



Facilitating evidence-informed programming in Mozambique

Lessons learnt from deploying an integrated malaria information system

Key learning

- Extensive user testing and developing interim data visualisation tools can generate important insights into data entry form design, dashboard design and key monitoring indicators.
- It is important for all relevant stakeholders to review training packages to guarantee clarity and trainers' preparedness to deliver standardised training.
- Building trainees' basic IT literacy skills, ensuring a rapid rollout and conducting regular supportive supervision visits are key to facilitating platform uptake.
- Creating effective coordination mechanisms — such as a task force led by the National Malaria Control Programme (NMCP) — can help to identify operational challenges.

Background

To accelerate malaria elimination in Mozambique, a functional and responsive malaria surveillance system is needed to provide the required intelligence to allocate resources and target interventions effectively in all transmission strata.

The NMCP assessed the national malaria surveillance system in 2017 and 2018 with the support of Malaria Consortium and identified poor data accessibility, the absence of standardised data capture tools, the lack of a centralised data repository and poor data use for decision-making as critical gaps in the system. In response, the NMCP and Technical Working Group included the development and rollout of an integrated malaria information storage system (iMISS) in the National Malaria Strategic Plan (2017–2022).

Under the leadership of the NMCP, Malaria Consortium and partners developed the iMISS based on the district health information system (DHIS2) and fully integrated it with the national health management information system (HMIS). The platform will gather and visualise malaria data from different sources, enabling malaria staff at all levels to:

- monitor epidemiological indicators to identify populations that are disproportionately affected by malaria and to assess progress towards programmatic goals
- monitor access to quality care and case management services (e.g. stock levels, testing and treatment rates)
- plan, implement and monitor vector control interventions (e.g. indoor residual spraying campaigns, distribution of long lasting insecticidal nets) and other community interventions (e.g. intermittent preventative therapy, health promotion)
- understand potential drivers of transmission and appropriately target surveillance interventions
- facilitate early warning systems for rapid outbreak detection and response.

Project activities

Malaria Consortium is supporting the Ministry of Health (MoH) with the design and deployment of the iMISS at all health levels as a component of the three-year project [Strengthening Malaria Surveillance for Data-driven Decision-making in Mozambique](#), funded by the Bill & Melinda Gates Foundation.

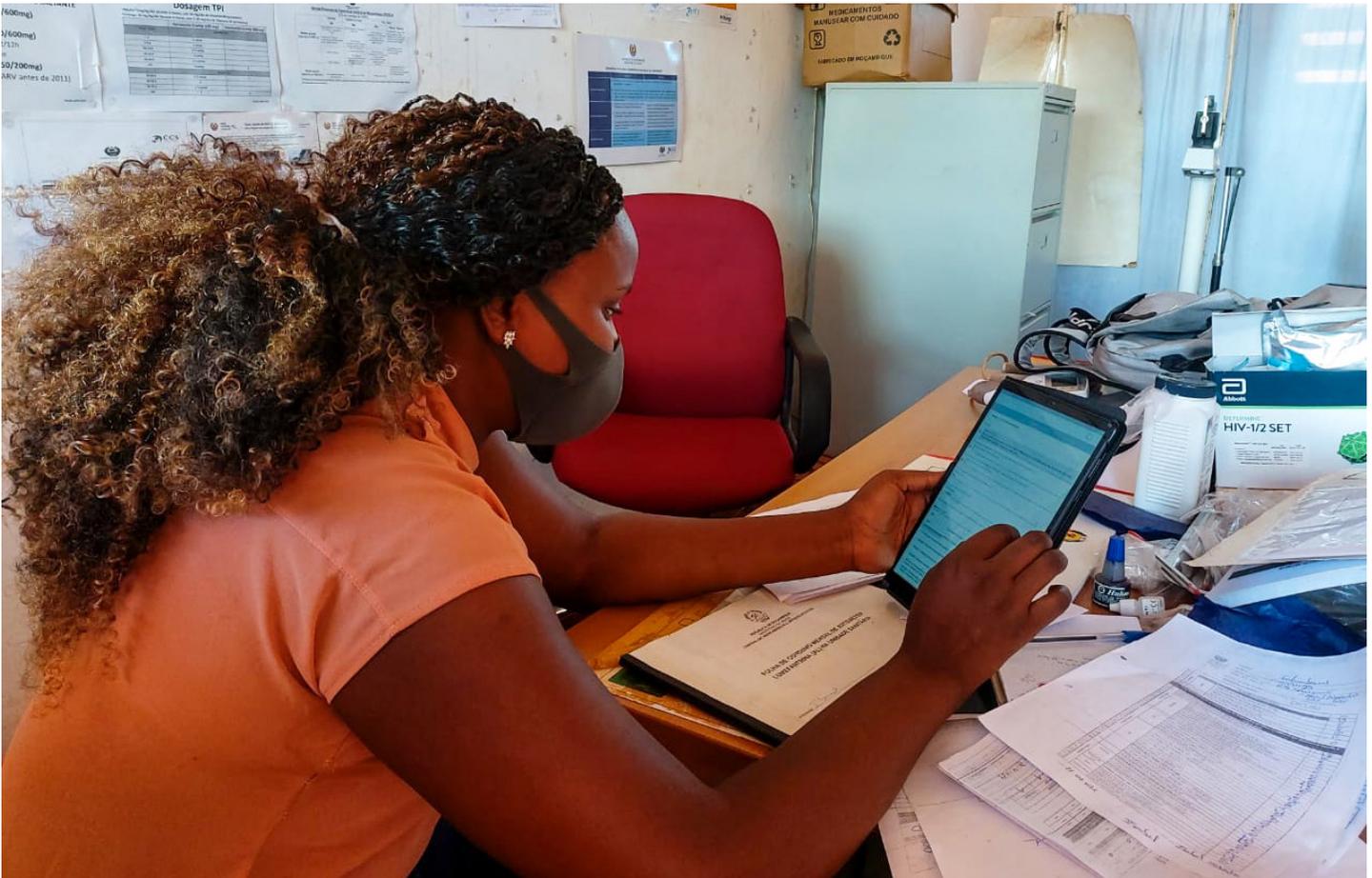
After conducting a detailed scoping exercise with relevant NMCP stakeholders and partners, we created a centralised malaria data repository and procured a server to accommodate the iMISS — together with the Clinton Health Access Initiative (CHAI) — between June 2019 and December 2020. We also developed the platform integrations and configurations, which included defining reporting mechanisms, forms and thematic dashboards that visualise risk stratification, covering both epidemiological and programmatic indicators based on case data and population projections. To allow districts and provinces to compare their progress to historical baselines across all programmatic areas, we imported and integrated data collected during supervision and data quality audit (DQA) visits, entomological surveillance and vector control activities, and malaria surveys (such as the Malaria Indicator Survey), as well as routine aggregated health facility information from the DHIS2-based HMIS. NMCP staff, project partners, and provincial and district focal persons user-tested the iMISS in July 2020, after which their feedback was incorporated.

In August 2020, CHAI trained 79 master trainers with our support. They subsequently trained 549 district-level malaria focal points and provincial technicians across 11 provinces, as well as 109 health workers from 46 health facilities across three districts. The trainings covered iMISS use, data entry forms and dashboard navigation, as well as data to action (D2A) elements. Malaria Consortium and CHAI distributed the required equipment — laptops, tablets, desktops, printers and lockers — for staff at all health system levels to utilise the platform.

The COVID-19 pandemic significantly impacted on project rollout and delayed deployment of the iMISS. Trainings had to take place in several small groups — which required a higher number of facilitators — or be conducted remotely. Similarly, meetings for user-testing and national rollout were delayed or held online.

Results

Despite disruptions caused by COVID-19, the project met several key milestones, including designing, developing and testing the iMISS, and successfully rolling out a complex training scheme. To align expectations and coordinate iMISS adoption going forward, the NMCP created the iMISS Task Force to liaise with provincial and district focal points to streamline data flow expectations, document uptake challenges and rapidly address any platform issues.



A malaria focal point carries out data quality analysis at Chicomo health centre in Massinga district, Mozambique.

Lessons learnt

- To ensure that project timelines are met, enough time should be allocated to importing historical data into the iMISS, as harmonising data formats requires intensive collaboration with the MoH and partners.
- To streamline the approval and integration of user feedback, coordinated mechanisms — such as the iMISS Task Force — can help clarify and build consensus around conflicting feedback among the NMCP and other stakeholders.
- Creating interim tools for data visualisation and interpretation allowed us to gain important insights into which indicators to monitor and how future data visualisation dashboards should be designed in the iMISS.
- NMCP collaboration on developing the training materials and agenda proved critical to ensure that trainings were properly contextualised and audience appropriate for subnational levels.
- We found that a lack of basic IT literacy among trainees can hamper iMISS uptake. We will, therefore, include IT skills in future training sessions.
- Due to the delayed launch, country-wide trainings ended months before iMISS deployment in February 2021. As a result, we found that refresher and supervision trainings at the national and provincial levels were required, as well as data entry supervision visits at the provincial and district levels. This suggests that a rapid platform rollout post-training is critical to ensure effective uptake, especially in settings where trainees demonstrate difficulties using the new tool.
- As many users required assistance to successfully log out of the training environment and into the live environment, we developed an outreach plan to help increase user engagement and collect additional feedback for the iMISS Task Force.
- Designing a robust monitoring and evaluation framework proved essential to enable the iMISS Task Force to actively follow up on user uptake indicators and rapidly respond to potential issues.
- We found that tablet usability may be compromised in remote areas with irregular power supply and internet connectivity. To identify a context-specific solution, the iMISS Task Force is currently mapping out all health facilities and districts facing such issues.
- Through comprehensive iMISS supervision visits, we were able to ensure active user engagement with national level stakeholders, allowing two-way communication and the collection of extensive user feedback regarding challenges faced.

Recommendations

Based on our experience of developing and deploying the iMISS at the district and health facility levels in Mozambique, the following recommendations may prove useful to malaria stakeholders — specifically implementers — operating in similar settings.

1. To **avoid delays in launching newly developed malaria platforms**:
 - allocate sufficient time to platform development — while overall platform design may be completed in a few months, development phases that require intensive collaboration and consensus-building (such as the harmonisation and import of historical data) between various partners and technical working groups can easily exceed 12 months
 - maintain strong **organisation and coordination amongst user-testing focal points** to ensure all feedback is streamlined, clearly defined, prioritised and swiftly approved for incorporation.
2. To ensure **effective platform uptake**:
 - integrate **basic IT skills training** into malaria repository training sessions at all levels
 - incorporate a **programmatic perspective** while developing training materials to ensure they are audience appropriate and sufficiently contextualise the software's purpose
 - minimise the **time between training sessions and platform deployment** and organise intensive **supportive supervision** for data entry activities
 - map out health facilities and districts reporting **irregular power supply and internet connectivity** issues to formulate a coordinated response
 - develop a robust **monitoring and evaluation** framework that allows partners to swiftly identify and address any problems
 - designate a **coordinating body** to maintain bi-directional communication and support end users.
3. To stimulate malaria repository **data use for decision-making**:
 - produce **D2A tools** — such as decision trees and flowcharts — to facilitate a step-by-step process linking malaria dashboard visualisations with relevant actions at each level, refining data analysis at the district and provincial levels, and gradually embedding data use and D2A activities into monthly data review and annual planning meetings
 - organise **quarterly supervision visits** to the district and provincial levels to verify the number of functional tablets, assess difficulties in tablet use — including navigating dashboards, and filling out and synchronising data entry forms — and identify specific training and technical assistance needs
 - hold quarterly **refresher trainings** at the national and provincial levels to ensure that technicians have the required knowledge to solve problems locally and that supervisors can pass on correct information to the district level
 - develop **long-lasting training packages** (e.g. training videos) to ensure consistent knowledge transfer, particularly in the event of staff turnover
 - support a more **output-oriented Surveillance Technical Working Group** via outputs generated through the platform
 - continue to **refine dashboards** in response to emerging needs, ensuring their relevance and use.

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