

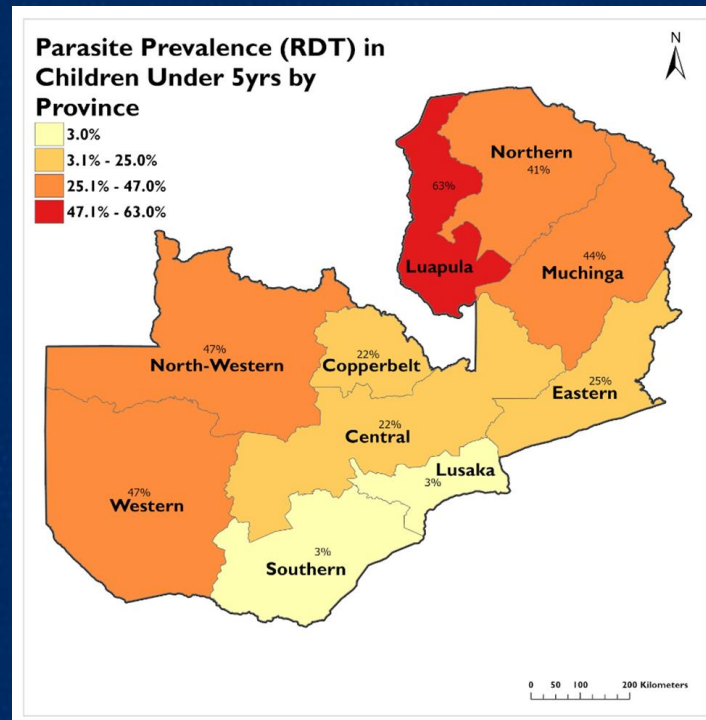
Zambia 2023 ITN Mass Distribution Campaign Digitalization Experiences

February 2024, Nairobi



Zambian Context

- Zambia is malaria endemic. National U5 prevalence of 29% (2021 MIS).
- ITN use is the primary vector control intervention. Nationwide mass campaigns every 3 years, last was 2020 (<5.6M nets)
- The MOH implemented a mass campaign in October 2023 – February 2024:
 - Largest ever, targeted 18M people with >11.6M nets (1 per 2 people)
 - Major partners included the U.S. President’s Malaria Initiative (PMI), Global Fund (GF), and Against Malaria Foundation (AMF).
 - The first campaign to be digitalized



Source: National Malaria Indicator Survey (MIS) 2021

Zambian Context - continued

- Digitalization was a condition for accepting AMF funding for 6 provinces
- The MOH embraced this innovation as a best practice for adoption in all 10 provinces.
- Paired Community-Based Volunteers (CBVs) conducted door-to-door registration and distribution. One CBV captured data with a smart phone, the other with a printed register. (Figure)
- In brief, the digitalization process involved procurement of a data server, mobilizing over 10,000 smartphones/tablets, digitizing the household registers using DHIS2 Tracker, and training and deploying CBVs and supervisors.



(Photo: PMI Zambia)

Challenges Encountered Prior to Digitalization

Previous ITN campaigns faced numerous challenges with paper registers, such as:

- Manual assignment of unique household IDs
- Missing data
- Poor handling of paper registers
- Illegible text / handwriting
- Miscalculation of ITNs required at health facility
- Limited technical assistance provision - could only be provided onsite
- Time consuming manual data entry of data from paper to computers
- Late availability of data for evidence-based decision making at all levels
- Lack of data validation during data entry

Synopsis of the Digitalization

Preparation

- Learning from other countries (e.g., Senegal, AMF)
- Workplan, budget development & partner mapping
- Mobilization of 10,500 smartphones/tablets and accessories
- Printing of paper registers (used as backup)
- Customizing ITN registers into electronic formats (DHIS2 Tracker)
- Training of >27,000 community-based volunteers (CBVs)
- Pilot conducted in 6 districts

Household Registration

- CBVs deployed in pairs (one CBV with the smartphone or tablet; the other with a printed register for backup)
- Data collected during household registration: Physical address; GPS coordinates (autogenerated by the tool); name of household head; number of persons and sleeping spaces; number of ITNs required (auto calculated by the tool)
- MOH supported by PMI provided technical assistance to districts, facilities and CBVs.

ITN Distribution

- CBVs deployed in pairs (as during registration)
- CBVs collected ITNs from health facilities; traced households in the communities using the smartphone/tablet; checked number to be distributed; issued the ITNs
- Upon issuance of ITNs to households, CBVs mark ITN distribution process as 'Complete' in devices and backup registers, and synchronized data to the server.

Data Integration & Visualization

- Developed DHIS2 dashboards for progress monitoring at various levels
- Data visualized in charts and tables for tracking progress, accountability, management decisions (resolving bottlenecks, etc.)
- Data from the digitalized processes triangulated with data from the paper registers

Technical Highlights

- DHIS2 selected over Reveal and Open Data Kit (ODK) due to its visualization capabilities, familiarity, and out-of-the-box configurability.
- The DHIS2 tracker was accessible to users both online and offline modes
- Auto assignment of unique household IDs by the system instead of CBVs doing it manually
- Integrated GIS capabilities to capture GPS coordinates of houses during registration
- Tracker configuration done on a development server. Dummy usernames and villages for testing and training.
- Data was captured at village level. Over 79,000 villages (Organizational Unit Level 6) were loaded against an existing hierarchy and about 19,000 data collector User Accounts.
- All metadata configuration was done at national level include accounts creation

Achievements/Best Practices

- Successfully digitalized the ITN campaign. Over 3 million households registered and over 11.3 million nets distributed
- Enabled overall monitoring and supervision of household and distribution data regardless of location. Prompt feedback was given to lower levels, e.g. through WhatsApp groups
- Supported over 10,000 CBV users simultaneously at full operating capacity without compromising performance.
- Maintained at least 90% system uptime.



***Photo:** Mr. Edwin Mteba from NMEC explaining to the CBVs in Kasama District how to resolve the technical challenge experienced when attempting to register a household for the first time.*

Achievements/Best Practices - Continued

- Political will from the government and active participation of all partners.
- Through training and field experience, built capacity at Provincial, District, Facility and Community levels in digital tools and data capture.
- All logistics and commodities were mobilized (funds, cell phones, training material and registers), although delays occurred in some instances
- MOH and its partners stepped up monitoring, troubleshooting, and partner coordination to address most of the issues onsite and accelerate the campaign.
- Once data capture has been completed, post-campaign assessments are expected to have enhanced transparency and accountability.

Challenges (I): Delays to Campaign Progress

The campaign ran 3 months behind schedule, into rainy season. Attributable in part to digitalization. Throughout, roughly 20% of CBV data failed to upload to DHIS2. Management decisions had to be made using data from printed registers.

Causes of delay included:

- Late procurement or outsourcing of devices by MOH and other govt departments
- Delays in loading data bundles by Mobile Service Providers
- Poor or no internet connectivity in rural locations
- Devices not sufficiently charged to support a full day's work
- DHIS2 tracker workflow too complicated for CBVs, leading to skipping of critical steps.
- Release of new version of the DHIS2 capture app in mid-campaign
- DHIS2 limit on number of events downloadable affected distribution in some instances

Challenges (2): Other Issues

- Low GPS accuracy affected correctness of household positions.
- Inadequate technical skills at district level to fully support facility and community levels.
- Significant extra costs (e.g. for procurement of devices, training, and technical support).
- Difficulties in establishing a daily work target for CBVs due to geographical and population distribution dynamics. Some areas are vast with spaced households while others are densely populated.
- Database grew to over 100GB, making it difficult to backup regularly.



Photo: PMI

Lessons Learned and Recommendations

General: The Zambian MoH and partners see digitalization as the way of the future and expect to reap rewards of improved efficiency in future campaigns. Thus, the main benefits from the 2023 campaign are the many lessons learned, the best practices established, and the robust partnerships forged.

Build **local staff IT capacity** in the districts, training them to troubleshoot and resolve IT issue without relying on central level staff.

Conduct a **pilot** to test device functionality, battery capacity, data synchronization, digital forms, etc. Test the data servers' capacity to handles increased data and user volumes.

Develop a **comprehensive budget and realistic timeline** that anticipates all costs, including all necessary accessories transportation of devices to the sites, and redeployment after the campaign. Include high capacity power banks to permit full work days in the field.

Lessons Learned & Recommendations *–continued*

Plan to **minimize data transmission bottlenecks** in rural areas. The longer data stays on devices, the more challenging it is to sync up to the server. Devise plans for reaching places that are not covered by internet. For example:

- Periodically collect devices from CBVs and synchronize data.
- Login all devices into the production server in advance on behalf of the CBVs during the district-level TOTs, where internet connectivity is typically better.

Prepare **strong training materials and job aids**:

- Develop a Troubleshooting manual: After the pilot, a comprehensive troubleshooting manual was developed to address commonly faced challenges with clear screenshots of issues.
- Create Short Explainer Videos: The provincial, district and facility levels are trained on the digital tool. However, it's common for them to forget. Short explainer videos covering specific areas of the data collection greatly helps the remember what to do.
- Create CBV-friendly User Manuals and SOPs on the data collection tool for sharing with CBVs.

Create **WhatsApp groups** for wide sharing of best practices and addressing challenges as they arise.

Quotes from participating teams...

"The introduction of digital technology has marked a significant turning point for the district. Now, with digital tools at our disposal, we can plan with precision, using real-time data to ascertain the exact quantity of Insecticide-Treated Bed Nets (ITNs) required."

**-Mr. Billy Longwe, District Health Information Officer (DHIO),
Lumezi District Health Office,
Eastern Province.**

"The advantage of a digital system is that it offers accessibility from any location, eliminating the need for a specific physical location to access data, unlike paper-based systems where data access is limited when one is away from the office. Furthermore, digital systems facilitate data analysis, a task that used to be challenging in the past, enabling the creation of graphs and visualizations."

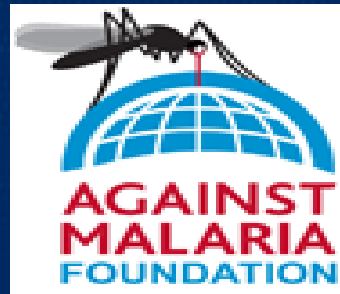
"In addition, if data fails to meet data quality aspects, it is automatically flagged for review, in contrast to the past when data could be entered without validation, regardless of its accuracy."

**-Dr. Evans Phiri, District Health Director (DHD)
Chipata District Health Office,
Eastern Province.**

THANK YOU



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