

# Experience in the development and rollout of mHealth application for acute malnutrition programming

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Photo: Jon Warren/World Vision

## Background

Community-based management of acute malnutrition (CMAM) is a proven approach in the treatment of acute malnutrition. However, the effectiveness of CMAM programmes is undermined by a variety of factors, including poor adherence to CMAM clinical protocols, inaccurate record keeping and weak supervision systems. Currently, paper-based systems are most widely used for patient records, summary reporting and stock management.

World Vision initiated the development of a mobile application for CMAM in 2013. The application was contextualized and launched in Afghanistan, Chad, Mali, Niger and Kenya in collaboration with International Medical Corps and Save the Children.

## CMAM mHealth Application Features

The application is an open-source software solution, built on the CommCare platform. It is designed to provide health workers with an easy-to-use case management information resource; provide simple and powerful decision making and patient tracking tools. Key features of the applications include:

- Response-triggered decision tree algorithms
  - Text, voice, and pictures prompts for health workers
- Automated referral initiation and tracking
  - Automatic reminders for child follow-up
  - Referral notifications attached to individual child records, allowing data on treatment adherence and symptoms to be viewed by multiple health workers along the continuum.
- Integrated media to support counseling to caregivers
- Activity reports to supervisors
- Automatic generation of monthly reports
- Supply chain monitoring

## Country Contextualisation and Deployment

The development of the CMAM mHealth application specifications was initiated in 2013, with country contextualisation first launching in Niger and Afghanistan. Application contextualisation and deployment for Chad, Mali and Kenya commenced in 2014.

## mHealth Application Development Process

- Development of global technical specification for CMAM mHealth application
- Country specific contextualisation and piloting of application
  - Stakeholder meetings
  - Observation at OTP/SFP sites (health worker workflow)
  - User orientation/training and review/testing
  - Refinement based on feedback
  - Testing, feedback, refinement

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## Evaluation

To assess the impact of the CMAM mHealth application, evaluations were conducted in Chad, Niger, Mali and Kenya over the period of July to October 2016. The main objectives of the evaluation were: to identify the effects of the app on health workers performance; to assess the acceptability and competence of app users; and capture lessons learned from the deployment and use of the application among field level stakeholders (health workers, CMAM beneficiaries). Final evaluation reports will be available in late 2016. In addition, Save the Children is conducting a case-control study in Wajir, Kenya in late 2016.

## Preliminary Feedback from Users

### Improved clinical protocol adherence

Health workers reported that the application assisted with the administration of the clinical procedures for CMAM, through providing a useful job aid, and step-by-step process. The application was considered particularly useful to health workers with limited formal training in CMAM.

### Improved health worker-beneficiary interaction

Health workers also reported that the application minimized conflict with the beneficiaries. For example, if the application advised that admission was not required (based upon clinical or anthropometric criteria), then caregivers would accept this diagnosis without questioning the health worker.

### Beneficiary acceptance

Beneficiaries appreciated the counselling and education messages that were provided through the application, in their local language.

### Mobile device functionality was challenging

Users commented that the application is difficult to work with on a small-screened device and, in some cases, limited battery power was problematic, despite the provision of solar chargers. Network coverage was also limited in some areas.

## Key Lessons Learned

### Establishing a single set of 'global specifications' for a CMAM mHealth application is not feasible

In contextualizing the mHealth application to match country protocols it was found that there are notable differences between the national CMAM protocols in French-speaking countries (Niger, Mali, Chad), compared to Kenya. In French-speaking countries, a single anthropometric table (WHO WHZ boys) is used, whereas in Kenya, four WHO WHZ tables are used. It was determined that two versions of the application—one for French speaking countries, and one for others—are required.

### Country contextualization

The country contextualization process of the application was labour intensive and complex. Having a technology partner located in-country to provide immediate technical support to address 'bugs' would be useful, along with ensuring adequate and timely remote support.

## Outstanding Issues and Next Steps

Due to delays in country deployments, a few key features of the application are outstanding: automated generation of summary reports (for French app), stock management—automated alerts (defaulter, non-responders, discharge). A high priority is to finalize these features so the apps are ready for further use.

Opportunities for future deployment should be considered in the following contexts:

1. In humanitarian settings where there is no national DHIS or digital health platform available. Deployment may be primarily led by NGOs supporting CMAM implementation.
2. National deployment linked to Government DHIS and/or digital health strategy. This issue is critical for scalability and sustainability of the application.

Several future priorities have been identified for the application:

- Expanded use of application in current countries, linking the application to DHIS system, and national mHealth platforms
- Develop monitoring and reporting standards based on use of individual child data
- Capacity building to support uptake and use of application, e.g. performance reports, supervision functions
- Use of application in CMAM Surge work
- Explore the potential for application on an integrated platform e.g. GMP, iCCM
- Link application to other platforms (e.g. CMAM report, WV CMAM database)