



D-tree International

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# mHEALTH for Integrated Community Case Management

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*Improving the quality of child health care at the primary level through integrated decision-support tools*

Malawi is among nine low-income countries that successfully reduced its under-five mortality rate by 60 percent or more between 1990 and 2011.<sup>1,2</sup> Despite this progress, large numbers of children continue to die unnecessarily from conditions that are easily preventable and treatable. A large proportion of children in Malawi are still at increased risk of mortality due to common childhood infections. The leading causes of under-five mortality in Malawi are malaria (13 percent), AIDS (13 percent), pneumonia (11 percent), diarrhea (7 percent), and neonatal conditions (31 percent). The Ministry of Health (MOH) has been collaborating with partners to scale up a package of high-impact interventions to reduce under-five child mortality since 2007 under the Accelerated Child Survival and Development (ACSD) strategy. These efforts have included integrated community case management (iCCM) in hard-to-reach (HTR) areas to complement fixed or scheduled facility-based services. To improve the quality of care provided to under-five children, D-tree International is providing mHealth to support the implementation of iCCM.

## About mHealth for iCCM

The primary end-users of the mHealth application are community health workers (CHWs) in Malawi, called health surveillance assistants (HSAs). There are three components to the mHealth application, each of which strengthens the ability of HSAs to deliver effective and efficient care. These components are synergistic in providing a comprehensive array of tools and a supportive supervisory

framework for the HSAs to do their jobs well and enable improvement on access and quality of care at the primary level of health care.

The first component of the iCCM application captures all elements of the [village register](#) used by the HSA. The application has built-in functionalities that support HSAs to register children between the ages of two and 59 months only

and adhere to standard protocols. It supports HSAs to make the appropriate decisions on treatment and enables them to accurately report on time. The mHealth application therefore enforces adherence to clinical protocols and iCCM holistically.

The second component of the application is the **supervisory tool** for those who are managing and supervising HSAs. It is based on the new routine supervision checklist developed by the (MOH) and Save the Children and focuses on a few key indicators of performance by the HSAs. The tool facilitates both collection and interpretation of data and has a dashboard that enables users to see at a glance the status of the work being done by HSAs.

The third component **links the iCCM application to the logistics management system** to improve the availability of needed drugs at the rural clinics where HSAs see patients. This work has been coordinated with the existing John Snow Inc. (JSI) cStock program to improve the use of cStock in tracking drug inventories. D-tree International developed a simple user interface within the application through which health workers can report stock levels and then submitted the data to cStock.

## Evaluation and Results

D-tree International carried out an evaluation to determine the clinical effectiveness of the electronic iCCM. A mixed approach was used to collect both quantitative and qualitative data. The results showed similar or higher scores in assessment, identification of danger signs, referrals (diagnosis), treatment, and counseling among HSAs using the mobile application. These are the key elements in the management of under-five child illnesses.

Adherence to assessment using the iCCM application was 90 percent compared to 91 percent among those using paper. With the phone application, all questions are asked and recorded before going into the next phase, requiring the HSA to go through the complete assessment. Phone users correctly identified and recorded 100 percent of the danger signs, while only 83 percent of the danger signs were correctly identified and picked by paper users. Adherence to treatment guidelines was lower among paper users (62 percent) than phone users (73 percent). While the phone provides the recommended treatment, the actual treatment given depends on the availability of needed drugs and supplies. Sixty percent of cases were referred appropriately in the intervention group compared to 48 percent in the control group. Counseling and treatment advice were also seen to be higher in the phone users than the paper users at 92 percent compared to 83 percent.

Much positive feedback was recorded during HSA and caregiver interviews. HSAs felt more confident using the iCCM application. They also felt a reduction in frequency of visits by the same children as compared to before, which they attributed to the comprehensiveness of the assessment and care given to the child when using the phone. HSAs using the phone expressed knowledge gain as a result of the prompts, advice, and counseling messages they receive from the application. HSAs also expressed improved follow-up rates for cases. However, they were concerned with double entry of data as they use both the phone and the paper registers.

## Lessons Learned

- **It takes time and effort** to train and generate interest among stakeholders to use data generated through the implementation of mHealth applications.
- **The involvement of communities** in managing phones is critical to their sustainability.
- **The implementation of mHealth is not a panacea** to fix all problems within the health system. It is, and should be, part of an integrated system in order to achieve greater results.

## Conclusion

The project has trained over 350 HSAs and 15 supervisors across Malawi and equipped them with mobile phones with the mHealth iCCM application. There are plans to train over 1,000 HSAs and supervisors, one-third of the total in the country. The project has built capacity within the MOH in mHealth by training trainers and champions to provide support to the system, and mHealth has been added to the national eHealth strategy. More importantly, the mHealth application is improving quality of care for under-five children due to strict adherence of assessment protocols by health workers. Malawi is on its way to becoming a leader in the wide-scale embrace and use of mHealth activities to strengthen the health system. ■

**Geographic Coverage:** Ntchisi and Dedza Districts, Malawi

**Implementation Partners:** D-tree International, Ministry of Health, Malawi (IMCI Unit), Things Prime

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**Contact Information:** Eric Saforo, Country Director, D-tree International – Malawi, esaforo@d-tree.org