

CHN on the Go

End of project findings on
a smartphone app to equip
Ghana's frontline nurses

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Background

Challenge

While Ghana's frontline health workers - Community Health Nurses (CHNs) - are key to averting maternal, newborn and child deaths in rural, under-served areas, they face many challenges in delivering this lifesaving care. These nurses often travel for hours by foot, motorbike, bicycle and even canoe to reach the vulnerable women and children they serve. Their human resources and delivery barriers include having limited access to important health information, professional advancement and learning opportunities and to supervision and support for problem solving. Many also feel isolated working in remote areas. All of these constraints affect the motivation and morale of CHNs that, in turn, impact retention rates and quality of care.

Key Ghana Statistics

Maternal Mortality¹:

- 319 deaths per 1,000 live births

Neonatal Mortality²:

- 28 deaths per 1,000 live births

CHNs per population³:

- 1 per 1,792 people

Opportunity

- The Ministry of Health and Ghana Health Service (GHS) recently identified equitable distribution, retention, recruitment and professional development of health workers as a priority.
- Leadership in Ghana increasingly supports investment in mobile health (mHealth) strategies.
- The rapid global increase in connectivity and mobile phone usage has enabled an increase in (mHealth) apps to address challenges faced by frontline health workers and health systems.
- Limited evaluation studies have sought to understand the effectiveness of using a mobile platform to improve health worker motivation, creating a need to fill this gap.

Partners

As the lead agency, Concern Worldwide U.S. worked in tandem with multiple partners to design, implement and evaluate the app, with strong collaboration with the GHS. The app's content is based on existing GHS protocols, guidelines and policies and is integrated within the national mHealth strategy.

Developer & Implementer	Research Partners	Funder	Government Partners	Designer
Grameen Foundation	John Snow Research & Training Institute ILC Africa	Bill & Melinda Gates Foundation	Ministry of Health Ghana Health Service Nursing & Midwifery Council	ThinkPlace Foundation

¹Trends in maternal mortality: 1990 to 2015: estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division. Geneva: World Health Organization; 2015

²Ghana: The 2015 Report. Countdown to 2015; 2015

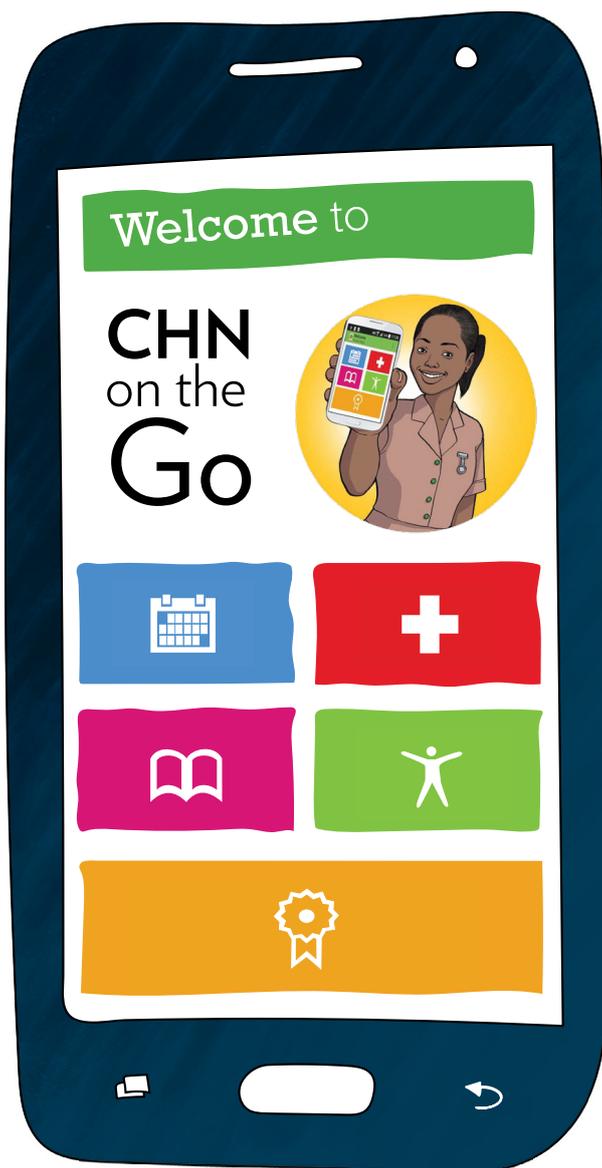
³Payroll. Ministry of Health; 2015

Project Description

Concern Worldwide's Innovations for Maternal, Newborn & Child Health created a pilot in October 2013 called Care Community Hub (CCH) to improve the motivation, job satisfaction and knowledge of these health workers. The innovation that we developed, CHN on the Go, is a smartphone app designed for and by the nurses themselves to equip them in the field. We did not intend to directly reduce maternal or newborn death rates but rather to strengthen a health workforce that can do so in the long term.

The CHN on the Go app is comprised of five modules plus WhatsApp. These modules help nurses to set, meet and track work targets; quickly and effectively diagnose and treat women and children; take courses that increase their clinical knowledge and earn professional development credits; access and share health information without carrying heavy reference materials; and receive wellness tips. A complementary Supervisor's App was also created for supervisors to track their CHNs' progress.

App Modules



- | | | |
|--|-----------------------------|---|
| | Planning Center | Plan work and set targets |
| | Point of Care Center | Obtain diagnosis and treatment support in the field |
| | Learning Center | Take accredited e-learning courses to improve knowledge |
| | Achievement Center | Track targets and coursework |
| | Staying Well Center | Learn wellness and stress relief tips |
| | WhatsApp Groups | Connect with peers and supervisors |

Methods

Design

CHN on the Go was designed through a human-centered, multi-stakeholder process:

- CHNs, supervisors, and District Health Management Teams worked with the design firm ThinkPlace Foundation, Grameen Foundation and Concern Worldwide to determine the design of the app and its features.
- Workshops and interviews combined empathy, creativity and logic to understand and address the users' needs with scale in mind.
- Through this process, nurses identified specific needs and worked with workshop participants to solidify six key concepts for the app to address.
- The app was constantly improved, refined and enhanced by soliciting continuous feedback from nurses and supervisors.

Nurses' Roadblocks:

- Lack of appreciation for hard work
- Limited resources to do job effectively
- Restricted opportunities for career growth
- Feeling disconnected from family and friends
- Being bullied and treated disrespectfully

Nurses' Needs:

- Respect me
- Reward me
- Teach me
- Inspire me
- Inform me
- Connect me
- Equip me
- Believe in me

Key Concepts to Prioritize:

- Learning and growing
- Providing good care
- Getting feedback and feeling appreciated
- Connecting with others
- Managing Work
- Keeping Well



Implementation

- Implemented in five districts in the Greater Accra Region (Ningo Prampram, Ada East/West) and Volta Region (South Tongu, South Dayi).
- Trained all CHNs and supervisors in study districts.

Evaluation

We implemented a rigorous, mixed methods monitoring and evaluation strategy with global and local evaluation partners to collect data on frequency of use, progress of implementation, effect on CHN knowledge and motivation, costs, and the added value of the human-centered design process.

Research, Monitoring and Evaluation Strategy:

Baseline & Endline Survey

- To assess levels of motivation and basic maternal, newborn and child health clinical knowledge among CHNs.

Process Documentation

- To collect information during program implementation on how the modules on the CHN on the Go app influence the CHN work environment, their ability to perform their jobs, and their motivation and satisfaction; to explore any enablers or barriers in the health system that may affect implementation of the app.

Monitoring

- To gather programmatic indicators on mobile phone usage, operational data, and CHN experience with the app.



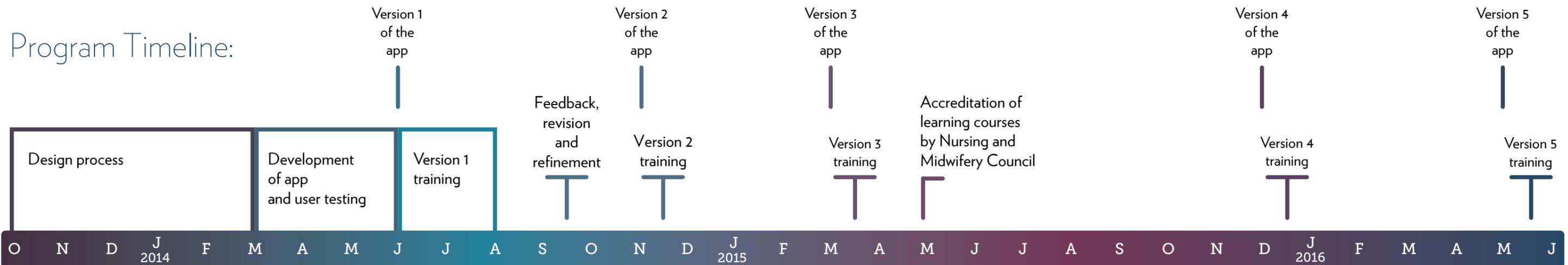
Methods

Timeline & Activities October 2013 – June 2016

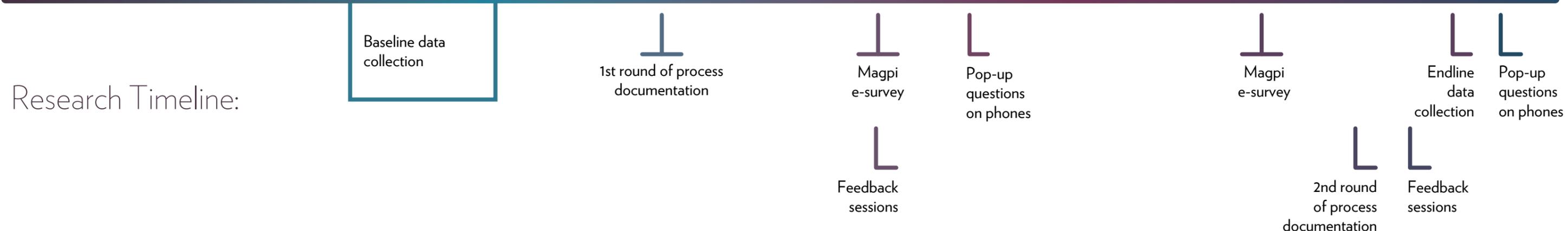
Evaluation Activities			
	Baseline	Endline	Process Documentation 1 & 2
In-depth Interviews	29 CHNs & 11 Supervisors	40 CHNs, 8 Supervisors, 12 Stakeholders, 2 Clients	29 for round 1 32 for round 2
Focus Group Discussions	4 groups (23 CHNs)		
CHN Observations			6 for round 2
Job Satisfaction & Motivation Questionnaire	186 CHNs	185 CHNs	
Knowledge Questionnaire	184 CHNs	186 CHNs	

Monitoring Activities		
	1st Round	2nd Round
Feedback Sessions	30 CHNs	186 CHNs
	20 Supervisors	
Magpi e-survey	178 CHNs	182 CHNs
	39 Supervisors	34 Supervisors
Pop-up Questions	115 CHNs	135 CHNs
	20 Supervisors	17 Supervisors
Usage Dashboard	Monthly: all users, with slight monthly variation in total number	
Field Monitoring	Monthly: field officers follow up with nurses and supervisors at their facilities	

Program Timeline:



Research Timeline:



Results

Profile of CHNs & Supervisors

Age

- 63% were 25-30 years old

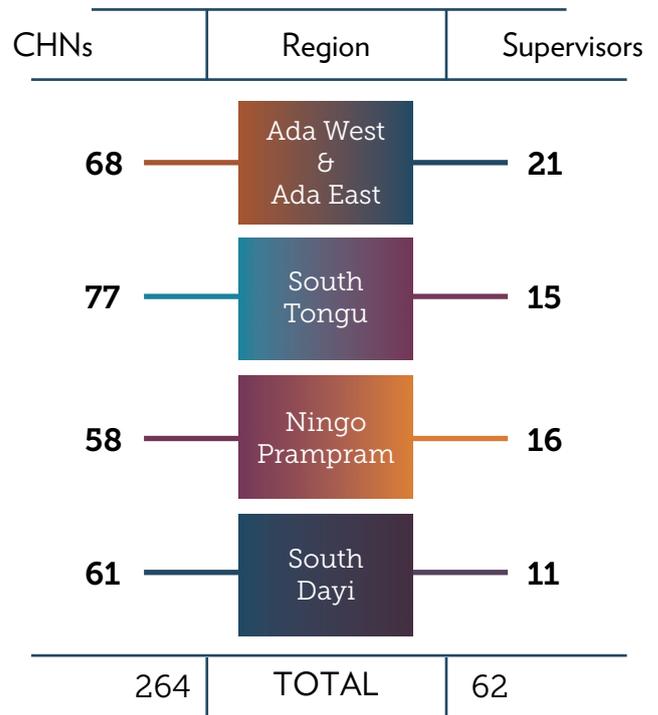
Sex

- 97% were female

Outside of the study districts:

- 23 people were given a device and were trained by Grameen (20 regional supervisors and 3 national supervisors).
- 79 people downloaded the app on their own devices and were trained by Grameen (55 nurses - 32 of whom were CHNs and 22 district health directors from Adaklu and Nkwanta South districts, and 2 Nursing and Midwifery Council staff).

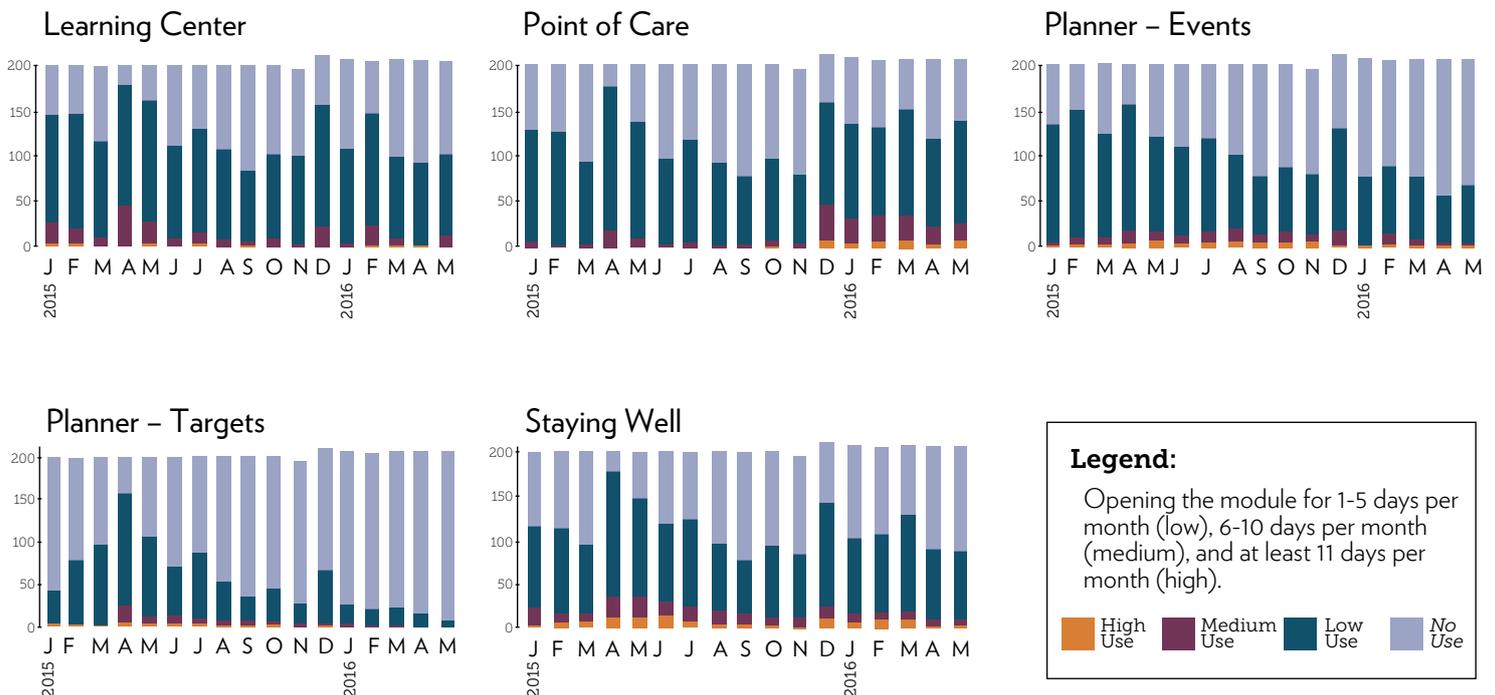
Number of CHNs and Supervisors, by region, trained & provided with devices



Phone Usage

- Point of Care and Learning Center were the most popular modules based on preference and frequency of access as seen in the figure below.
- CHNs entered data into the planner once a month.
- WhatsApp was a popular means of communication. 56% of CHNs reported using WhatsApp for work purposes 6+ times per week, and 36% reported using it for personal use 6+ times per week.

Phone Use by CHNs per month



Outcomes

Increased job satisfaction

Overall, 61% of nurses at endline reported that they were satisfied with their jobs, an increase from the baseline

Increased motivation

Key Drivers of Motivation

Progress monitoring and supportive supervision via Supervisor's App

Supervisors have access to more up-to-date information on CHNs' events and activities through their tablets.

Communication and connectedness with supervisors, peers and friends via WhatsApp

CHNs reported that they feel connected with their supervisors because they can now see what the CHNs are doing. CHNs can also get ahold of their supervisors easily and are able to discuss any issues.

Intermediate Outcomes

Increased Health Knowledge

"One thing about the CHN on the Go app is that you will not cease learning. It keeps refreshing our minds, keeps us up to date with GHS protocols and their policies."

- Supervisor, Ningo Prampram

Improved Relationships between CHNs and Supervisors

"[The app] is good because it brings about teamwork; you know that whatever you are doing, your supervisors are aware."

- Supervisor, Ada East/West

Improved Work Scheduling and Access to Information

90% of CHNs feel they can plan their day well to meet their targets.

Stress Relief and Keeping Well

"The Staying Well [module], some of the activities will help you ease the stress and thereby give you more strength to carry on with your work."

- CHN, South Tongu

Meeting Targets

CHNs use the app to self assess and mark any improvements; seeing their progress through the achievement center motivates them to work hard.

Elements of Motivation

Confidence in all skills

CHNs feel confident with the service that they provide because they have the app as a resource.

"With the phone now, you have everything inside. And when you need any information, you quickly refer and you give it out. So it's a very enjoyable thing, the phone. It has helped me a lot."

- CHN, Ningo Prampram

Respect by clients and peers

Clients trust the information they received from CHNs and respect them more.

Recognition and encouragement from supervisors

CHNs get verbal recognition at group meetings and events, face-to-face meetings with their supervisor, or in the WhatsApp group.

Emotional support from peers and family

The app helped CHNs socially. They call their family and friends and discuss their health with them.

Time management and planning work targets

CHNs can better plan their itinerary, activities and work targets.

Professional development opportunities

CHNs can take the Learning Center courses and get credit to renew their professional nursing license. This was valued by CHNs and reported as useful with a small overall decline in the feeling that they don't have enough career advancement opportunities.

Human-Centered Design

The use of human-centered methods and tools influenced the design and implementation of the app by addressing the expressed needs and desires of the CHNs. Principles of human-centered design further inspired program managers to adapt the app over time by refining the content through continuous feedback loops and ongoing interaction and reflection with CHNs.

Conclusions &

Key Successes

- Created an app that purposefully and successfully addresses the needs of users.
- Collaborated closely with GHS (Family Health Division; Policy, Planning, Monitoring and Evaluation; Human Resources and ICT departments) in developing the app.
- Worked within the existing GHS health system structure from national, regional, district levels and gained strong support from GHS throughout the lifecycle of the project.
- App valued by CHNs, some of whom reported willingness to use their own funds to keep using it.
- Trained and equipped the following people with devices:
 - Over 300 CHNs and their supervisors.
 - National (Family Health; Human Resources; and Policy, Planning, Monitoring and Evaluation departments), regional (health management team) and district level government officials.
- Pioneered e-learning in Ghana – app's Learning Center courses were accredited by Nursing and Midwifery Council with approval from GHS for continuing professional education.
- Supported by the Volta GHS regional director for regional scale up for all districts.
- Government committed to absorb the server costs at the end of the project to ensure sustainability of the app in all districts.

Challenges

- The intervention was not able to address all the challenges expressed by health workers such as staff shortages, salaries and transport issues.
- Time spent perfecting and testing the fit of the app took away time from promoting its uptake and monitoring its usage.
- The app does not work on all devices. It requires an Android phone and has hardware requirements.
- The app's complexity and many modules made its scale up challenging.
- Network connectivity problems at times prevented nurses from using, sending and syncing data.
- Engaging decision makers at the national level should have been done earlier in the project, considering the complexity of the process.
- No benchmarks/standards were set against which to measure success.
- Turnover of CHNs and supervisors caused continuity challenges.

Lessons Learned

- Recognize that the app does not work in isolation to address challenges faced by CHNs; a change in the health system and ownership by stakeholders/government is needed to do so.
- Market the modules individually or in groups as some are more popular than others and more instrumental in achieving particular objectives.
- Balance the development and implementation of an effective app addressing CHNs' needs with the rigor of research to assess the app's standard use and effectiveness.
- Invest more time in communication between the monitoring and evaluation team and the implementation tech team to ensure that the structure (tech) and data (research) needs are in agreement through the entire design, implementation and evaluation process.
- Start earlier at national levels when scaling the intervention to help with ownership and pace of uptake. A bottom-up approach was used in which districts were engaged followed later by national level stakeholders.
- Place more emphasis on supervision earlier in the process as supervisors play a major role in CHNs' motivation.
- View motivation as being comprised of different components to address rather than a general, overall issue.

Next Steps

Moving Forward

- Collaborate with other development partners and GHS to scale the innovation to other districts and regions.
 - Develop and market the different modules of the app for different departments and organizations interested in scaling up specific modules.
- Periodically update the app's health content (Point of Care and Learning Center) to keep up with GHS' changing health protocols.
 - Create an e-learning center for continuous development of nurses and all cadres of health workers.
 - Work with Family Health Division to incorporate the Point of Care in their Integrated Management of Neonatal and Childhood Illnesses (IMNCI) training (possibly develop a training curriculum) since the Point of Care tool has all antenatal care, postnatal care and IMNCI protocols in interactive, step by step format.
- Further develop the supervisors' app as a monitoring tool for GHS.
- Transfer the server hosting to GHS post December 2016.
- Integrate CHN on the Go with GHS eTracker and other mHealth interventions being implemented by GHS.
- Further develop the Planner as tool to support the government's District Health Management Team's monitoring of nurses' performance through target settings.
- Explore the possibility of conducting further research studies on the impact of CHN on the Go on quality of care and client satisfaction.



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