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THE USAID MIKOLO PROJECT

COMMUNITY HEALTH VOLUNTEERS IMPROVE QUALITY OF CARE IN MADAGASCAR THROUGH DIGITAL HEALTH

TECHNICAL BRIEF
DECEMBER 2017



Photo by Samy Rakotoniaina

Background

Community health volunteers (CHVs) in Madagascar serve as first-line health care providers for many communities located more than five kilometers from a basic health center (CSB). They provide routine services for family planning and maternal, newborn, and child health, and refer patients for appropriate higher-level services.

CHVs collect and report health service data to the Ministry of Public Health (MOPH) through paper-based forms and logs. This data is aggregated up through the health system and used by the MOPH to inform health policy programmatic strategies, health planning, and other decision-making. However, the system causes considerable time gaps between data collection and use, and is vulnerable to data recording and reporting errors at multiple levels. Furthermore, CHVs working in remote areas lack regular access to supervision and support to ensure the quality of services. Instead, they rely on paper-based job aids, which are heavy to carry along

with reporting forms and client registers when they conduct door-to-door visits in their communities.

To address these challenges, the MOPH developed a mobile health (mHealth) initiative with the support of USAID Madagascar through the USAID Mikolo Project, implemented by Management Sciences for Health (MSH).

Program

The mobile application integrates MOPH algorithms, validation checks, job aids, and digital reporting forms to improve the quality of both services and data collection, reporting, and use. The application is available in Malagasy, French, and English, and was developed in the open-source CommCare software platform with support from Dimagi. Testing and feedback on the modules was conducted with MOPH technicians and user representatives to fine tune the content.

THE USAID MIKOLo PROJECT increases access to and availability of community-based primary health care, especially for women of reproductive age, children under age five, and infants living in remote areas in Madagascar. Implemented MSH, with partners *Action Socio-sanitaire Organisation Secours*, *Catholic Relief Services*, *Institut Technologique de l'Education et du Management*, and *Overseas Strategic Consulting, Ltd.*, the project is aligned with Madagascar's national community health policy and specifically focuses on reproductive health; family planning; maternal, newborn, and child health; and malaria prevention and care. The five-year project serves an estimated 4.6 million people who live more than five kilometers from a health facility in 8 of Madagascar's 22 regions, 42 districts, and 506 communes.

The USAID Mikolo Project supports the MOPH by training and supporting community volunteers to support a continuum of care under the supervision of the local health center. The community-based delivery of the service package they offer is endorsed by the World Health Organization (WHO) and has been shown to be an effective way to address shortages of human resources without compromising the quality of care.

The pilot application includes three versions for user groups: CHVs, CSB chiefs, and project support technicians.

- The CHV version has eight modules along the continuum of care. They include: 1) family planning; 2) child health; 3) maternal health; 4) growth monitoring; 5) promotion of healthy behaviors; 6) stock information; 7) referrals to other levels of care; and 8) monthly activity reporting. These modules can be used offline in places without Internet connectivity. Once network coverage is available and the app is synchronized, the data entered by CHVs can be accessed by the MOPH and the project via the CommCare web platform, and by the CSB chiefs through their own version of the application.
- The CSB chief version comprises monitoring of referrals made by CHVs, and consultation of monthly activity reports submitted by the supervised CHVs.
- The support technician version includes three modules: 1) monitoring of CHV report completeness; 2) guidance for onsite supervision associated with an automated calculation of CHV performance score; and 3) consultation of monthly activity reports issued by the supervised CHVs.

The mHealth application was piloted between April and September 2017. A private sector partner, the Telma Foundation, which is linked to a national telecom operator, provided the project with 50 smartphones, 50 solar chargers, and a six-month package of data/mobile connectivity. The project trained 20 trainers (including MOPH representatives) and 50 users. The users included 35 CHVs, 8 CSB chiefs, and 7 support technicians, all working in the regions of Analamanga or Atsinanana. Of the 35 CHVs, 25 had no ready access to electricity. However, they were all covered by a mobile network, though only with sporadic Internet connection. Each CSB had Internet connection.

A monitoring and evaluation protocol for the pilot phase was designed with the MOPH based on the mHealth Evidence Reporting and Assessment (mERA) guidelines.¹ The pilot study focused on the three following areas: 1) technical feasibility (i.e. availability of mobile/Internet connectivity to support the initiative, usability of the content of the app, adequacy of CHV health care provision to national standards, and higher report completeness/promptness from CHVs); 2) user and beneficiary acceptability of the application and the equipment; and 3) interoperability with the national health information system using District Health Information Software 2 (DHIS-2).

Monitoring and evaluation of the initiative occurred between April and August 2017. Remote monitoring of user performance was done continually through the CommCare web platform to monitor the number of forms completed, the frequency of data synchronization, and which version of the app was used. Additionally, monthly onsite supervision and support were conducted and questionnaires were used to collect information on user satisfaction and problems encountered. In August 2017, a final evaluation was jointly conducted by the MOPH and the USAID Mikolo Project, which included one-on-one interviews with pilot users and beneficiaries.

Results

(I) Technical Feasibility

Use of Application

Two weeks after the first training was completed, 100% of the newly trained users utilized the application (Figure 1). A slight decrease was registered during the following months due to technical problems with the solar charger, which briefly impeded the use of a few smartphones. However, technical support provided by the project resulted in higher utilization rates again. At the end of the pilot phase, 96% of the users continued to utilize the application.

1. S. Agarwal et al. Guidelines for reporting of health interventions using mobile phones: mobile health (mHealth) evidence reporting and assessment (mERA) checklist. 2016. *BMJ* 2016;352:i1174 <http://dx.doi.org/10.1136/bmj.i1174>

High-performing users are those who completed more than 15 forms in a month. Following the start of the pilot phase, the number of high-performing CHVs increased and then stabilized after June 2017.

Clients Served

CHVs used the application with an average of 32 clients per month (compared to 30 with the paper-based system), for a total of 4,058 beneficiaries (data collected between mid-April and September 2, 2017).

Data Reporting

Among CHVs in the mHealth pilot, 88.5% to 94% reported monthly health service data on time compared to 46% to 75% among CHVs using the paper system (Figure 2). Report completeness was good among all CHVs, though slightly higher among mHealth users.

Service quality

The diagnostic component of the application lists questions about health status and symptoms. Based on the responses, it generates a diagnosis and the required treatment and follow-up according to national norms and standards. The degree to which CHVs comply with these national norms and standards is measured by a “quality score” obtained through the USAID Mikolo Project’s quality-improvement system. The higher the score, the greater the compliance.² Figure 3 shows that the average score obtained by CHVs using the mHealth application was over 90% for both integrated management of childhood illness and family planning services compared to less than 80% among others.

(2) User and Beneficiary Acceptability

The pilot users demonstrated high interest and satisfaction with the application (providing an average score of 3.88 out of 4). More specifically, users noted that the application is relevant and useful to them (CHVs scored relevance and use as 3.91 out of 4; CSB chiefs rated this aspect 4 out of 4), is faster to utilize compared to paper-based tools (average score of 3.88 out of 4), and is a supportive mechanism for improving quality of service delivery (average score of 3.85 out of 4). CHVs also noted that the job aids and diagnoses support increased their confidence in their service delivery. The equipment received a lower score (3.4 out of 4 for the phones and battery life, and only 2.58 out of 4 for the solar chargers). Insufficient powering from the solar charger led to quick battery depletion of the phones.

(3) Interoperability with the National Health Information System

The MOPH is using the DHIS-2 system to store health data at the national level. Therefore, interoperability of the mHealth program with DHIS-2 was a main prerequisite

2. H. Rakotoarisoa et al. 2017. Assuring the Quality of Community-based Health Services in Madagascar. The USAID Mikolo Project, Madagascar, March 2017.

Figure 1. Percentage of pilot users using the app

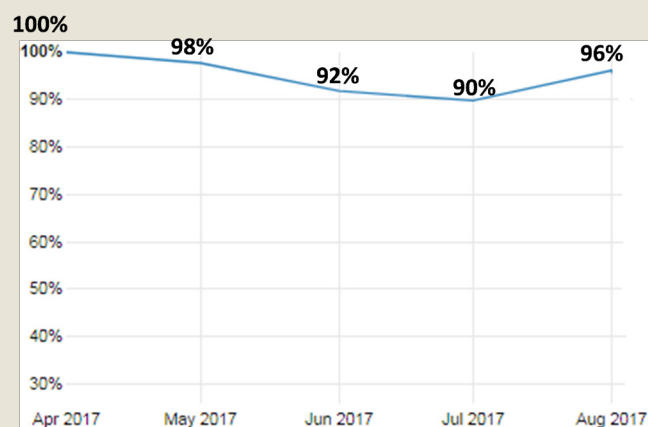


Figure 2. Better report promptness

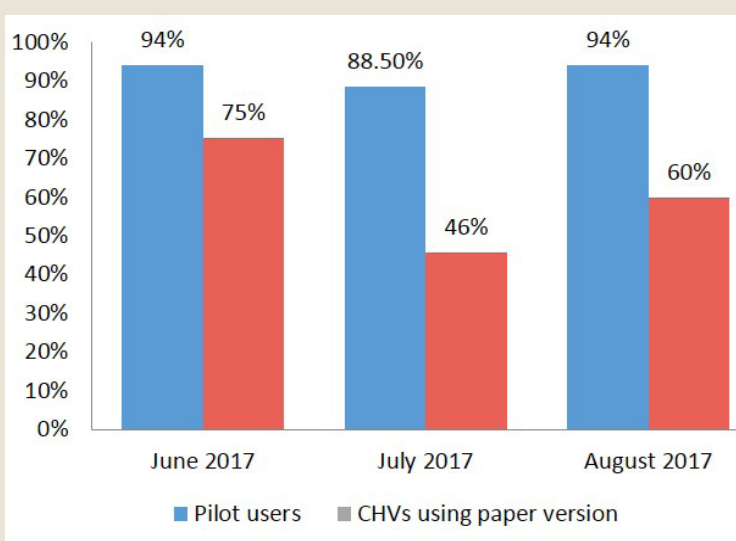


Figure 3. Improvements in CHVs’ quality score

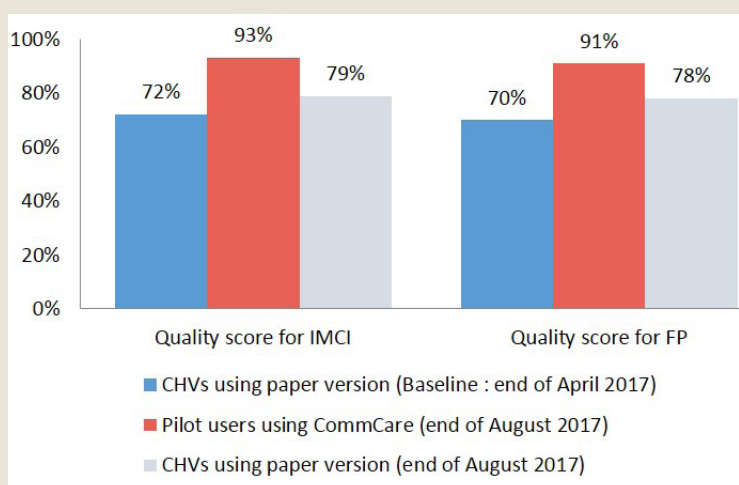




Photo by Rija Rakotoniramanana

A CHV demonstrates use of the mHealth app.

for the implementation of the initiative. During the pilot phase, the program was successfully linked to the project DHIS-2 database through a test server. This confirmed the interoperability of the two systems. The project continues to work closely with the MOPH on configuring its own server. In the meantime, access to the web CommCare platform has been shared, and the MOPH can view and extract the data.

Lessons Learned and Way Forward

Use of mHealth apps and tools for community health is feasible in Madagascar. The pilot showed that mHealth is not only acceptable to the users, but also improves the quality of services as well as data reporting. A gradual but cautious scale-up is already planned by the MOPH. Further expansion to other areas—such as community disease surveillance—is under consideration.

Leadership by the MOPH is essential when introducing and piloting mHealth applications. The mHealth application was developed in close collaboration with the MOPH and is fully aligned with and supports the MOPH Health Management Information System. Several working sessions were conducted with the MOPH and partners to assess the country priorities and existing information systems. A dedicated committee that includes representatives from the MOPH and partners helped to harmonize the approach, ensure tool adherence to standards, and integration of the initiative into the national policy.

Partnering with the Telma Foundation provided leverage to the initiative. The USAID Mikolo Project provided the initial application investment, including development of the application and technical assistance during the pilot phase by an international service provider, and implementation of the trainings and monitoring/evaluation. Private partners provided

the equipment and technology, which enabled cost-sharing, access to a global platform, and specific expertise in training and supporting CHVs.

The acceptability of the system by all user groups is crucial for the success of the program. With CHVs, support technicians, and CSB chiefs highly rating the system's usability and performance is an indicator that the mHealth application could serve as a mechanism for improving motivation among the users. CHVs are not paid for their services, thus the ability for this application to save them time, enable them to see more patients within their limited time, and use the smartphone for other purposes will not only lead to improved motivation and performance, but also to improved service delivery and case management.

"I spent less time with the CHV, but I left feeling better served ... I can see the treatment, advice, and follow-up steps on the phone screen." - Family planning client Jocelyne Hortense

The MOPH and the USAID Mikolo Project also gained valuable insights into the strengths and challenges of implementing the mHealth application for CHVs. One of the common challenges encountered was in regard to technical functionality, particularly battery life and device charging. Ensuring adequate solar chargers and adding power banks for the phones are essential. As immediate steps after the pilot phase, the application has been updated according to user feedback, and the project continued supporting the MOPH in the configuration of its DHIS-2 server in order to complete the data integration. Additional post-training support is planned to help the newly trained users become more comfortable with the device and the mHealth application, and to provide troubleshooting.

Overall, the pilot evaluation suggests that this mHealth application has strong potential to positively impact the quality and efficiency of health service delivery and data collection at the community-level. Following presentation of the pilot phase results, the MOPH confirmed its interest to further roll-out the program. With support of grant funding secured by MSH through the NetHope Device Challenge 2017, the MOPH and the USAID Mikolo Project are preparing to scale up the program to an additional 550 users by early 2018.

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Additional information can be obtained from: Management Sciences for Health, The USAID Mikolo Project

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