Sanginis from nearby Chinhat block started coming to Nidhi's monthly Sangini meetings with the Block Health Education Officer so they could also improve their work. The Chinhat Sanginis reported that nothing much was happening in their block, but they were keen to keep learning, so they travelled to attend the meetings in Bakshi Ka Talab.

> **The ASHAs were happy, enjoying their work more because they were effective, respected and supported by the community.**

Replication

The best indicator of success for any intervention is replication in another state or context. Replication highlights the adaptability and utility of the intervention.

In 2016, ReMiND was invited to present at the National Health Systems Resource Centre annual meeting focussed on community processes. This event, attended by government officers from all states, is an opportunity to share innovations and best practices from all over the country. A number of states took an interest in ReMiND and these officers were invited to Lucknow to see for themselves the successes and possibilities of the ReMiND and the Sangini app. This visit occurred in March 2016.

One of the states that took an interest in ReMiND was Meghalaya. Meghalaya is a state in the northeast, famous for having the most rainfall anywhere in the world. It is also matrilineal (although still patriarchal), and people live according to tribal traditions.
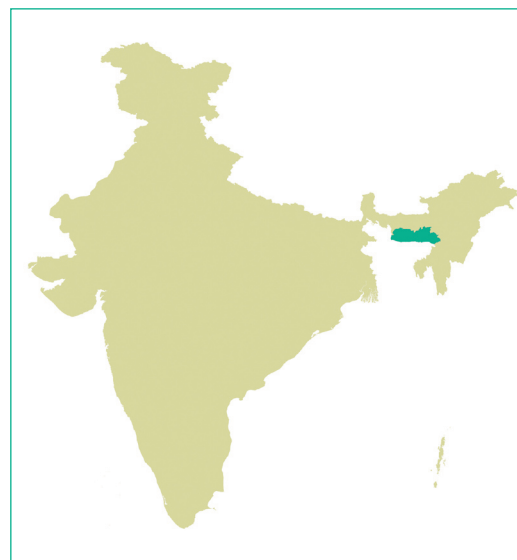

Figure 4: A map of India with the state of Meghalaya highlighted

Map by DK Siva Kumar

MEGHALAYA HEALTH SYSTEMS CONTEXT

Meghalaya experiences many health systems challenges common to other states in the Himalayas: linguistic diversity (people speak Khasi, Garo, English, Assamese and Bengali), remote and inaccessible communities, and high fertility. Some villages are only accessible on foot, with health workers having to walk 4 hours to reach them. During the rains, many villages are completely inaccessible.

The ASHA cadre in Meghalaya is skilled, and most have a primary education at least. However, their skills focus on delivering care in homes, rather than connecting people to a facility. Many states in India have made great progress in maternal and infant health – and have subsequently expanded the ASHAs' roles to include non-communicable disease prevention. However, Meghalaya is still struggling with addressing the more fundamental issues of ensuring deliveries attended upon by a skilled provider, and high infant and maternal mortality.

The ASHA facilitators came into being in 2010 and 2011 (much earlier than the Sangini cadre was introduced in Uttar Pradesh), and established themselves as trusted advisors to the ASHAs.

HOW ReMiND CAN HELP

One of the key challenges with the health system in Meghalaya is the disconnect between the community and the health system at large. Most data is facility-based, and in Meghalaya the facility is not necessarily where people receive care. Data about the ASHAs' work is simply not being captured. If data from the field were available, it would enable better planning and improved outreach. The Mother

and Child Tracking System is there (an information system that tracks pregnant women and newborns), but has been challenging to roll out because there are too many communication gaps between different levels of the health system.

This is where the ReMiND project would be helpful – capturing village-wise data. This data also helps identify training and refresher training needs, and can identify when would be a good time to expand the program scope (for example, to train the ASHAs in non-communicable disease prevention). **The app will help ensure that training best meets their needs and maintains their motivation and commitment.** The ReMiND project particularly suits the context in Meghalaya, because it accommodates community health workers with limited literacy.

In India, health is a subject that is governed and implemented at the state level. However, the National Health Mission is a program focussed on maternal and child health, funded at the national level. Within this program, the national government sets policy and guidelines and provides 75 percent of the funds. Subsequently, states implement these policies in accordance with their systems and socio-economic context. To access these central funds, states write up a "Program Implementation Plan", and on approval, the central government releases funds accordingly.

Meghalaya's plan for ReMiND is to implement it on a pilot basis with 100 ASHA facilitators first. It will then be assessed to see if it can be scaled up with the payment system integrated, and a link added to the Mother and Child Tracking System. Right now, Meghalaya has submitted their Program Implementation Plan to the central government, and once it is approved, they will role out the project.

The Meghalaya team suggested that the scalability and adaptability of the app would be enhanced if it could align with the Mother and Child Tracking System and the ASHA payment system.

Photo by Satish Srivastava/CRS

Conclusions

The ReMiND project delivered positive benefit at multiple levels of the health system, and demonstrated what supportive supervision can look like within the government system. This report captured quantitative results, the stories told by different stakeholders, and also the process of design, implementation and scale-up. The program's experience offers a number of key lessons learned for the mHealth practice community:

SUPERVISION FOR IMPROVED ASHA PERFORMANCE

The project has clearly demonstrated the importance of supervision and support for improved ASHA performance. This is through two modalities:

1. The project's own supervisory staff, the Sector Facilitators, supporting the ASHAs.
2. The Sangini app that supports the government's own cadre of ASHA supervisors.

Friendly and supportive supervision serves many functions; it clarifies role responsibilities, demonstrates key skills (such as convincing reluctant families to go to a health facility), gives actionable feedback on performance, and helps solve problems and challenges in the field. The rollout of the Sangini app has helped clarify and demonstrate what effective supervision might look like. This is important – supportive supervision is mentioned frequently in government reports and recommendations,[7] and yet the shift from an ethic of punitive "command and control" to collaboration and support is not easy. Having the Sangini, with the support of the app, in place, makes supportive supervision more visible and tangible.

HUMAN PROCESSES FIRST

An important element of the ReMiND project is that it always gives primacy to human processes, with technology supporting but not usurping this. The project focuses on interpersonal communication both between the ASHA and the beneficiary, and between the ASHA supervisor and the ASHA. In the training, the first day always focuses on interpersonal communication, and only on the second day does it look at how the app could support and guide this. Keeping the project rooted in human interaction ensures it is meaningful and useful to ASHAs and Sanginis – and ultimately leads to a range of benefits at different levels of the health system. These project outcomes are not all quantitative, and we have captured some of the stories and anecdotes here.

Photo by Satish Srivastava/CRS

The project has clearly demonstrated the importance of supervision and support for improved ASHA performance.

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7. See for example: Government of India, Planning Commission (2011). *High level expert group report on universal health coverage for India* (No. id: 4646). New Delhi.

TARGETING PROJECT RESOURCES TO THOSE WHO NEED IT MOST

One of the most significant outcomes of the ReMiND intervention has been the equity effects: it consistently benefits those who need it most. This happens both through conscious effort in training and outreach, and with the support of the data from the app. The data helps identify which pregnant mothers are from marginalized households, and who needs support and when. The Sangini app identifies low-performing ASHAs and flags them for additional support. This targeting means that project resources are used efficiently for widespread benefit.

ITERATIVE DESIGN AND ONGOING LEARNING

The project benefitted from an iterative approach that included ongoing user feedback, research, analysis and reflection to identify what was working and where there was room for improvement – and refining the app accordingly. This not only meant an app that met user needs, but consultation with key stakeholders also fostered engagement and a sense of ownership.

POTENTIAL OF THE ASHA CADRE

While the ASHA cadre enjoy some successes across the country,[8] it has not reached its potential in terms of reaching the hard to reach or improving health outcomes. Studies have found that limited capacity, confusion about role responsibilities, a lack of management structure and support have undermined performance. **The ReMiND project leverages this potential through tools that help them organize their workflow, communicate with beneficiaries and get support from their supervisor. All of these factors help increase ASHA coverage, and over time, will result in improved health outcomes.**

SYSTEMS ALIGNMENT

Using government guidelines as a starting point for intervention design, as well as close consultation with government stakeholders meant that the intervention was always in line with government priorities, and interoperable with the government system. This is an important precondition of scale, and is key to the support that the ReMiND project engendered at all levels of the health system.

Photo by Umesh Gupta/CRS

One of the most significant outcomes of the ReMiND intervention has been the equity effects: it consistently benefits those who need it most.

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8. See for example; Lim SS, Dandona L, Hoisington JA, James SL, Hogan MC & Gakidou E. (2010). India's Janani Suraksha Yojana, a conditional cash transfer programme to increase births in health facilities: an impact evaluation. *The Lancet*, 375(9730), 2009-2023.

ReMiND Resources

ReMiND Baseline Report
CRS, 2013
Research Report

- Maternal education is most important demographic predictor of healthy behaviors
- Husbands and mothers-in-law are main decision makers
- ASHAs play a role in helping liaise between mothers and ANM/ facility. Do not play much of a role in counseling

ReMiND Formative Research Report
CRS, 2014
Research Report

- At baseline, only 61 percent of women were visited by an ASHA
- ASHAs learnt about new pregnancies by interacting with community members through immunization rounds and VHIR
- Geography was the biggest barrier for ASHA visits
- Those who were intrinsically motivated and those who were literate had better coverage
- Women who were not visited would have liked a visit: ASHAs are valued
- Mothers-in-law were main gatekeepers
- Wealthy households were visited less often

Maturity Model Case Study
Dimagi, 2015
Case Study
The case study included four key stages toward project maturity:

- Initial system design and demonstration
- Scale, capacity building and supportive supervision
- Monitoring worker performance and SMS reminders
- Scale up

Impact – improvement in coverage, knowledge of danger signs and access to ANC.

Closing the feedback loop: A 12-month evaluation of ASTA, A self-tracking application for ASHAs.
DeRenzi et al, 2016
Conference Presentation

- Describes ASTA, a self tracking application
- Improved ASHAs' performance
- Choice of format (web/ voice) important

ReMiND Project Mid-term Evaluation Report – Reducing Maternal and Newborn Deaths
CRS, 2014
Research Report

- ASHA coverage has increased
- Helped improve performance of low-performing ASHAs
- Number of topics discussed during counseling doubled
- Knowledge of danger signs improved
- Boosted confidence and increased acceptance
- Illiterate ASHAs knew how to use app, but needed training and support

Impact of m-Health application used by community health workers for improving utilization of maternal, newborn and child health care (MNCH) services in a rural area of Uttar Pradesh, India
Prinja et al, 2016
Research report (unpublished)

- Statistically significant improvements in IFA consumption, abdominal examination, identification and self-reporting of pregnancy complications

Mhealth-enabled community health worker strengthening: A mid-term evaluation of a program to improve MNH in India
Murless & Weaver, 2014
Conference presentation

- Improvement in coverage and counseling practice
- Equity effects of ReMiND – those with less education benefitted most.
- Improvements in health behaviors: ANC care seeking, tetanus toxoid injections, care seeking for complications, colostrum feeding

Exploring the relationship between social networks and health workers in India, 2015
Journal article (unpublished)

- Social networks matter to ASHA performance
- Having a positive relationship with high-performing ASHAs, more experienced ASHAs and supervisors can help ASHAs in their work

ASHA Facilitation Model
CRS, 2014
Policy brief

- Requirement for full-time female ASHA supervisors, supported by development partners
- Technology can be an enabler

Cost analysis of implementing an mHealth intervention for MNCH through CHWs
Prinja et al, 2016
Journal article (unpublished)

- Cost is estimated at US$20 per registered beneficiary, or from a "societal" perspective, US$37.50 per beneficiary
- Total program costs are projected to be 6 percent of the annual RCH budget – and the program is therefore financially sustainable.

Cost-effectiveness of m-Health intervention by Community Health Workers
Prinja et al, 2016
Journal article (unpublished)

- Implementation of ReMiND intervention in UP would result in a reduction of 16,918 maternal and 119,646 neonatal deaths during the 10-year period: a reduction of 16.4 percent maternal and 5.2 percent neonatal deaths.
- Overall, ReMiND incurs an incremental cost of 637 rupees (US$10) per DALY averted and 18,516 rupees (US$292) per death averted.

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ReMiND Project

RESEARCH BRIEF

Cover photo by Elin Murless/CRS

Contents

Acronyms

ANC	Antenatal care
ASHA	Accredited Social Health Activist
BHEO	Block Health Education Officer
BKT	Bakshi Ka Talab
CRS	Catholic Relief Services
DALY	Disability-adjusted life year
GOI	Government of India
IFA	Iron-folic acid
KPC	Knowledge, practice and coverage
MNCH	Maternal, newborn and child health
MTE	Midterm evaluation
RDW	Recently delivered women
ReMiND	Reducing Maternal and Newborn Deaths
UP	Uttar Pradesh
UP-NHM	UP National Health Mission
SF	Sector Facilitator
SO	Strategic objective
TT	Tetanus Toxoid
VHIR	Village Health Information Register

Key lessons learned

- One of the major successes of ReMiND has been increasing ASHAs' coverage of pregnant women in their community. The project reduced the number of low-coverage ASHAs to less than 20 percent of the total, down from more than 60 percent at baseline.

- Only 44 percent of women received an ASHA visit with a counseling component prior to the intervention, but 72 percent received a counseling visit from their ASHA at the time of the midterm evaluation survey.

- Pride, honor and community recognition that an ASHA gets in the community is a source of motivation for her.

- Beneficiaries (pregnant women, recently delivered mothers) considered counselling messages from ASHAs about the importance of institutional deliveries alongside contrary messages from their social networks.

- While knowledge of danger signs increased, care seeking for complications did not. Information about danger signs may have been difficult for women to act upon.

Photo by Elin Murless/CRS

ReMiND is a mobile-based job aid for India's frontline health workers—called the Accredited Social Health Activist (ASHAs)—and their supervisors.

Introduction

Using mobile phone-based health technology (mHealth), the Reducing Maternal and Newborn Deaths Project (ReMiND) aims to increase the adoption of key maternal newborn and child health practices by improving the presentation and content of health information provided by ASHAs, as well as strengthening support and supervision structures for the ASHA through the ASHA supervisor called the ASHA Sangini.

The project objectives are to increase the following:

1. Coverage of the ASHA (i.e., increase the number of pregnant women who are visited at least once by an ASHA).
2. Frequency and quality of counseling by ASHAs to their pregnant clients.
3. Client knowledge of danger signs in pregnancy and postpartum.
4. Adoption of key maternal, newborn and child health (MNCH) and nutrition practices of clients during pregnancy and postpartum (e.g. number of antenatal care visits, Tetanus Toxoid injections, care seeking for danger signs, and appropriate breastfeeding).

The ReMiND project completed a baseline study in January 2013 that included a qualitative study and a quantitative knowledge, practice and coverage (KPC) survey covering 1,100 households. The KPC established baseline measures for the project's strategic objective and targeted outcome-level indicators. The midterm evaluation in August 2014 employed the same methodology with 2,200 households.

ReMiND aims to increase the adoption of key maternal newborn and child health practices.

Background

Uttar Pradesh contains a fifth of India's population, and lags far behind national averages in maternal, newborn and child health, threatening achievement of national and global goals. Kaushambi district, one of UP's 75 districts, exhibits some of the worst health statistics, with neonatal, maternal and child mortalities far greater than the national averages (at 84%, 92% and 103% higher).[1]

In 2006, the Government of India formed a network of community health workers known as Accredited Social Health Activists (ASHAs) in an attempt to promote improved health practices in rural communities. ASHAs act as the critical cornerstone between rural households and the health system, and are the main source of essential health information to families. A 2011 evaluation by the government highlighted several challenges to ASHAs provision of effective community health services, due to limited training and job aids, weak supervision structures, and low literacy among ASHAs.[2]

1. State of the World's Children 2012; 2010/2011 Annual Health Survey data
2. Evaluation of ASHA Program 2010-11, National Rural Health Mission. India

Uttar Pradesh lags far behind national averages in maternal, newborn and child health.

Uttar Pradesh

INDIA

Maps by DK Siva Kumar

UTTAR PRADESH

Bakshi Ka Talaab

Lucknow district

Kaushambi district
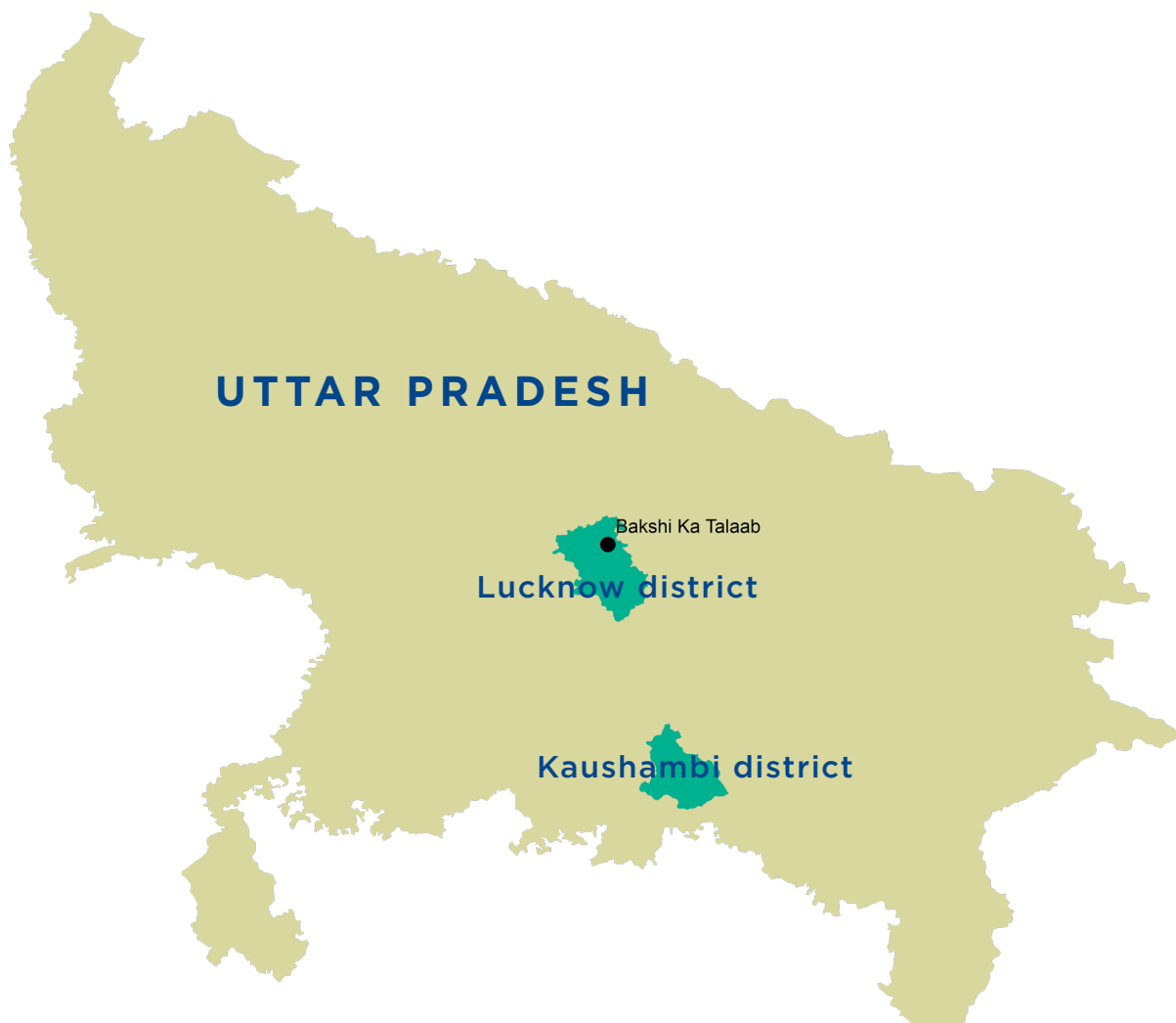
The ReMiND solution

In April 2011, Catholic Relief Services together with private sector technology leader Dimagi and local partner Vatsalya partnered to form the Reducing Maternal and Newborn Deaths (ReMiND) Project.

The government's ASHAs in project areas are now supported through basic mobile phones (Nokia C2-01) operating Dimagi's open-source CommCare software, which equips ASHAs with multimedia job aids that can be used to support their outreach to pregnant and recently delivered women. ASHAs were also supported by Sector Facilitators – project staff who accompanied the ASHAs on home visits, helped them with the phone and provided ongoing supportive supervision. SFs were precursors to the Sangini cadre of supervisors that the government put into place later. Once the Sangini cadre was introduced, the SFs were phased out. All real-time data is transmitted from the applications to CommCareHQ, Dimagi's cloud-based server, where project supervisors and government health professionals can monitor and support ASHA activities, and produce reports using CommCare's health data.

ReMiND has a comprehensive monitoring and evaluation system. The project team compiles monthly and quarterly reports for indicators to share with the team, health managers, government counterparts and partners. These data guide focused project management and timely allocation of resources towards low-performing program areas. The results framework was revised in December 2013 to reflect the project's evolving support to Sanginis and to explicitly include sustainability and scaling-up as cross-cutting themes in ReMiND.

The government's ASHAs are now supported through basic mobile phones operating Dimagi's open-source CommCare software, which equips ASHAs with multimedia job aids that can be used to support their outreach to pregnant and recently delivered women.

Methodology

The midterm evaluation included both quantitative and qualitative components, using a non-experimental pre- and post-study design. The quantitative component used two rounds of knowledge, practice and coverage surveys, with data collected using Dimagi's CommCare platform on tablets. Data was analyzed using Stata 13.

The qualitative data collection consisted of key informant interviews and focus group discussions. Full ethical permission was obtained, and informed consent was collected from each participant. Interviews were conducted in Hindi and recorded by a notetaker. Data were analyzed according to key themes.

The midterm evaluation included both quantitative and qualitative components, using a non-experimental pre- and post-study design.

ASHAs act as the critical cornerstone between rural households and the health system. *Photo by Amy Ellis/CRS*

Summary of findings

The greatest successes of the project have been in increasing the linkages between women and the health system. There were significant increases in the percentage of women being visited by ASHAs and receiving counseling from them. This improved antenatal care access, but did not translate into notable improvement in other areas of care seeking, such as institutional delivery.

**Table 1: Progress on key program coverage indicators**

	Baseline	Midline	Difference
Percent of women ever visited by an ASHA	61% [0.58,0.64]	76% [0.73,0.78]	+15% [<.001]***
Percent of women receiving counseling from their ASHA	44% [0.41,0.47]	72% [0.69,0.74]	+28% [<.001]***
95% confidence intervals listed below the points estimates, with p-values listed under the differences			

ASHA COVERAGE

As a result of ReMiND, ASHAs carried out far more visits with pregnant women, both due to support from the project and increased confidence derived from the mobile phone job aid. Only 44 percent of women received an ***ASHA visit with a counseling component*** prior to the intervention, but 72 percent received a counseling visit from their ASHA at the time of the midterm survey. Most of the improvement came from an increase in counseling on nutrition and rest during pregnancy, for which there was a module in CommCare.

**Figure 1: Average number of topics counselled on by ASHAs**
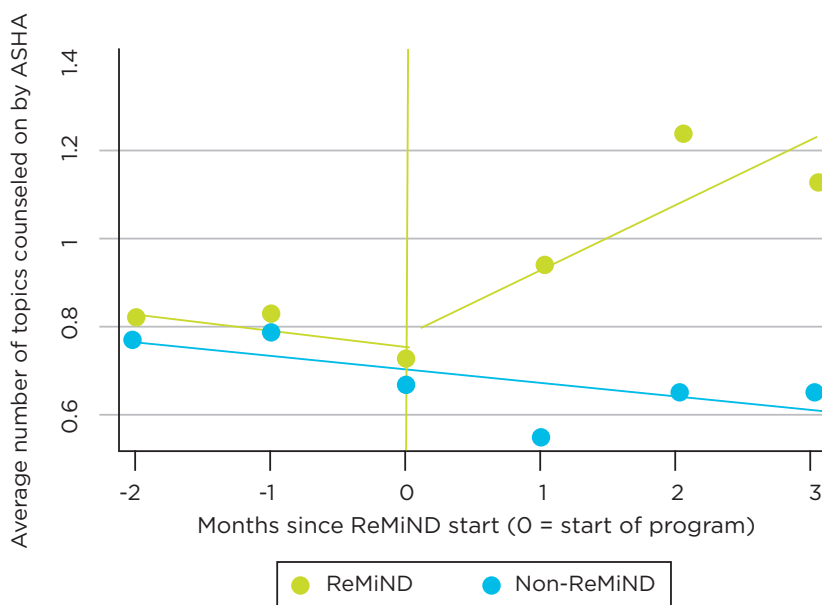
Within 3 months of implementation, 60 percent of recently delivered women reported having been visited by an ASHA using CommCare. Such rapid adoption suggests that the system is relatively easy to use by the ASHAs.

EQUITY EFFECTS

ReMiND was particularly successful at reducing the number of low-coverage ASHAs: the number of ASHAs who counseled less than 40 percent of the pregnant women in their village dropped from 61 percent to 19 percent. This in turn led to a large improvement improvement in the number of antenatal care visits that women received, especially among less-educated households.

At baseline, less-educated women received slightly fewer visits than those with a medium level of education, but not much lower. In fact, wealthier households also received fewer visits from ASHAs, likely due to lack of demand from those who could afford more private health services. ReMiND increased ASHA visits across all levels of women's education.

**Figure 2: Number of ASHA visits, by women's education level**
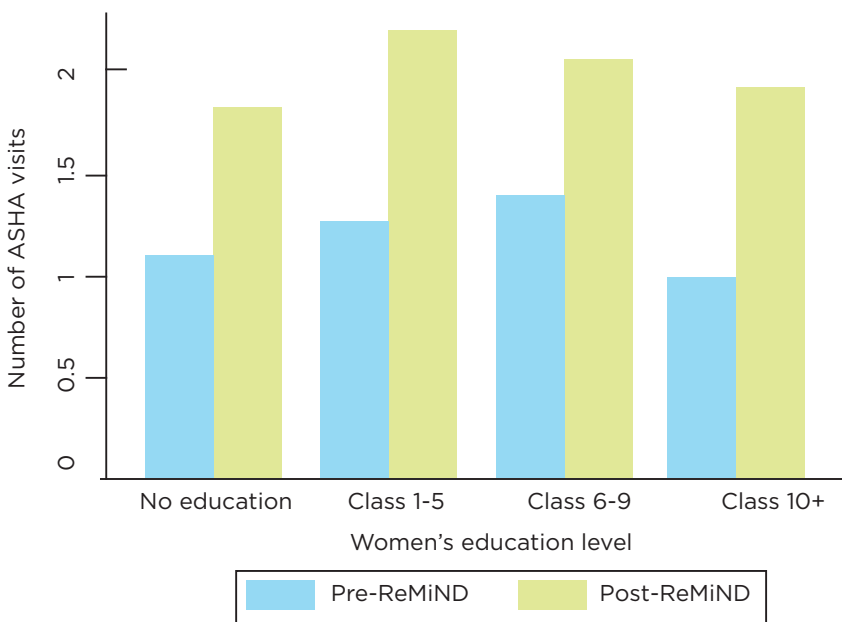
DANGER SIGNS

As a result of the project, women received significantly more counseling on nutrition and pregnancy danger signs, and were able to name nearly twice as many pregnancy danger signs. Recall of nutrition messages increased from 17.8% to 55% of women, while recall of counseling danger signs increased from 3.8 % to 14% of women. Most of this increase came among less-educated women, such that after ReMiND, they named nearly as many danger signs as more-educated women. However, the absolute number of danger signs that they could name was still low (1.23) to expect it to translate into health outcomes. One of the main areas of interest was whether women were more likely to seek care upon experiencing danger signs. Results were inconsistent, with improvement in care seeking for some danger signs but not others.

ReMiND was particularly successful at increasing antenatal care visits among less-educated women.

RECALL OF NUTRITION MESSAGES SHOWED A HUGE INCREASE, FROM 17.8 PERCENT TO

55%

Figure 3. Number of delivery danger signs known, by women's education level



Women's education level

Pre-ReMiND   Post-ReMiND
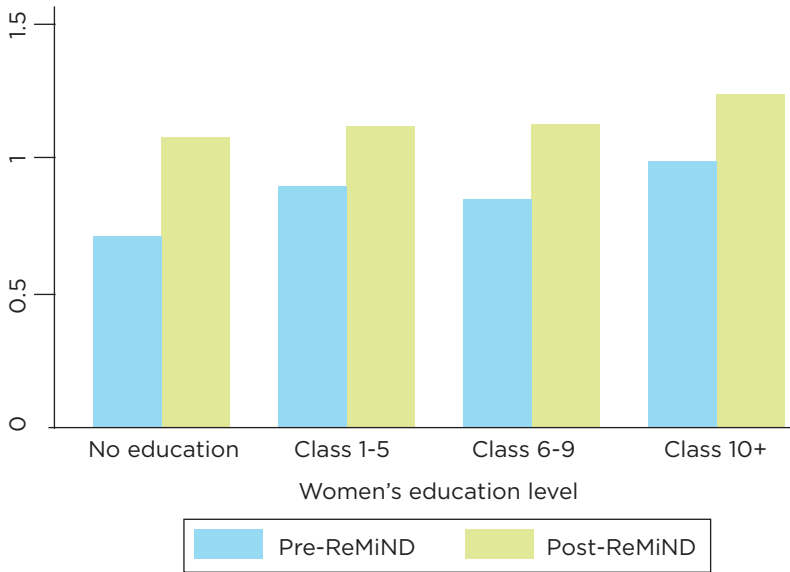
ANTENATAL CARE

The program appears to have had a major success in antenatal care. The average woman accessed 41 percent more ANC sessions at midterm than baseline, with 58 percent more women receiving the recommended number of three or more antenatal care checkups (from 18.9 percent of women to 30.2 percent). Most importantly, the effects were concentrated among households with lower socioeconomic status, with much larger increases in ANC checkups among women with no or low education.

58%

MORE WOMEN RECEIVED THE RECOMMENDED NUMBER OF THREE OR MORE ANTENATAL CARE CHECKUPS

Figure 4. Number of antenatal sessions completed, by women's education level

Number of ANC sessions

Women's education level

Pre-ReMiND   Post-ReMiND
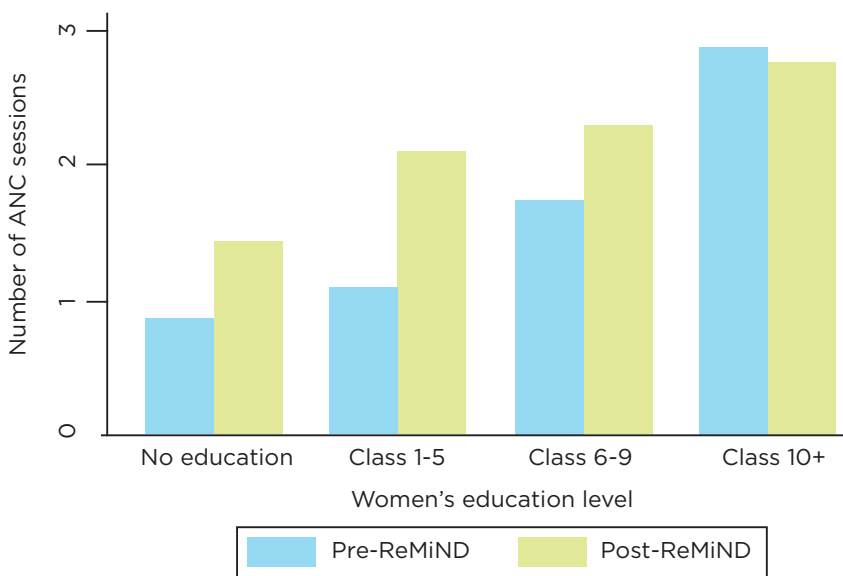
The quality of antenatal care remained steady over time. Yet as a result of the increase in the number of ANC sessions accessed, the percentage of women experiencing a given component of quality ANC increased. At midterm, 59 percent more women reported receiving an abdominal exam, while more women also had their blood pressure taken (from 32 percent to 39 percent), and gave blood or urine samples (both increased from 28 percent to 33 percent). This is encouraging, however, 40 percent of women still did not receive any antenatal care at the time of the MTE survey.

INSTITUTIONAL DELIVERY

While these finding are encouraging, there was little significant change in other health outcomes, such as IFA consumption and institutional delivery. Most importantly, institutional delivery rates did not increase over this time period, which is surprising given the large increase in contact between ASHAs and women in the village.

OVERCOMING TRADITIONAL BARRIERS

ASHAs are affected by problems similar to those of their beneficiaries, such as illiteracy and proscriptions on women's behavior and decision making. They also observe similar social practices, such as use of traditional medicine and observance of the caste system. Instances of ASHA visitation being constrained by caste rules were mentioned by community members and SFs. SFs who, in the absence of a government supervisory cadre, had served as ASHAs' de facto supervisors and mentors, played a role in mediating the impact of these social practices on provision of services.

PATHWAYS TO CHANGE

The MTE found that use of mobile phones and the CommCare platform led to significant improvements in ASHAs' work by increasing:

1. ASHAs' efficiency and productivity by compiling and organizing beneficiary information and counseling content on the mobile phone.
2. ASHAs' confidence in their own work, according to SFs and health administrators.
3. Community members' engagement with ASHA counseling, as well as their overall evaluations of ASHAs.

CommCare was particularly valued by ASHAs and SFs for the increase in efficiency and productivity that it afforded. Several ASHAs described using their mobile phone registers instead of paper registers, cutting down on paperwork and saving time. ASHAs had easy access to stored digital information about their beneficiaries, and they mentioned that their mobile phone registers were more reliable than paper registers.

ASHAs' increased productivity was also due to increased engagement among community members, and the community's confidence in them. ASHAs reported that some beneficiary families engaged their services primarily to view the multi-media content on their mobile phones. This is important; ASHAs identified community recognition as an important motivating factor, a source of job satisfaction, and an indicator of their success.

> **"She was not allowed by her family to visit a lower-caste home, as she belongs to an upper caste. So, when I get to know this, I visited her house and tried to convince their family members and also motivated her to visit the same. Later she started visiting lower-caste beneficiaries houses as well."**
>
> **ASHA Facilitator**

All participant groups mentioned that illiteracy of some ASHAs was an obstacle for implementing CommCare, but not an insurmountable one. ASHAs identified SFs as being extremely helpful in providing support with CommCare, including instruction in use of the app and tech trouble-shooting.

TARGETING MESSAGES TO KEY DECISION MAKERS

MTE results found that ASHAs target decision makers within the household during home visits to ensure that the counseling they provide is acted upon. Although the primary target audience for ASHAs' counseling and messaging is expectant and postpartum mothers, ASHAs understand that the primary household decision makers, including for health decisions involving young mothers, are often mothers-in-law and/or women's husbands. Furthermore, the responses of mothers and mothers-in-law show that there is no single decision maker within a family. Rather, various family members, both within and outside of a household, may participate in or influence decision making surrounding health care and delivery.

"During the counseling, I ensure one of the family members is also present. Especially if the mother-in-law is present, then it is effective because motivating the mother-in-law is important. She has a big role in any decision of the family."

ASHA, Mooratganj

Discussion

ASHA COVERAGE

One of the major successes of ReMiND has been increasing ASHAs' coverage of pregnant women in their community. This proved especially effective at reducing the number of low-coverage ASHAs to less than 20 percent of the total, down from more than 60 percent. While this result is likely due to a combination of reasons, discussions with ReMiND staff point to the presence of the SFs as a primary reason. As part of their job, SFs visited pregnant women alongside the ASHA and carefully monitored ASHA activities, helping ensure that ASHAs visit pregnant women in their area. Building on this success, future efforts to improve ASHA coverage rates should consider increased monitoring and support supervision by the new cadre of ASHA Sanginis.

Although this is promising, nearly a quarter of pregnant women did not receive a home visit. In general, there are many constraints that prevent ASHAs from covering more women; targeting and eliminating these constraints must be a major focus of future work.

Only 44 percent of women received an ASHA visit with a counseling component prior to the intervention, but 72 percent received a counseling visit from their ASHA at the time of the MTE survey. This indicates that the project's mobile job aid that supports counseling is improving coverage of counseling.

KEY MOTIVATING FACTORS

Pride, honor and community recognition that an ASHA gets in the community are a source of motivation for her and hence she continues her work despite challenges in the community, such as restrictions on women's mobility.

INSTITUTIONAL DELIVERY

One of the areas in which ASHAs did not achieve expected outcomes was institutional deliveries, for which the increase (60 percent to 63 percent) was not statistically significant. The qualitative study shed light on some barriers to institutional delivery. ASHAs named several reasons for lower numbers of institutional deliveries, including limited education and awareness, personal or household preference for home deliveries, financial costs, and limited geographic accessibility in terms of transportation. Women mentioned being motivated by the incentive scheme for institutional delivery, and both mothers and mothers-in-law demonstrated an understanding of the benefits of institutional delivery. Findings demonstrated the importance of social networks, personal experiences, peer behaviors, and informal support systems in decision making about delivery. In general, there are many constraints that prevent ASHAs from bringing in more women; targeting and eliminating these constraints must be a major focus of future work.

DANGER SIGNS

While knowledge about danger signs increased, there was no change in health-seeking behavior for complications. This could be because of poor access to facilities, family constraints, or other issues.

One of the major successes of ReMiND has been increasing ASHAs' coverage of pregnant women in their community.

Photo by Neeraj Sharma/CRS

Recommendations

Institutional delivery: Identify reasons why women are not delivering in institutions and focus messages on overcoming these barriers.

The mHealth knowledge base: Adopt a stronger evaluation design. The field needs stronger data and, to measure the efficacy of mHealth programs, it is strongly recommended that evaluation design include comparison groups. Additionally, collecting information from other household decision makers (in addition to women) would add additional insight useful for programming.

Supervision makes a positive difference: The program's greatest success has been in increasing ASHAs' coverage of pregnant women in their area. The presence and support of the project's sector facilitators seem to have been significant factors in improving coverage, and lessons learned can be incorporated into work with ASHA Sanginis.

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CATHOLIC RELIEF SERVICES