# Increasing Health Facilities' Access to Health Information for Decision Making and Operational Plan Development

in PMI-MEASURE Malaria Supported Districts in Madagascar

# 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 12 USAID-supported regions in Madagascar.

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.

# WHY IS ACCESS TO MALARIA INFORMATION IMPORTANT FOR HEALTH FACILITIES?

Health facilities' access to malaria information is essential for the progress and sustainability of the quality of the services and data in Madagascar. Despite country support for strengthening health information, access to data remains a challenge—partly because those who collect data do not always have access to the appropriate 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 to store and manage data
- Insufficient electricity
- Insufficient skilled personnel to use computer software
- Lack of access to land line internet

Enabling access to and visualization of key malaria indicators at the health facility level will allow health providers to improve the quality of service delivery. The project used the District Health Information Software, version 2 (DHIS2) malaria module and the existence of mobile internet networks 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.

## Availability of infrastructure and equipment in a sample of 39 health facilities

**31%** of health facilities have electricity

**3%** of health facilities have computers

**5%** of health facilities have internet

**95%** of health facilities have tablets

**54%** of health facilities have smartphones

Data source: Evaluation of the use of mobile applications

# KEY ACTIVITIES LEADING TO INCREASED PARTICIPATION AND OWNERSHIP TO IMPLEMENTATING MALARIA MOBILE APPS

The implementation process of the mobile dashboard and scorecard apps required joint efforts from partners to support the Madagascar National Malaria Control Program (NMCP) in increasing access to malaria information for all health facilities. Processes for the development and implementation of the mobile dashboard and scorecard apps consisted of:

- Developing generic mobile apps with a selection of WHO key malaria surveillance indicators.
- Reviewing and adapting to country malaria surveillance information needs by the NMCP and its partners.
- Using existing district coordination meetings to train and guide health facility providers on the use of the mobile apps for data analysis and development of plans of action.
- Monitoring the use of the mobile apps and the progress made toward addressing the plans of action

As a result of this process, the pilot phase was implemented in the district of Toliara 2 in August 2021 for 42 health facilities with tablets and access to the mobile internet network. All service providers from the health facilities are invited at the end of each quarter to routine district coordination meetings to discuss and address their respective health service issues. This platform was used to train health providers on the use, and to review with them the results, of mobile dashboard and scorecard apps installed on their tablets. During these meetings, each facility's plan of action was reviewed and updated based on the results of the mobile apps and on progress made in implementing previous recommendations.

## How Health Facility Managers Perceived the Use of Malaria Mobile Apps

### District of Toliara 2

Among the 39 health facilities assessed during the first quarter of implementation, 27 health facilities in Toliara 2 were trained on use of the malaria mobile apps, with 12 non-trained health facilities from other districts used as the control group. After only three months using the mobile apps, 63% of the trained health facility managers found that the selected indicators in the graphs and tables were well visualized in terms of the trends of malaria cases and the service performance level. After six months using the mobile apps, the two quarterly visits revealed an increase, from 48% to 72%, of malaria scorecard app users and from 37% to 51% of malaria dashboard mobile app users who found graph and table presentations immediately identifying the problems and felt they were very easy to interpret.

Of the 42 health facilities trained on the use of mobile malaria apps, 27 health facilities were visited in the first quarter and 39 in the second quarter to assess their use. The health facility managers' perceptions on the use of the malaria mobile apps increased from 26% to 80% for their contribution toward monitoring the levels of commodity stock, and from 44% to 62% for their help in improving decision making. However, four percent had not used the app because they could not download it due to having older tablets or no access to the internet.

Even though the mobile apps have been very useful, the fact remains that users would like to view the scorecard tables on one page. They also expressed the need to access the apps with a newer Android version and to have a fast internet connection.

*One health facility manager stated "…The applications have improved our work, because with hard copy of the monthly report we have to go through paper reports to explore past data, whereas with the applications we immediately access data from the last 12 months."*

*Another said that "…the applications are a reminder tool for me, in case I am drowned in other routine activities, using the applications I can determine the status of the HF indicators"*

*According to a health facility manager: "The individual presentation of the data by HF would be better, instead of combining the data of all the HF on the same graph, because we tend to compare several HFs which have different targeted populations."*

*Another said: "Presenting individual HF data allows us to focus more on our performance."*

## The District Manager's Role in Encouraging the Use of Malaria Mobile Apps to Address Service Performance Issues

When asked about their role in encouraging the use of malaria mobile apps, one district manager responded: "We work closely with health facilities to help them understand the indicators and their differences in scorecard and dashboard. It is the district manager's responsibility to explain the indicators to the health facility that some of the misunderstood indicator results are not always data entry errors but could be service provision under-performance."

"At the end of each month, we tell them not to forget to use the scorecard and dashboard to update the action plan template. To encourage continued use of the mobile applications, we also advise them to delete photos and videos since their tablet storage capacity is low which prevents the malaria mobile application from working."

## A Health Facility Manager's Understanding of the District Management Team's Role in Overseeing the Use of Mobile Apps

One health facility manager stated: "The district managers are guiding health facilities in the use of the malaria scorecard and dashboard applications. It is during the monthly review that the district management team encourages health facility managers to develop an action plan on the results of the dashboard and the scorecard applications."



Top photo: Toliara 2 district coordination meeting to review malaria data quality and use, August 2021. Bottom photo: Training on use of malaria mobile scorecard and dashboard apps at Antsirabe 2 district, February 2022. Photos courtesy of PMI Measure Malaria Madagascar.

## USE OF MALARIA MOBILE APPS AT HEALTH FACILITIES INCREASED REAL-TIME ACTIONS IN PROBLEM SOLVING

The health facilities' ability to monitor performance and trend progress and to develop/update plans of action in three consecutive assessments of mobile app use were as follows:

| **55%** | **67%** | **79%** |
|---|---|---|
| October 2021 | November 2021 | February 2022 |

The first follow-up was made by phone call, where, out of the 42 health facilities, 14 were not reached and 12 were not able to use the mobile apps due to the lack of internet access or were unable to download graphs and tables because of older versions of tablets. Following the February 2022 visit, the district used the assessment results to advocate for the purchase of new tablets and WHO provided new devices running Android version 10 and internet airtime to allow health facilities to download graphs and tables for use in the mobile apps.

## Development of Health Facility Plans of Action Based on the Results of Malaria Mobile Apps

During an August 2021 Toliara 2 district coordination meeting, health facility managers were trained on the use of malaria mobile apps. After installation of the malaria mobile apps on the health facilities' tablets, the first review of each health facility's data was followed by development of plans of action. The results of the November 2021 assessment on the use of the malaria mobile apps in a sample of 27 health facilities in the district of Toliara 2, showed only 89% found issues which required the development of a plan of action. Among the health facilities with plans of action, only 75% were available during the day of the assessment visit and 50% of the available plans were monitored and updated. The limited availability of high-speed internet and the use of older tablets did not allow the other half of the health facilities to monitor progress and update their recommendations.

## Improvement of Malaria Service Delivery and Commodity Management

Expanded real-time access to malaria information for use in health facilities offers malaria service providers the opportunity to discuss and address service delivery and commodity management issues and performance during their meetings with community leaders and community health workers at the health facility level. The November 2021 assessment and the February 2022 monitoring of the use of malaria mobile apps revealed an increase of users' appreciation from 52% to 66% for improved performance of malaria service delivery and from 63% to 80% for improved malaria commodity management. The progress made in the implementation of each health facility's plan of action is monitored and malaria mobile app trends and score performance are reviewed during the quarterly district coordination meetings.

## Progress from Implementation of the Plans of Action Recommendations

Following the use of the malaria mobile scorecard and malaria dashboard apps, and the implementation of the plans of action, considerable progress toward improving the performance of health facility services was observed. Results from the 13 health facilities with updated plans of action showed that all had observed decreases in malaria positivity rates following recommendations to intensify awareness-raising activities on malaria preventive measures and the distribution of long-lasting insecticide-treated nets (LLINs), and only two health facilities presented poor performance in the proportion of pregnant women with IPT3.

| Health facility | Low performance indicator | Baseline Aug. 2021 | Oct. 2021 | Feb. 2022 | Performance change |
|---|---|---|---|---|---|
| CSB 1 Antanimena | Malaria positive rate with RDT for children under 5 years | 63% | 40% | 14% | -26% |
| CSB Mitsinjo Betanimena | Mosquito net distributed to children under 1 year fully immunized | 18 | 52 | 212 | 160 |
| CSB2 Ambohimahavelona | Number of malaria cases for 6 to 13 years | 182 | 420 | 203 | -217 |
| CSB2 Beroroha | Proportion of pregnant women with IPT3 | 25% | 33% | 38.% | 5% |
| CSB1 Manoroka | Proportion of pregnant women with IPT3 | 15% | 44% | 23% | -21% |
| CSB Marofoty | Proportion of pregnant women with IPT3 | 40% | 63% | 55% | -8% |
| CSB Saint Augustin | ACT availability rate for 14 years and more | 85% | 80% | 100% | 20% |
| CSB2 Manombo sud | Routine mosquito net availability rate | 0% | 67% | 89% | 22% |
| CSB2 Miary | Malaria positive rate with RDT | 66% | 70% | 11% | -59% |
| CSB ANDREVO BAS | Malaria positive rate with RDT | 50% | 45% | 23% | -22% |
| CSB MANOROFIFY | Malaria positive rate with RDT | 60% | 50% | 30% | -20% |
| CSB2 Maromiandra | Malaria positive rate with RDT | 50% | 42% | 11% | -31% |
| CSB TSIHAKY | Malaria positive rate with RDT for 6 to 13 years | 32% | 33% | 0% | -33% |

### Quarterly District Coordination Meetings are a Sustainable Platform to Review the Results of Malaria Mobile Apps and to Exchange Best Practices

To promote routine malaria information use, the existing platform within the Ministry of Health constitutes the best approach to sustain the activity. At the operational level, the health district organizes quarterly meetings to discuss health service delivery and conduct paper-based data monitoring. The introduction of malaria web and mobile apps enabled real-time access to malaria information and development of plans of action for each health facility. Returning to their health facilities, managers presented their performance and plans of action to the community leaders and health workers for implementation of the recommendations.



ToT for NMCP and HIS staff on use of malaria mobile scorecard and dashboard apps at Antananarivo, June 2021. Photo courtesy of PMI Measure Malaria Madagascar.

## CHALLENGES FOR THE USE OF MALARIA MOBILE APPS IN IMPROVING ACCESS TO MALARIA INFORMATION IN HEALTH FACILITIES

Between some tablets running older versions of the Android operating system (5.0 or earlier) and limited internet access, most of the health facilities in the district of Toliara 2 were unable to download the dashboard graphs and scorecard tables. During the district meetings, where high-speed internet was available, these health facilities managed to download the graphs and tables to develop their plans of action. However, once back at their health facilities, they did not access the new graphs and tables due to slow internet speeds and outdated tablets. The NMCP and the district presented results from the November 2021 and February 2022 assessments of malaria mobile app use to partners to advocate for support. In March 2022, WHO purchased tablets running Android version 10 and internet connectivity for the 42 health facilities of the district; other partners are upgrading the slower speed internet plans to high speed. The Ministry of Health is planning to provide new versions of tablets to other districts to scale-up the use of malaria mobile apps. The Global Fund has also promised to fund scale-up for the use of malaria mobile apps in non-USAID supported regions.

## The Way Forward for Sustainable Use of Malaria Mobile Apps to Enable Access to Malaria Information by Health Facilities for Decision Making

The scale-up of malaria mobile apps is dependent on increased access to high-speed mobile internet and the availability of newer versions of tablets and smartphones. District coordination meetings gathering both health facility managers and partners are the best platforms to review real-time malaria data and to monitor and address recommendations based on evidence. Instead of relying on paper-based data—which may be affected by errors or biases—to calculate indicators, the use of malaria mobile apps will help to rationalize the data review meetings and to reduce errors from manual indicator calculations. Malaria mobile apps will also increase health providers' accountability in terms of their own service delivery performance.



Training on the use of malaria scorecard and dashboard apps at Antsirabe 2 district in Madagascar, February 2022. Photo courtesy of PMI Measure Malaria Madagascar

## PMI Measure Malaria