transform nutrition

research brief

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A mobile app to manage acute malnutrition

Severe Acute Malnutrition (SAM) is responsible for between 1–2 million preventable deaths every year and affects around 17 million children under five. Community based Management of Acute Malnutrition (CMAM) is a proven approach to identify and treat SAM cases. However its effectiveness is limited if treatment protocols are not followed and data is unreliable. A mobile health (mHealth) application was developed and piloted in five countries by World Vision, Dimagi, Save the Children and International Medical Corps (IMC) to help health workers follow treatment protocol and generate accurate and timely data to respond to changes in caseloads. Programme staff in Niger, Chad, Mali, Kenya and Afghanistan discuss the challenges they faced adapting the mobile app and rolling it out in some of the most remote, hard to reach health facilities in the world and make valuable recommendations for other mobile health application developments.

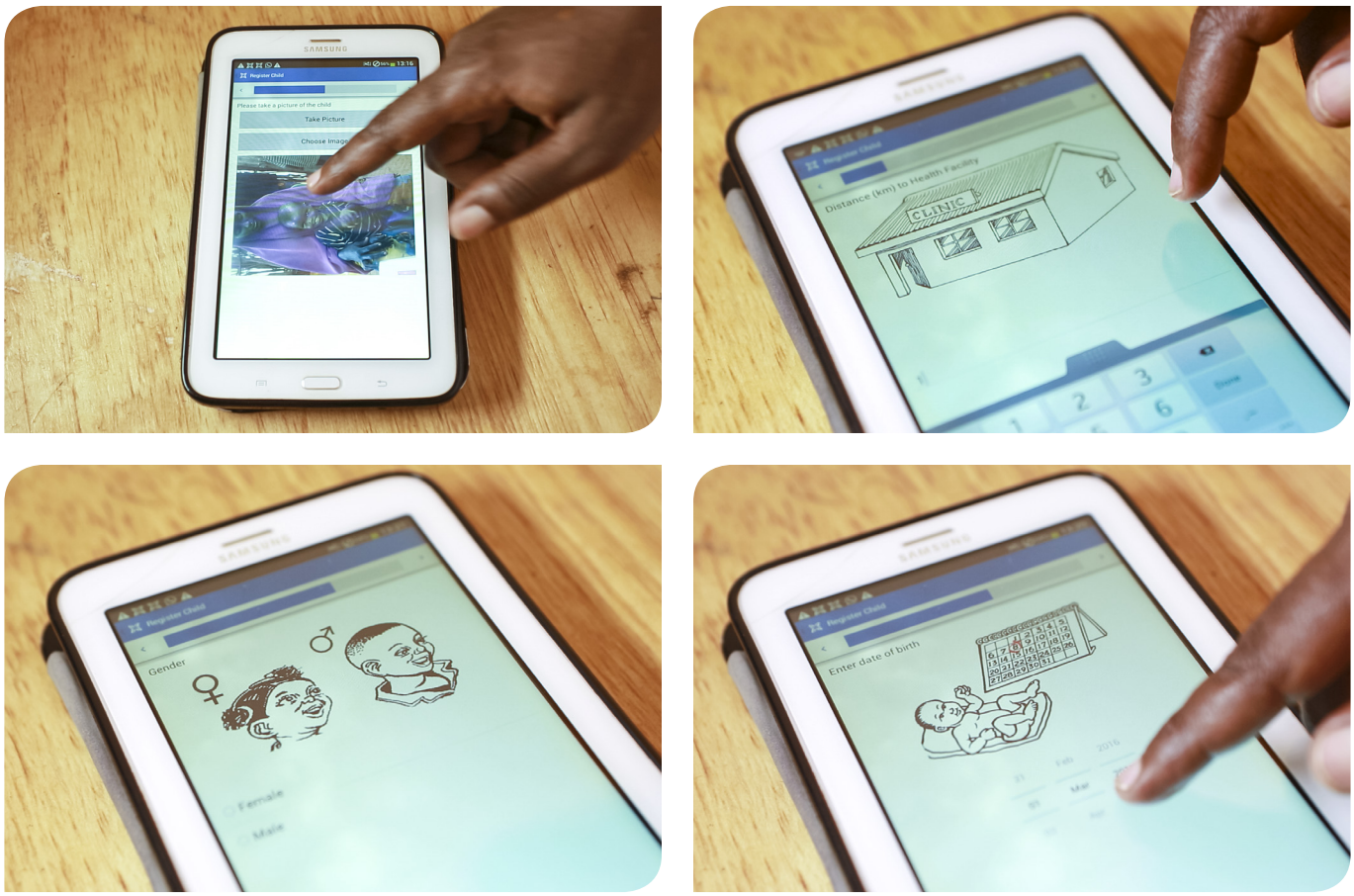
Severe Acute Malnutrition (SAM) is a major cause of death in children under five. Its prevention and treatment are critical to child survival and development. Community based Management of Acute Malnutrition (CMAM) enables community health workers and volunteers to identify and initiate treatment for children with acute malnutrition before they become seriously ill, using ready-to-use therapeutic foods (RUTF) – a high-energy, micronutrient enhanced paste which mothers can give their children at home. However, the success of CMAM is limited if treatment protocols are not followed, record keeping and data management is poor and reliable data is not available in time for decision makers.

A CMAM mobile health application was designed by World Vision and Dimagi in 2013 to guide health workers through CMAM protocols and provide accurate and timely data for district health managers to respond to changes in caseloads and treatment outcomes, manage supplies, and inform national statistics. The application was piloted in Chad, Kenya, Mali, Niger and Afghanistan between 2014 and 2016 through established World Vision, IMC

JUOZAS CERNIUS/SAVE THE CHILDREN

A health worker screening a child for malnutrition, using the Community based Management of Acute Malnutrition app.

> “The effectiveness of Community based Management of Acute Malnutrition is limited if treatment protocols are not followed and data is unreliable.”



JUOZAS CERNIUS/SAVE THE CHILDREN

▲ Sample screens from the CMAM application which helps health workers assess and treat children with acute malnutrition and counsel mothers on child care and treatment.

and Save the Children CMAM programmes. In September 2016, Save the Children through Transform Nutrition, commissioned a consultant to interview headquarter and programme country staff and review programme reports across the five countries to capture their experiences adapting and piloting the mobile app in remote health facilities to inform other mobile health projects.

How the mHealth app works

The mHealth app provides health workers with simple, step-by-step guidance to help them assess, treat or refer children visiting the CMAM programme. The app is built on the CommCare platform, which uses a touch swiping function to take health workers through the steps, remind them of the treatment protocol and counselling messages and calculate z-scores and numbers of RUTF sachets and routine medications. It also records the child's information making child follow up easier and uploads the data to the 'cloud' providing live and accurate data for district level management.

Key experiences

Experiences adapting and rolling out the app in the different countries were remarkably similar. A full account of the challenges and successes from each country can be found in the mHealth working paper: www.transformnutrition.org/wp-content/uploads/sites/3/2017/04/TN_WorkingPaper1_MobileApp_Online.pdf.

Frontline health workers acceptance

Health workers were initially resistant to using the app. They did not trust it to store and send data via the 'cloud' and were reluctant to abandon their paper based systems. It also forced them to follow all the steps of the standard CMAM protocol rather than take short cuts to save time. With time, practice and support, health workers did learn to use the app and saw many benefits, including unexpected ones e.g. it helped them avoid conflict with caregivers over treatment doses, communicate with their supervisors and track down defaulters.

In Kenya, a WhatsApp group was created for health workers to interact with each other and the project team, share experiences, ask questions, which increased app acceptance and use.

> "Mobile application improves CMAM protocol adherence, counselling, child follow up and reporting."

Devices, networks and software issues

Battery-life, screen size, phone authenticity, network speed and coverage are all issues that had a tremendous impact on health workers' motivation and app usage. Software bugs preventing children from being discharged, weak network to upload data, fake phones, small screens and overused data packages were all issues that demotivated health workers from using the app. Identifying suitable quality devices, reliable network operators and data packages and making sure the bugs are identified and fixed quickly are key for health worker adherence.

Government engagement and alignment to national health systems

National CMAM protocols and health information systems differ significantly from one country to another. Adapting the app to different countries took significantly more time and effort than expected. It also requires strong local government buy in and engagement from conception to implementation to ensure the app is streamlined with the country's national protocols, health monitoring information system (HMIS), training programmes, languages and culture.

Pilot sites, resources and timeline

CMAM programmes locations tend to be complex and challenging environments with high staff turnover, security issues, poor infrastructure and network coverage, and long distances between health facilities. These sites are less than ideal for testing and piloting a new mobile application and require more budget and staff time to support uptake.

"This project had probably the highest impact potential of any project I have worked on. If you go to these project sites, and observe the nurses, you see the mistakes they make using paper forms, and the off-the-fly decisions they make that have serious impact on the child's health. So you could see, from the beginning, how the app would really add structure and eliminate a lot of mistakes. And we have been able to see real value on the ground, real value added to such an important programme."

CARLA LEGROS, PROJECT MANAGER, DIMAGI WEST AFRICA

"Some caregivers see the project as revolutionary and, in some areas, mothers prefer the app over traditional consultations, and are willing to travel further to access it. They perceive it as less prone to mistakes, and are curious about the technology and the innovative aspect. The registration process on the phone is seen as quicker and safer than paper forms, and there is more confidence in the data collected via the phones ending up where needed."

DR NAROUA OUSMANE, NATIONAL HEALTH AND NUTRITION ADVISOR, WORLD VISION NIGER

EDWARD AHONOBADHA/SAVE THE CHILDREN

◄ Ibrahim, a nutrition clinical officer, attends to mothers during a nutrition clinic at Dambas Dispensary, Wajir County, Kenya.

Recommendations

- When introducing a new mobile health app to health workers, particularly in remote locations, significant on-site support is necessary for both health workers and supervisors. This has budget and staff implications to support travel to remote clinics.
- The app should be tested in non-remote health facilities and all major bugs fixed before rolling it out to remote settings. Rapid assessment and mapping of phone networks and electricity should be used to develop contingency plans in the event of failure, and agreed to with MoH partners, as well as mobile network operators.
- The technology partner should provide considerable in-country presence and support, either through country representatives or frequent site visits, to build national capacity, fix bugs and update the app.
- Health workers are more likely to use the app if it is aligned with national health protocols, health information systems, and health worker training and job targets. It is critical to plan and budget for local and national government engagement and uptake from the start. For scalability, the app should also be linked to a wider continuum of care and other maternal and child health services.
- Standard CMAM protocols take time, especially where caseloads are high and staff numbers and capacity is low. Simplifying the treatment protocol and reflecting these simplifications in the app should be considered to prevent health workers taking their own short cuts.

Conclusions and looking ahead

The impact of the CMAM mobile app on quality of care and reporting is currently being evaluated by Save the Children through Transform Nutrition in 40 health facilities in Wajir, Kenya, with results coming out in August 2017. These results will be used to advocate for more funding to improve the app functionality (data reporting, stock monitoring, simplified protocol), streamline it to national health monitoring information systems, link it to other maternal and child health services and work with governments to take it to scale.

SAVE THE CHILDREN

◄ A health worker screening a child for malnutrition, using the Community based Management of Acute Malnutrition application. Wajir County, Kenya.

Credits

This research brief was written by Tine Frank, Natalie Roschnik, Emily Keane and Colleen Emary based on the working paper *A mobile health application to manage acute malnutrition* by World Vision and Save the Children. Frank, T. (2017). www.transformnutrition.org/wp-content/uploads/sites/3/2017/04/TN_WorkingPaper1_MobileApp_Online.pdf

Further infomation

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Short video 'This Is How Aid Saves Lives' (www.youtube.com/watch?v=lelmlvzKpJ4&feature=youtu.be) showing how the mobile phone app is being used in Kenya.

Transform Nutrition is funded by UK aid from the UK government and is a consortium of five international research and development partners. Using research-based evidence we aim to inspire effective action to address undernutrition. The views expressed do not necessarily reflect the UK Government's official policies

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