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Improving quality and use of malaria surveillance data: Results from evaluating the effectiveness and acceptability of a new integrated malaria information storage system in selected districts in Mozambique

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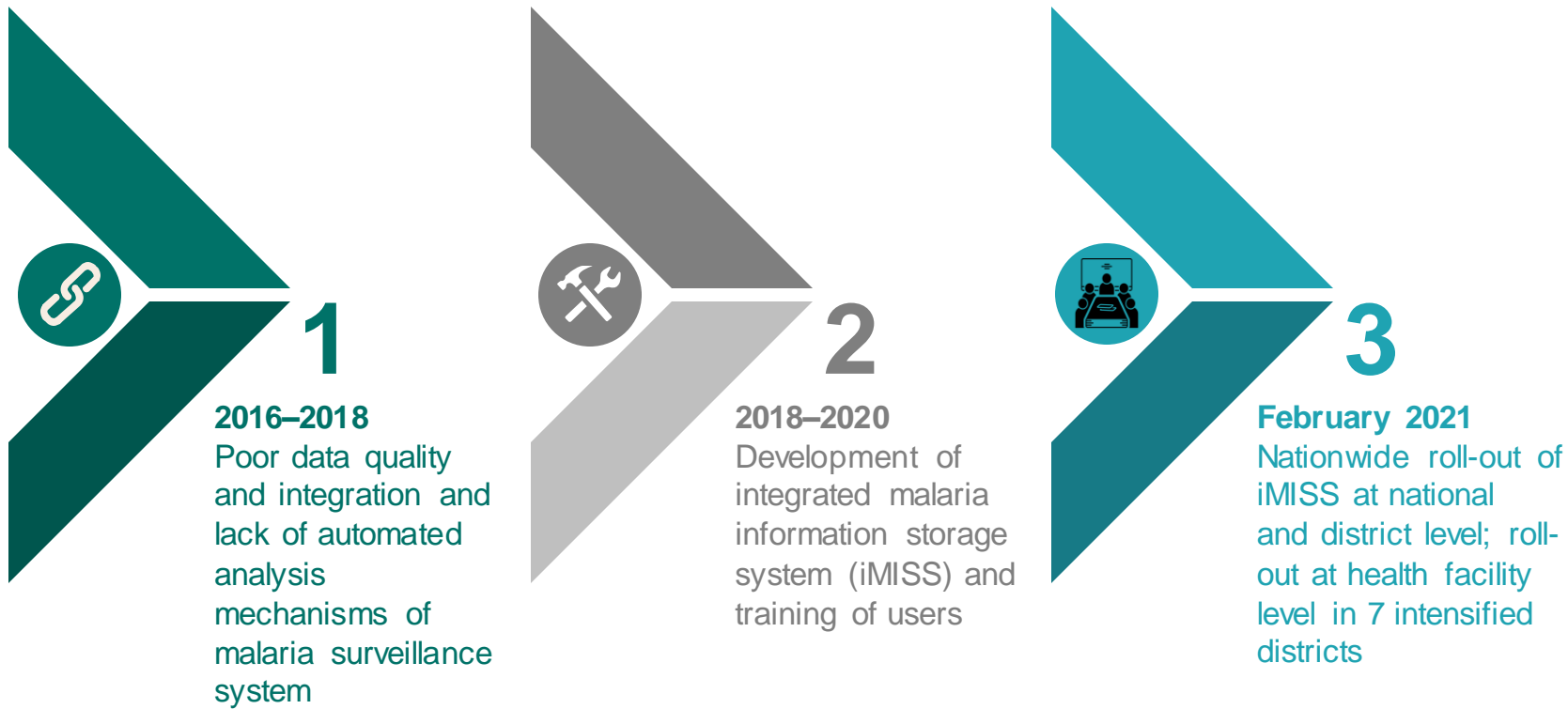2021 Annual Meeting of the American Society of Tropical Medicine & Hygiene

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Background

Systematic assessments identified need for integrated malaria surveillance system in Mozambique

1

2016–2018
Poor data quality and integration and lack of automated analysis mechanisms of malaria surveillance system

2

2018–2020
Development of integrated malaria information storage system (iMISS) and training of users

3

February 2021
Nationwide roll-out of iMISS at national and district level; roll-out at health facility level in 7 intensified districts

Collaborative effort between several partners

PNCM
PROGRAMA NACIONAL DE CONTROLO DA MALÁRIA

malaria consortium
disease control, better health

CLINTON HEALTH ACCESS INITIATIVE

Saudigitus

New system retrieves and integrates malaria data across thematic programme areas, allowing for direct digital reporting at health facility level

Goal

To enable malaria staff at all levels of the health system to monitor key indicators and to provide quality evidence to plan and implement responses

7 intensified districts: health facilities directly submit monthly reports instead of paper reports

Commodities

Health facility cases

Supervision

Data quality

Access

OpenLMIS

DHIS2 HMIS

DHIS2 CHMIS

ODK

Data warehouse

DHIS2 HMIS

CommCare

iMISS

Monthly discussion of health facility submitted data at district meetings

DHIS2 PMI *(planned)**

Entomology

Bed nets

Indoor residual spraying

Health promotion

Graphic: Courtesy of Clinton Health Access Initiative

Methods

Focus on roll-out at health facility level

- **Aims**
  - Assess the effectiveness and acceptability of the new system at health facility-level
  - Document lessons learnt
  - Identify challenges and possible mitigation actions

- **Outcomes**
  - Quality of directly submitted health facility data
  - Adoption of new system for intended purpose (data use)
  - Acceptability of new system among target users
  - Maintenance
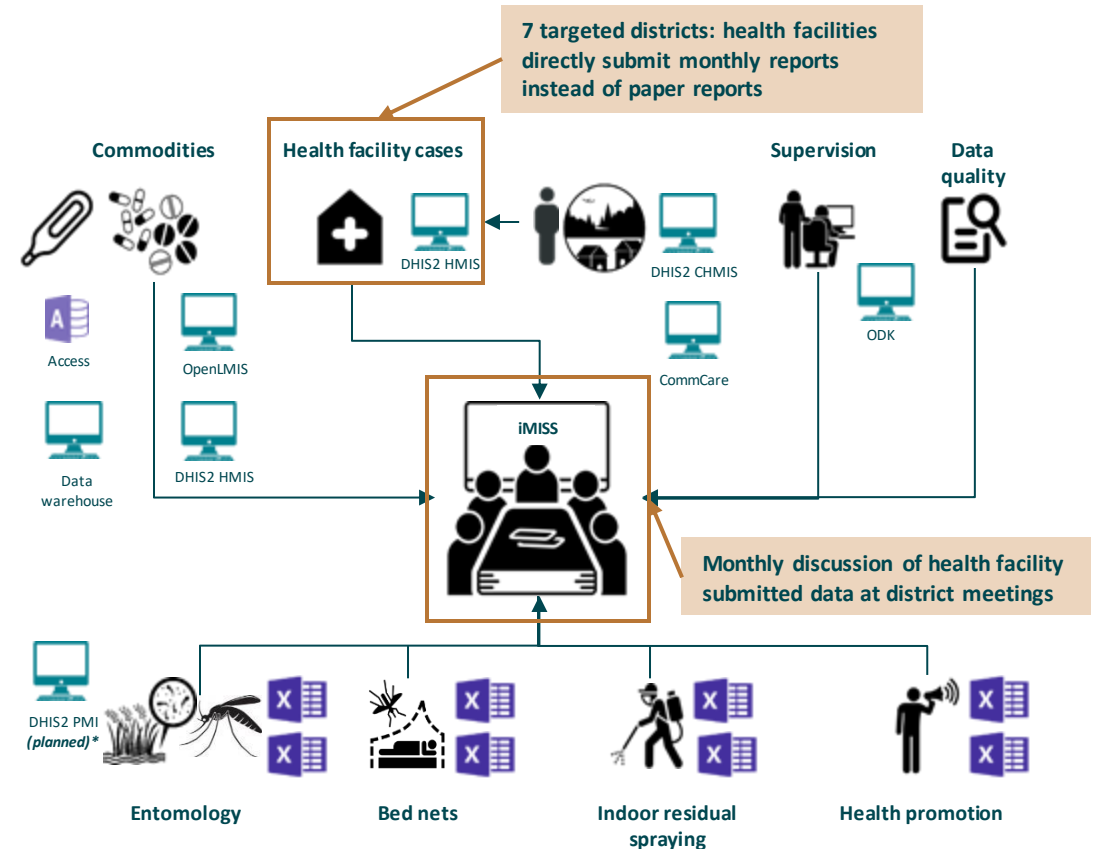
Graphic: Courtesy of CHAI

Focus on roll-out at health facility level

- **Evaluation area**
  - 94 health facilities across 7 'intensified' districts where iMISS was rolled out to health facility level as part of surveillance strengthening efforts

- **Evaluation period**
  - February to July 2021 – first six months after roll-out

- **Data collection**
  - Monthly quantitative data from all 94 health facilities
  - Endline key informant interviews with purposive sample of key users at district and health facility level
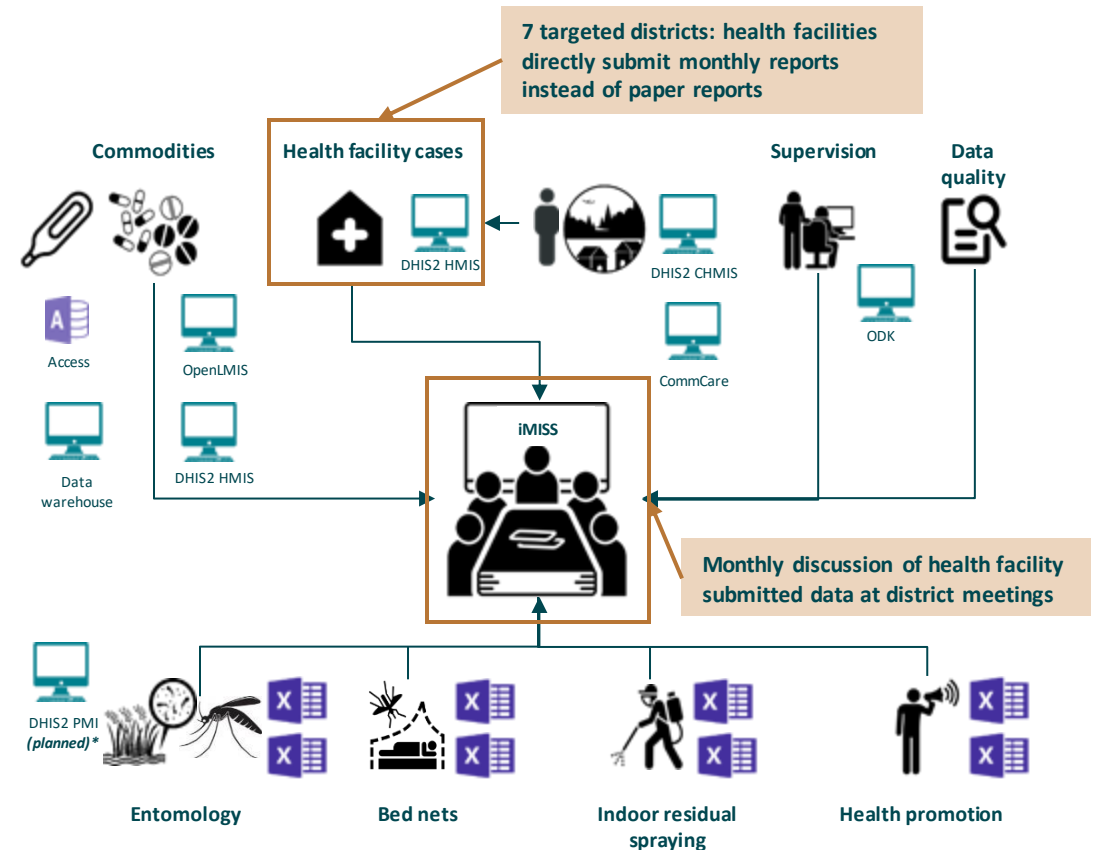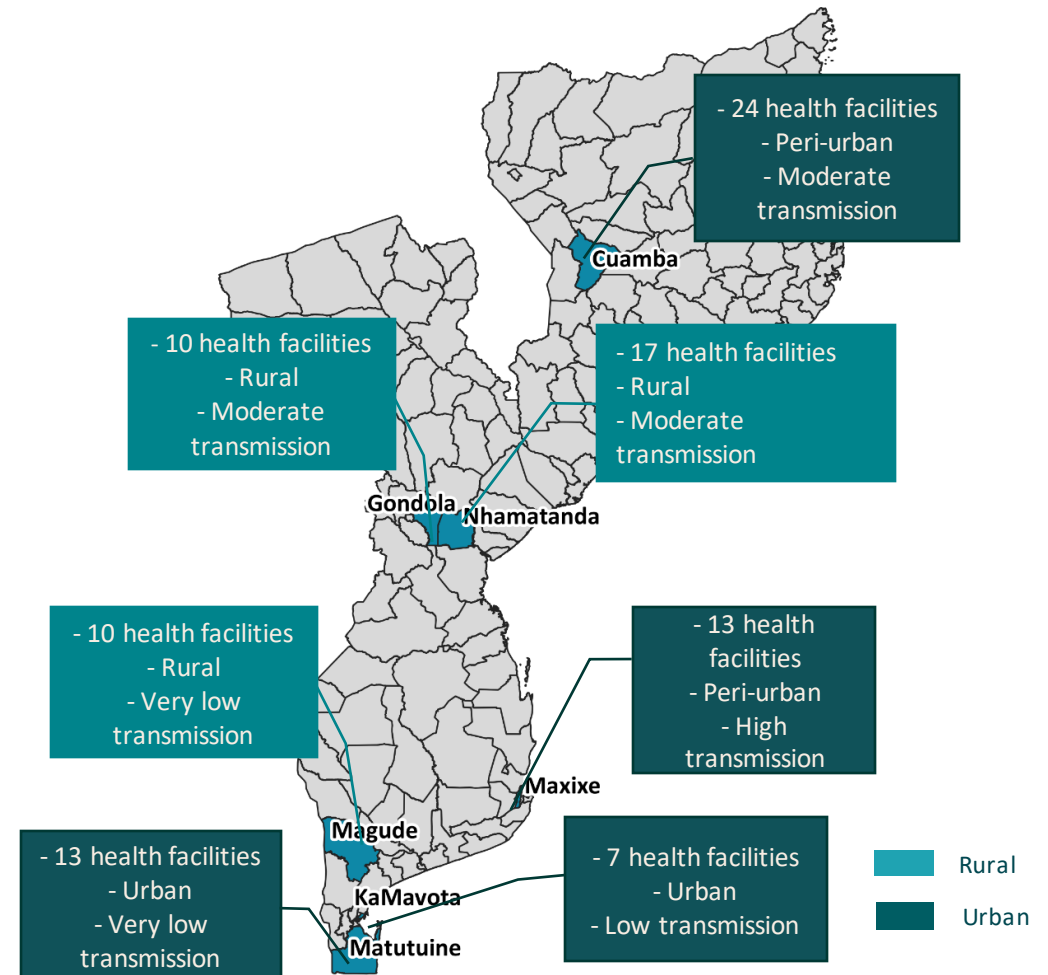

Graphic: Courtesy of CHAI

Results

Quantitative sample included all districts and health facilities across evaluation area
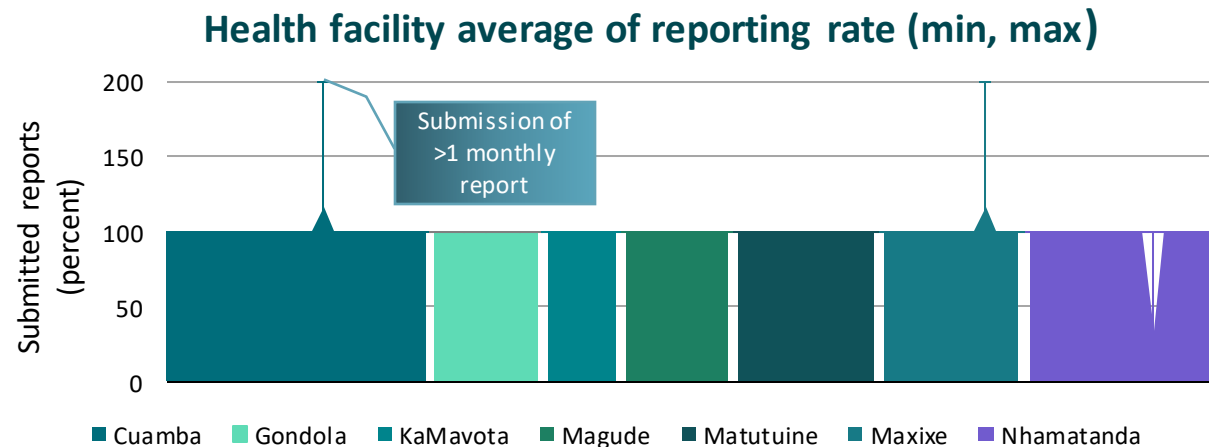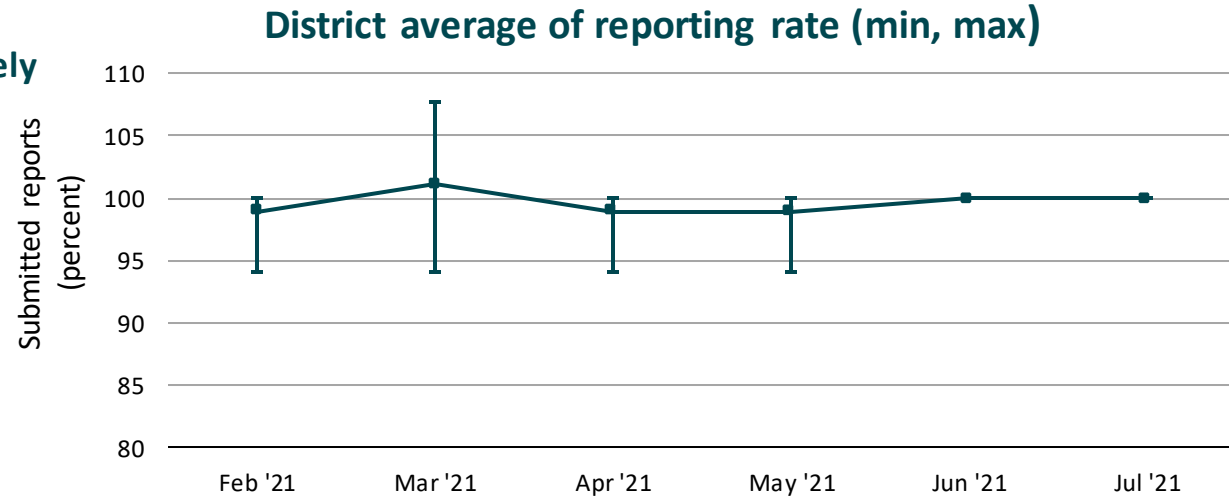
Characteristics of quantitative sample

	Districts	Health facilities
Total (N)	7	94
Setting (n, %)		
Urban	4 (57)	11 (12)
Rural	3 (43)	83 (88)
District transmission stratum (n, %)		
Very low	2 (29)	
Low	1 (14)	
Moderate	3 (43)	
High	1 (14)	

- 24 health facilities
- Peri-urban
- Moderate transmission

Cuamba

- 10 health facilities
- Rural
- Moderate transmission

- 17 health facilities
- Rural
- Moderate transmission

Gondola Nhamatanda

- 10 health facilities
- Rural
- Very low transmission

- 13 health facilities
- Peri-urban
- High transmission

Maxixe

Magude

- 13 health facilities
- Urban
- Very low transmission

KaMavota

Matutuine

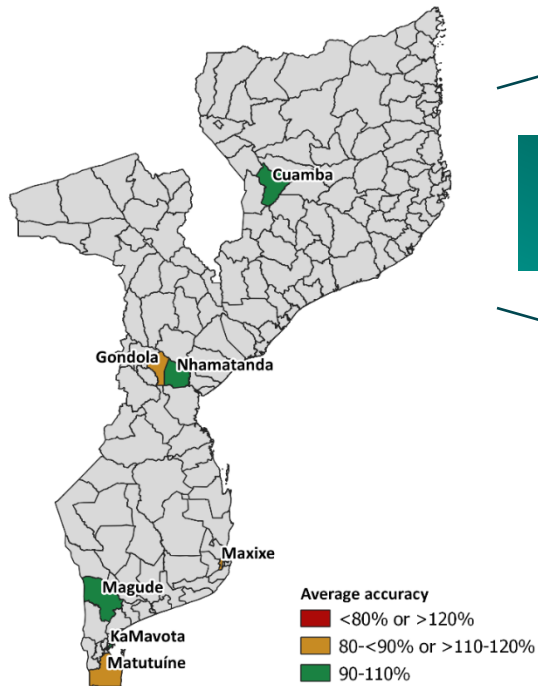- 7 health facilities
- Urban
- Low transmission

Rural

Urban

Health facility reporting rate and timeliness of report are sufficient

- **Reporting rate of directly-submitted health facility reports: (submitted reports/expected reports)*100**
- **Timeliness of direct health facility reporting: (timely submitted reports/ Submitted reports)*100**

Expected reports submitted (timely): 99.3 (99.8) percent

Average monthly reporting rate
- <80% or >100%
- 80-<90%
- 90-100%

District average of reporting rate (min, max)

Health facility average of reporting rate (min, max)

Submission of >1 monthly report

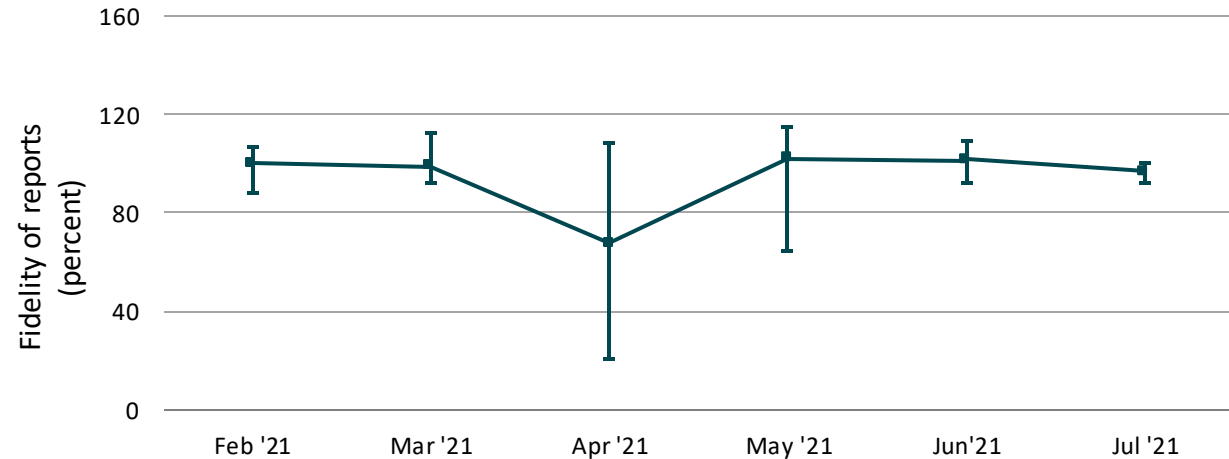Cuamba   Gondola   KaMavota   Magude   Matutuine   Maxixe   Nhamatanda
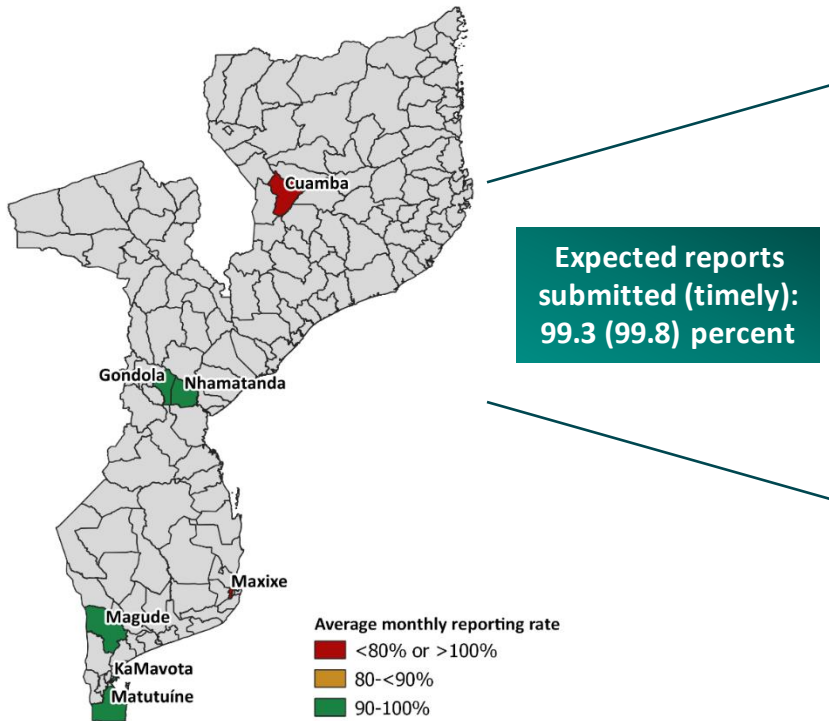
Overall fidelity of directly-submitted health facility data is sufficient, but issues arise from individual health facilities...

- **Fidelity of directly submitted health facility data: Cases* reported in submitted iMISS reports/ Cases* reported in paper reports**
- **High fidelity: iMISS data within +/- 10 percent of paper-report data**

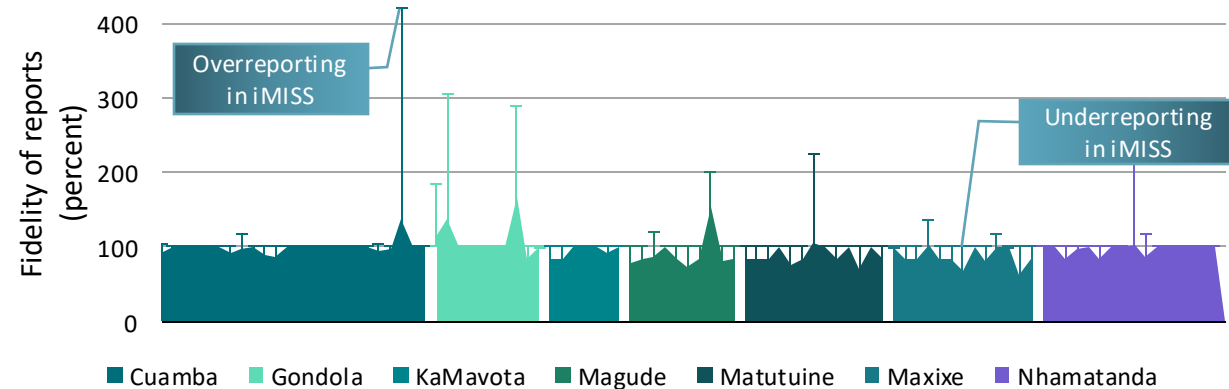**High fidelity reports on system: 85.8 percent**

Average accuracy
- <80% or >120%
- 80-<90% or 110-120%
- 90-110%

* Cases: Clinical cases + RDT confirmed cases + Microscopy confirmed cases

District average of fidelity (min, max)

Health facility average of fidelity (min, max)

Overreporting in iMISS

Underreporting in iMISS

■ Cuamba ■ Gondola ■ KaMavota ■ Magude ■ Matutuine ■ Maxixe ■ Nhamatanda

# Quality of directly-submitted health facility data seems sufficient, but data use of new system needs improvement

Adoption of new systems depends on engagement, use and trust which matures over time

Expected monthly meetings that took place: 69.0 percent
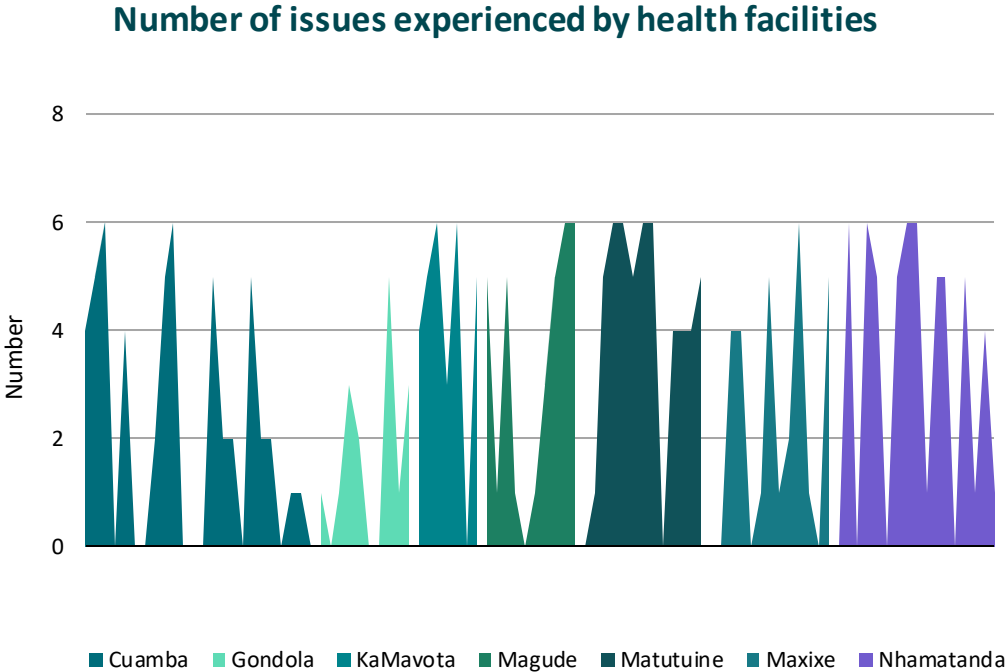**Meetings that took place where iMISS data was discussed: 58.6 percent**

Expected monthly meetings that took place

Percentage

100.0	
80.0	
60.0	
40.0	
20.0	
0.0	

Feb '21   Mar '21   Apr '21   May '21   Jun '21   Jul '21

— Districts where meeting took place   ◆ Meetings where iMISS was discussed

Meetings that took place where iMISS data were discussed, by district

Percentage

Cuamba   Gondola   Kamavota   Magude   Matuituine   Maxixe   Nhamatanda

■ Months where monthly meetings took place
■ Meetings that took place where iMISS was discussed

Reported maintenance issues mainly related to being unable to access tablet and internet connectivity

Reported maintenance issues (N=267)

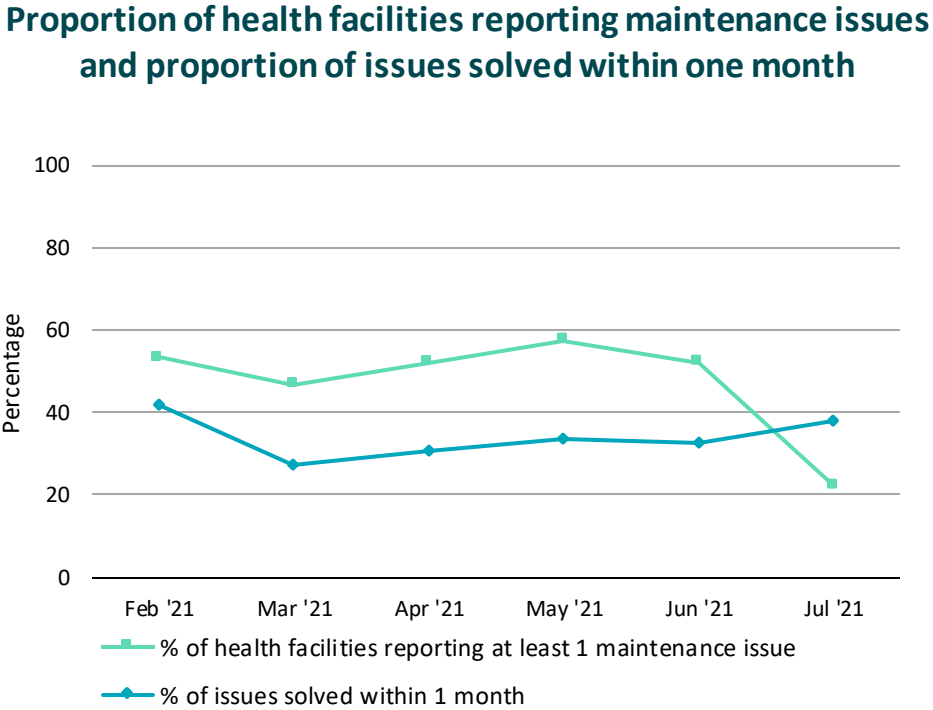Proportion of all reported issues (percent)
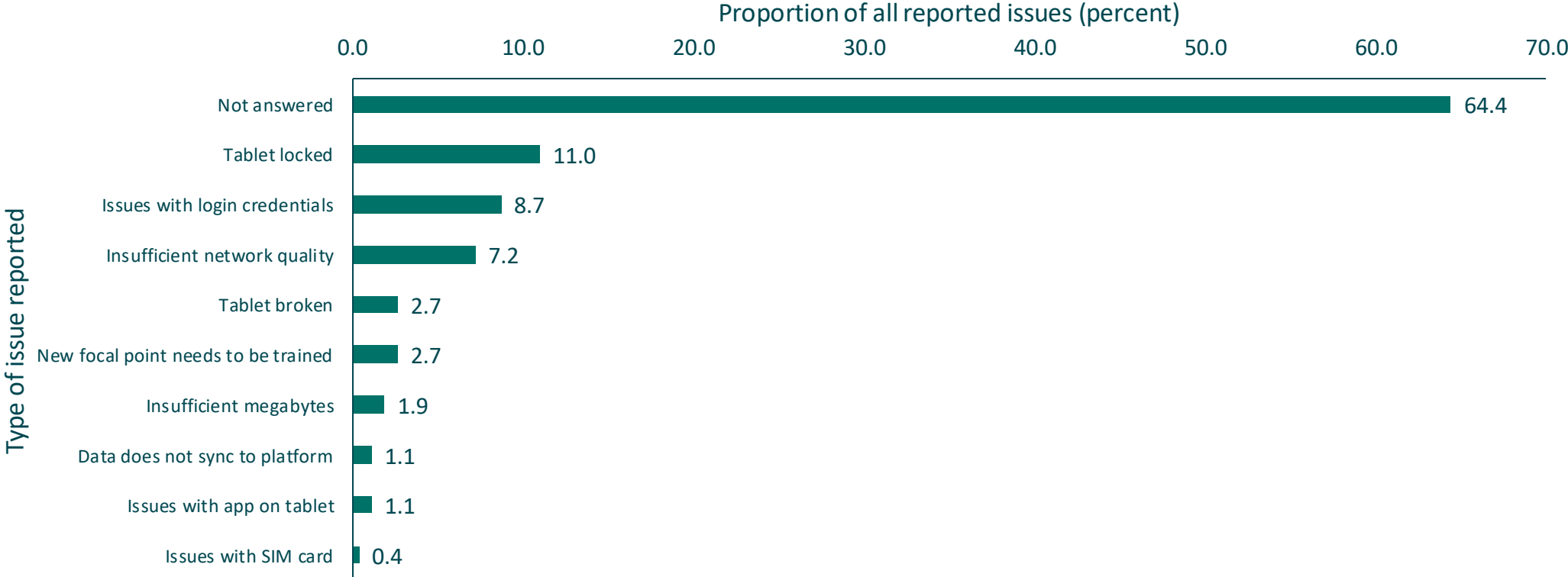
While number of maintenance issues decreases with increasing maturity, resolve time of issues needs improvement

Number of issues experienced by health facilities

Legend: Cuamba, Gondola, KaMavota, Magude, Matutuine, Maxixe, Nhamatanda

Proportion of health facilities reporting maintenance issues and proportion of issues solved within one month

Legend:
% of health facilities reporting at least 1 maintenance issue
% of issues solved within 1 month

# Qualitative sample selected purposively to include malaria focal points from district/health facility level

Characteristics of malaria focal points participating in qualitative component

Characteristics	District level	Health facility level
Participants (n, %)	7 (100)	12 (100)
Rural	4 (57)	6 (50)
Urban	3 (43)	6 (50)
Time in function, years (mean, SD)	1.3 (0.47)	3.9 (1.49)
Education level (n, %)		
University	2 (29)	3 (25)
Medium	5 (71)	8 (67)
Basic	0 (0)	1 (8)

Education level among all participants

5%
26%
68%

■ University ■ Medium ■ Basic
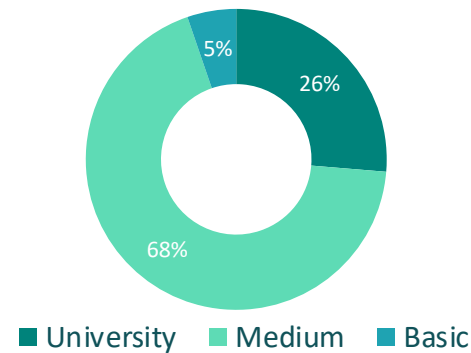
Setting among health facility focal points

50%   50%

■ Urban ■ Rural
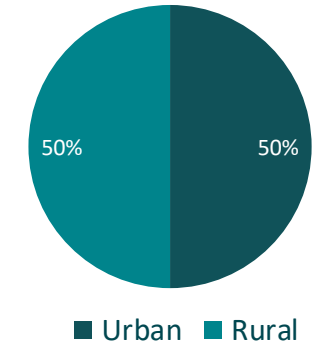
Mean time in function (max) among all participants

10

5

3.1

0
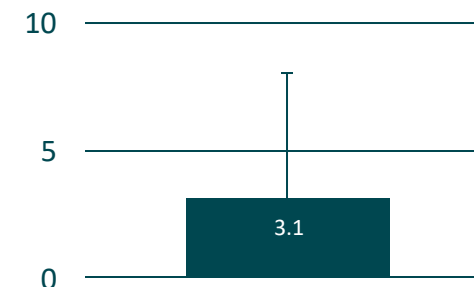
Overall, target users accept the new system…

Users have a good understanding of the purpose and content of iMISS

"An advantage [of using the] iMISS is that we can easily enter the data anywhere and anytime, and allows us to visualise the data, enter, it makes it easier for us to send the data already entered to colleagues at district level without having to move [...]."

"One of the great goals for us as a district is to be able to visualise the data that colleagues are entering at the US level, and we do this monthly, quarterly or even annually. We visualise this through tables, maps, graphs; based on this, we can interpret which of the US is with increase and decrease of cases [...]."

"[F]rom the results, we will already be able to plan according to the problems faced. It also aims to see the quality of the information we have, the quality of the system itself, the quality of the programme. This makes it easier for us to have the accurate and real planning [...]."

There is a gap between acceptance and use of the new system

Users report only irregular discussion of the data on the platform due to tight schedules and other, more important immediate issues

"[…] regarding the frequency we aim to discuss monthly, [however] some colleagues — because they have positions of leadership — have a tight schedule and sometimes we have to look for time to discuss."

"[…] usually it happened monthly. But because of COVID [we only managed to meet] once online and [aim to meet] quarterly."

"[…] we used to do it in the clinical sections, but in this time of COVID we ended up [not discussing this data as frequently]."

Lessons learnt and recommendations

Overall, the platform is effective and well accepted six months after use at health facility level. Next steps need to integrate lessons learnt to allow the iMISS to reach its full potential at providing quality evidence to plan and implement responses before nationwide roll-out to the health facility level.

The platform is effective and well accepted

- Data quality is sufficient, and number of issues decreases over time
- Performance issues are driven by individual health facilities and need to be addressed at that level

Next step
- District health department to ensure low-level performance analysis and targeted supervision visits at health facility level beyond quarterly visits until maturity of system is reached

Technical issues need to be resolved

- Syncing time between HMIS and iMISS needs to be improved
- Dashboards and visuals need improvement to serve user needs

Next step
- Timely workshop between key users, partners and developers to resolve technical issues

Resolve time of maintenance issues needs to be improved

- Issue management workflow is already established, but more timely execution is needed

Next step
- Timely review and simplification of issue management workflow
- Identify focal person at province-level responsible for addressing issues with iMISS in timely manner

Adoption/data use needs to be improved

- Monthly meetings need to take place more regularly and proportion of meetings where iMISS data is discussed needs to increase

Next step
- CHAI to develop guidelines and training on data-to-action meetings and include in refresher trainings

Acknowledgements

We would like to thank all colleagues and partners who contributed to the development and roll-out of the iMISS and this evaluation

- Programa Nacional de Controlo da Malária
- Clinton Health Access Initiative
- iMISS taskforce
- Malaria Consortium
- Saudigitus
- World Health Organization
- Departamento de Informação para a Saúde
- Centro de Investigação em Saúde de Manhiça
- Bill and Melinda Gates Foundation

Thank you

www.malariaconsortium.org