Learning Brief

Innovative Mobile Apps for Malaria Information Access and Use at Health Facilities to Monitor Service Delivery and Commodity Management Performance

in PMI-MEASURE Malaria Supported Districts in Cote d'Ivoire

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U.S. President's Malaria Initiative

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WHO ARE WE?

The U.S. President's Malaria Initiative (PMI) Measure Malaria (PMM) project is funded by the United States Agency for International Development (USAID). Its main objective is to support strengthening of the routine health information system (RHIS) and malaria surveillance, monitoring, and evaluation (SME) in the 20 USAID-supported districts in Cote d'Ivoire.

Building on the lessons learned and successes of USAID's MEASURE Evaluation project in scaling up web-based health information models and approaches, the PMI Measure Malaria project seeks to address health facility access to health information by developing and implementing innovative malaria mobile dashboard and scorecard applications (apps) to empower health providers to make decisions based on evidence.

BARRIERS TO AND OPPORTUNITIES FOR ACCESS AND USE OF MALARIA DATA AT HEALTH FACILITIES

Despite country stakeholder support to the Cote d'Ivoire Ministry of Health for strengthening health information, the conditions that prevent access to malaria and other health program data at the health facility level remain a challenge—partly because those who collect data do not always have access to the appropriate technology and communicative tools to use it. Health facilities often report their data to districts and do not have the capacity nor mechanisms to review and use their own data for decision making. This lack of access can be explained by:

- Limited computers and tablets to store and manage data
- Lack of access to landline internet
- Lack of digital data applications (apps)

Expanding access to key malaria indicators at the health facility level in Cote d'Ivoire will advance the use of information to better understand how services and commodities are delivered and managed and to develop improvement and strengthening plans. The availability of mobile internet networks, electricity, and smartphones provide the project an opportunity to use the District Health Information Software, version 2 (DHIS2) malaria module to select key indicators of surveillance and service delivery at the health facility level to design malaria mobile-friendly dashboard and scorecard apps. The dashboard displays trends of the selected indicators while the scorecard helps monitor health facility performance. The DHIS2-based mobile apps are supported on Android devices and data are accessible both online and offline.

Barriers to and opportunities for data access and use in a sample of 40 health facilities

Barriers

50% of health facilities have tablets

38% of health facilities have computers

43% of health facilities have landline internet

Opportunities

100% of health facilities have electricity

100% of health facilities have smartphones

85% of health facility managers believe use of data will improve health services

Data source: Evaluation of the use of mobile applications

MECHANISMS USED TO IDENTIFY PROBLEMS IN MALARIA AND OTHER HEALTH SERVICES DELIVERY AND MANAGEMENT AT HEALTH FACILITIES

After two months of malaria mobile dashboard and scorecard apps implementation, an assessment was conducted in 40 health facilities. The sample included an experimental group of 20 trained health facility managers in the districts of Adjame-Plateau-Attecoube, Anyama, Grand Bassam, and Port Bouet-Vridi on use of the apps and a control group of 20 untrained in the districts of Aboisso, Cocody-Bingerville, Koumassi, and Yopougon Ouest Songon. Prior to the implementation of the malaria mobile apps, among the mechanisms used to identify health facility problems:

- over 90% of health facility managers in both groups used the district coordination meetings;
- 10% of health facility managers in the experimental group and 30% in the control group used the monitoring plan of action meetings;
- only 10% of health facility managers in the experimental group and 15% in the control group used individual data review; and
- only 5% of the control group organized health facility meetings while none did in the experimental group.

In both groups, more than 80% of health facility managers used district meetings to review data quality and less than 36% used them to monitor and review data trends, plans of actions, epidemiological surveillance, immunization performance, mosquito net distribution and other public health issues. Since the implementation of the malaria mobile apps, 75% of the trained health facility managers are using both the scorecard and dashboard apps and the paper tally sheets to review and analyze malaria and other health program data, while 85% of the control group health facility managers are mainly using the paper tally sheets.

How Health Facility Managers Perceived Access and Use of Malaria Data

In both groups, 85% of the health facility managers believe use of data will improve the quality of services and more than 55% said it will alert from emerging problems and epidemics, while almost 60% of health facility managers lack access to data because of non-availability of data visualization tools. More than half of all health facility managers reported that the main challenges to promoting and improving malaria data use are lack of technical visualization tools, inaccessibility of data, and insufficient data analysis skills.

The majority of health facility managers recommended and suggested the increase of access to data to allow them to immediately review and monitor the service delivery and commodity management performance and to take corrective actions toward addressing the population health needs.

One health facility manager stated "…The access to malaria and other health program data at the health facility level is critical and with the development of new technologies we suggest to provide health facilities with electronic and communicative tools that help them to quickly calculate indicators and visualize the service performance and trends."

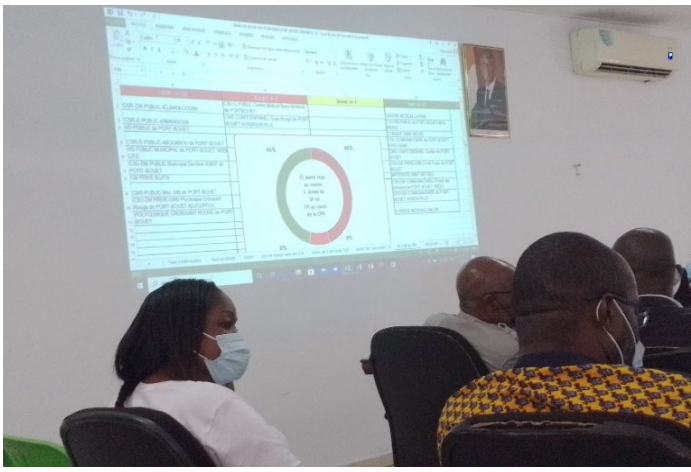
Training facility health manager on use of mobile malaria apps. Photo courtesy of PMI Measure Malaria.

What are the Requirements for the Use of Malaria and Other Health Data at the Health Facility?

When asked about their needs to facilitate the use of malaria data and other health data at the health facility, 85% of the health facility managers of the experimental group and 95% of those in the control group mentioned adequate data collection and analysis tools that enable immediate access to data and easy result interpretation. Improved skills and qualifications in data management and analysis are also essential for the use of information at the health facility for 65% of the health facility managers of the experimental group and 85% of those in the control group.

The majority of health facility managers suggested providing electronic devices for data management to facilitate decision making based on data evidence at the health facility level. They also require more coaching and mentoring on data analysis from the district team managers and other stakeholders.

One health facility manager stated: "The key motivation of the use of the malaria data and other health program data at the facility level is to help the service providers to understand and analyze data trends before submitting to the district. The improved data management and analysis capacity will help facility managers to review data and make corrections if any data inconsistencies were identified."



Top photo: Coaching Port Bouet Vridi district manager on use of scorecard. Bottom photo: Use of mobile malaria apps at Bouet Vridi District coordination meeting. Photos courtesy of PMI Measure Malaria.

HEALTH FACILITY MANAGERS' BELIEFS ON THE USE OF MALARIA MOBILE APPS AT HEALTH FACILITIES

During the pilot phase of the implementation of the malaria mobile dashboard and scorecard apps, 20 health facility mangers and four district managers were trained to use the apps to monitor performance and trend progress and to develop/update plans of action. Two months following the training, the beliefs of the 15 health facility managers who were able to use the apps were:

67%
Selected indicators are aligned with their information needs

53%
Graphs display trends well

40%
Scorecards are easy to use in the decision-making process

During the assessment conducted after two months of use, 15 of the 20 health facility managers trained were able to use the mobile apps. The remaining five health facility managers were unable to use the apps due to the lack of internet access and DHIS2 user password access. The district managers were able to use the mobile apps to monitor the malaria indicator trends to investigate on the performance progress and to verify the data quality.

Health Facility Providers' Understanding on the Importance of the Use of Malaria Mobile Apps

The assessment conducted in April 2022 to evaluate two-months use of malaria mobile dashboard and scorecard apps revealed that 100% of health facility managers considered the apps helpful in terms of the timely sharing of information; 85% believed that the apps contributed to developing and carrying actions to address malaria service problems, and 67% confirmed the apps' ability to help in identifying and monitoring service and commodity management performance and problems.

One district manager said: "The malaria mobile apps are among the expected tools that enable and promote data analysis and use at the health facility as the ultimate goal which all health service delivery centers must move toward."

Use of Malaria Mobile Apps and their Potential Effect on Malaria Service Delivery and Commodity Management

After two-months use of the malaria mobile apps, based on their results, almost half of the health facility users increased their sensitization activities on malaria prevention and mobilization of the population to use mosquito nets, and for those who tested positive, to comply with their treatment. One-third of the health facility users systematically performed the Rapid Diagnosis Test (RDT) on all suspected cases of fever.

During the district meeting, visualization of the data in the malaria mobile apps allowed 33% of health facility manager users to order commodities on time. After two months, following the initial data review at the district meeting, 20% of health facility managers were able to monitor the commodity stock.

Despite all actions undertaken, 40% of users said two months of use is too early to make changes in their routine operations. The district will help them to develop plans of action to address the service delivery and commodity management issues.

Agboville District data review meeting facilitated by PMM and NMCP using malaria mobile apps. Photo courtesy of PMI Measure Malaria.

Use of Malaria Mobile Apps at Monthly District Meetings for Real-Time Data Access and Review to Develop Action Plans for and to Exchange Best Practices Between Health Facilities

In Cote d'Ivoire, the Ministry of Health has established monthly meetings in each district, where health facility managers and the district team management gather at the district level to review, discuss, and monitor service delivery and commodity management performance. Paper-based data collection and reporting tools are used to cross-check data quality and to calculate indicators. The introduction of malaria mobile apps allow users to immediately view the trends and performances of each health facility and to develop action plans for each health facility to address health service delivery and commodity management issues. The implementation of plans of action are regularly monitored at the health facility level together with community health workers prior to the next monthly district meeting.

Bondoukou District data review meeting facilitated by PMM and NMCP staff using malaria mobile apps. Photo courtesy of PMI Measure Malaria.

MAIN OBSTACLES FOR THE USE OF MALARIA MOBILE APPS AT THE HEALTH FACILITY LEVEL DURING THE COMMUNITY MEETINGS

Among the 20 health facilities assessed in April 2022, only five were not able to use the malaria mobile dashboard and scorecard apps—one trainee was unable to use the dashboard and apps due to illness, two did not have a mobile internet connection, and two experienced login issues. The HMIS unit restricted access to DHIS2 to all health facilities to protect data against manipulation. Following the dissemination of the assessment's preliminary results, the National Malaria Control Program, as a Global Fund recipient, committed to allocate a budget for internet connectivity and purchase of tablets for health facilities and to discuss with the HMIS department for health facility DHIS2 access codes for the scale up of mobile malaria dashboard and scorecard apps. The USAID-funded IMPACT project requested PMM to train their trainers to allow them to implement the use of malaria mobile apps at the health facility in their supported regions. The training of IMPACT project trainers was conducted in early May 2022 and PMM will work with them to facilitate the implementation of malaria mobile apps.

Recommendations to Sustain the Use of Malaria Mobile Apps by Health Facilities

The use of malaria mobile apps is critical for real-time data access and use at the health facility level. Decisions on service delivery and commodity management are delayed because health facilities only have the opportunity to review their data and calculate indicators during the monthly district coordination meetings. With access to high-speed mobile internet and the availability of tablets and smartphones, health facility managers and partners will be able to monitor service delivery and commodity stock management performance progress and address recommendations based on evidence. To avoid errors or biases caused by paper-based data review in the calculation of indicators, the use of malaria mobile apps will help to increase health providers' accountability in terms of their own service delivery and commodity management performance.

Training facility health manager on use of mobile malaria apps. Photo courtesy of PMI Measure Malaria.

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University of North Carolina at Chapel Hill • 123 West Franklin Street, Suite 330
Chapel Hill, NC 27516 USA
Phone: 919-445-9350 • Fax: 919-445-9353
measuremalaria@unc.edu • www.measuremalaria.org

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