

Lessons in Health Information System Strengthening

What Worked in the Democratic Republic of the Congo

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ABBREVIATIONS

COE	centers of excellence
DRC	Democratic Republic of the Congo
HIS	health information system
M&E	monitoring and evaluation
NMCP	National Malaria Control Program
PMI	President's Malaria Initiative
RDQA	routine data quality assessment

INTRODUCTION

Since 2014, MEASURE Evaluation has supported the National Malaria Control Program (NMCP) of the Democratic Republic of the Congo (DRC) to streamline and improve malaria data collection, reporting, management, and use, at all levels of the health system. Our approach prioritized building local capacity within nine provinces targeted by the President’s Malaria Initiative (PMI). It was driven by the need to intervene where data are generated, to promote good-quality data that could be used to make policy and service delivery decisions.

Our support has contributed to the following improvements:

- Rollout of the electronic routine health information platform, DHIS 2, in all 178 health zones in nine PMI-targeted provinces
- More than 400 staff trained at the national, provincial, health zone, and health facility levels in areas such as monitoring and evaluation (M&E) and the collection, reporting, and analysis of data
- Development of HIS management resources such as the NMCP’s strategic and M&E plans, malaria M&E guidelines, and data collection tools
- Development of nationally validated indicators and an NMCP central database, both of which are integrated in DHIS 2
- Establishment of 77 centers of excellence (COEs)¹ in three PMI provinces
- Implementation of (1) supportive supervision visits at the health facility, health zone, and provincial levels; (2) establishment of the MEASURE Evaluation Routine Data Quality Assessment (RDQA) Tool as a primary method to assess quality of routine data at the health zone and facility levels; and (3) data review meetings at all levels of the health system
- Improved routine data timeliness and completeness at the health facility (COEs) and provincial level (PMI targeted provinces)
- Development of M&E technical working groups and a malaria task force at the national and provincial levels to coordinate M&E and surveillance activities, address service delivery priorities, and improve data quality

Because MEASURE Evaluation Phase IV is coming to a close, we sought to document the outcomes of our work with the NMCP, by interviewing staff at the national, provincial, health zone, and health facility levels. The objective of this document is to summarize lessons learned through this data collection effort and highlight effective health information system (HIS) strengthening interventions and their outcomes in the DRC.

¹ Selected health facilities in the provinces of Haut Katanga, Sud Kivu, and Kasai Central received financial and technical resources to access and use DHIS 2, and model best practices for improved malaria data collection, reporting, management, analysis, and use in their geographic area.

METHODS

In December 2018, an independent consultant conducted 10 interviews with health system staff at the national level, provincial offices (division provinciale de santé [DPS] health zone teams (*équipes cadres de la zones de santé* [ECZS]), and COE health facility staff. Interviews included questions about engagement with MEASURE Evaluation, any trainings attended, perceived facilitators of a strong HIS, and barriers to continuously improving the HIS. The interviews were recorded through in-depth notes in French, and the notes were translated into English and analyzed with thematic coding. The analysis of the findings yielded three primary themes capturing how MEASURE Evaluation's support of the NMCP built staff capacity at all levels of the health system and led to perceived improvements in HIS management and performance.

FINDINGS

1. **DHIS 2 access at all levels of the health system has facilitated the building of capacity in data collection and reporting.**

Through financial and technical assistance for the deployment of DHIS 2 and related staff training, MEASURE Evaluation supported the NMCP to promote HIS strengthening in DRC, particularly in data collection and reporting. Staff reported that the availability of DHIS 2, in conjunction with appropriate training on its use, has resulted in increased data collection, reporting, and management capacity at all levels of the health system, including the health facility level, where health services are delivered and data are generated.

Since 2015, MEASURE Evaluation has supported the NMCP to integrate malaria data into the DHIS 2 by deploying the platform, integrating malaria indicators, and training over 250 staff members at all levels of the health system. The DHIS 2 is now available to report and verify malaria data at 77 health facilities (COEs),² 100 percent of health zones and provincial offices in nine PMI-supported provinces, as well as at the national level. Users at all levels report having access to dashboards to review and analyze malaria data.

At the health facility level, access to DHIS 2 transformed how data are collected, reported, and analyzed. One COE staff member remarked:

Before, there was very poor data capturing/recording. After the installation of DHIS 2, different registers were being correctly kept; [the] software was assisting with the collection and coding of data; and we are able to analyze the data using the built-in graphs.

Health facility access to DHIS 2 also affects higher levels of the health system. Previously, when COEs did not have computer access, appropriate tools, or training to collect and manage their own data, data collection was often disorganized, forcing staff at the health zone or provincial level to enter data for multiple health facilities. This was a time-consuming task that was often left incomplete, which affected the quality and volume of available data. In provinces and health zones with COEs that have the capacity to accurately collect and enter their own data, higher levels of the health system can better leverage their time to oversee and practice data quality assurance, assess data trends, and present and act on health delivery needs. A health zone staff member elaborated on the improved data reporting process in health facilities:

[It is] no longer a purely paper-based system. [It has changed] to one in which we have an available data base which allows access. Reporting is 100 percent on time now. Also, for facilities that have DHIS 2, we can analyze multiple facilities at the same time, it reduces the time the zone needs to spend doing analysis.

NMCP staff at the national level observed that the rollout of DHIS 2 to all levels increased the availability and accessibility of data. A senior NMCP staff member commented, “with DHIS 2, data can be captured and analyzed in real time and with password access, the information can be retrieved from anywhere at any time,” which was not possible in the previous information system, GESIS. Wider access to DHIS 2 has improved the NMCP’s access to more complete and accurate data, which is essential for identifying program-wide data trends or inconsistencies. A senior staff member from the NMCP’s M&E unit remarked on the increased efficiency and accuracy of the HIS since the introduction of DHIS 2:

² In addition to DHIS 2 access, health facilities selected as COEs receive office and computer supplies, Internet, data collection tools, training, and additional technical assistance for data quality assurance.

Before DHIS 2, reviewing the program performance was very laborious/time-consuming and certain types of analyses—comparing facilities, trends—were impossible. Now, with DHIS 2, we know the data is of better quality; there is one data base and so fewer data errors.

Although the DHIS 2 rollout has expanded noticeably within all levels of the DRC’s health system, access is not yet nationwide. In facilities with access to DHIS 2, inconsistent electricity or Internet connectivity is a barrier to consistent and complete data reporting. A senior NMCP staff member elaborated:

Infrastructures in some places . . . there is not telephone and there is either no [Internet] or very unstable/weak Internet, [which] makes transmission of data very difficult. Sometimes data can only be sent at night or by traveling to another location.

Additionally, because of limited training events, which require significant technical and financial support from implementing partners such as MEASURE Evaluation, a fraction of current staff members has received formal training on how to use DHIS 2. Despite these limitations, data timeliness and completeness has improved dramatically in the nine PMI provinces where DHIS 2 is available,³ which supports the case to scale it nationally.

2. Training and engaging staff at the provincial and health zone level, to oversee data quality assurance, and the health zone and health facility levels, to participate in data quality assurance, has resulted in increased capacity to produce more timely and complete routine data.

In 2015, MEASURE Evaluation began introducing data quality assurance practices, including supportive supervisions visits and RDQAs to health zones and COEs. Data quality assurance practices are replicable processes to assess and improve overall data quality that can be used at different levels of the health system. They are a key component of HIS strengthening and one that senior NMCP staff remarked did not receive donor attention prior to the NMCP’s collaboration with MEASURE Evaluation. Engaging staff and building their capacity through training and “learning by doing”—at the provincial and health zone level to oversee data quality assurance and health zone and health facility levels to participate in it—has enabled health zones and health facilities to make corrective actions, based on feedback, to improve data quality. This feedback loop for data quality, whereby data are reviewed, issues are identified, and remedial action steps are developed and put into place, has led to more timely, complete, and accurate data being collected and reported in DHIS 2.

The effect of integrating data quality assurance practices within the COEs was quickly noticed by trained staff, who acknowledged increased awareness of the importance of routine data quality checks in order to identify and address potential data quality issues. A COE staff person said:

Before [we were trained], we were just going through the motions—collect, summarize at the end of the month, and send it along—no checking for data quality and no analysis of the data. Now, we look at data and subtotal it on daily basis, reserving only the coding and final entry for the end of the month.

³ Between 2015 and 2018, in the nine PMI-targeted provinces, routine data timeliness increased from 9 percent to 79 percent, and routine data completeness increased from 25 percent to 94 percent. Between 2016 and 2018, among the first 20 COEs that were established in 2016–2017, routine data timeliness increased from 32 percent to 98 percent, and routine data completeness increased from 60 percent to 100 percent. Between the first and third quarters of 2018, among 57 new COEs established in 2018, routine data timeliness increased from 25 percent to 86 percent, and routine data completeness increased from 27 percent to 100 percent. Source: MEASURE Evaluation (2018). *Improving Data Quality through Implementation of Centers of Excellence in the Democratic Republic of the Congo*. Chapel Hill, NC, USA: University of North Carolina at Chapel Hill. Retrieved from <https://www.measureevaluation.org/resources/publications/fs-18-319a>

A provincial staff member also elaborated that, as a result of training, health zone staff are now better equipped to follow up with them with data quality checks:

These skills have been of major added value. It has allowed the senior zonal health team to improve the way they analyze data. It has helped to reinforce follow-up in the health facilities.

A staff member from another COE described how participating in RDQAs changed the facility staff's understanding of the data they produced:

[We look at] patient treatment, [and] follow the patient through the system. The fact that numbers for the same event that are recorded on forms and registers have to be the same ones that we find in the DHIS 2. There are always things we gain that improve our data as a result of an RDQA.

Respondents valued supervision visits, and reported gaining the ability to determine real-time data quality solutions with facilities and health zones. A COE staff member made the following remark about supervision visits:

Since we do the data analysis as part of the supervision visits, it lessens the work necessary for follow-up. We correct data directly during the visits, if we have questions, we can talk to the person involved to understand.

A health zone staff member responsible for overseeing supervision visits with health facilities elaborated that RDQAs “now allow us to know the situation at the level of the health facilities since they have all the data; we can identify and address any data discordances/inconsistencies with the health facility staff.”

The ability to identify data quality issues has also granted the ability to take corrective actions to rectify them. A provincial staff member noted that action plans developed following each RDQA and supervision visit allow the facilities to agree to and follow up on remediation steps to resolve persistent data quality problems. For example, one COE was alerted to an issue with the management of rapid diagnostic tests. A COE staff member explained:

The pharmacy data was different than what had been recorded centrally. There were [rapid diagnostic] tests that were being used but not registered. There were several points at which the tests could be dispensed, so there was no centralization of the data.

To address this, the COE staff decided to “centralize the use of the rapid diagnostic tests so we could better control the stocks.”

Data quality assurance practices have improved, but there are still limited resources to implement them and carrying out follow-ups presents a consistent challenge. A health zone staff member remarked that among barriers to more consistent implementation of data quality assurance were “insufficient means to do supervision visits, resistance of some agents to corrective remarks, and power/energy issues—no power means agents have to travel to work with DHIS 2 and report data.” Given the documented benefits of data quality assurance in promoting data quality improvement and providing the ability to take corrective actions, it is an HIS intervention that should continue to be prioritized among implementing partners.

3. Data review mechanisms at all levels of the health system provide opportunities for stakeholders to review, validate, and share data to make key decisions.

With financial and technical support from MEASURE Evaluation, all levels of the health system have been able to successfully establish and regularly convene stakeholders to review data through data review meetings and indicator harmonization workshops. Data quality review mechanisms allow for levels of the health system to review and validate data, develop information-sharing products, and provide a setting to make data-

informed decisions on a variety of issues, including policy and service delivery. Often, these mechanisms include multiple stakeholders from ministry programs and implementing partners, and involvement of these stakeholders facilitates more participatory and effective decision making.

COEs convene monthly and weekly data review meetings before finalizing their data for entry and reporting in DHIS 2. A COE staff member reported that data review meetings often focus on dashboard data from DHIS 2, priority indicator data, and any other data that has been highlighted in DHIS 2. A health zone level staff member described data review meetings that took place on a monthly, biannual, and annual basis: “Data that is discussed includes number of cases, treatment, drug stocks. We present with tables, dashboards, summary information on flip charts.”

At the provincial level, data are reviewed quarterly through the M&E technical working group (TWG) and malaria task force and twice a year through provincial semiannual review meetings. A provincial staff member remarked that these meetings were critical to taking action based on data trends or inconsistencies:

We more closely follow evolution of the health situation, trends, take action more quickly, [and] to better coordinate [with stakeholders]. [What we learned from participating in this TWG] is the need/ advantage of being able to look comprehensively at the health situation in the province, and effectiveness, efficiency of good coordination.

At the national level, in addition to regularly scheduled meetings with various stakeholders (such as the national-level M&E TWG and malaria task force) a senior staff member from the NMCP’s M&E unit said that the unit now convenes *ad hoc* meetings to address any additional needs. The staff member elaborated:

When there is likely an epidemic occurrence—when there is a double spike of Ebola with increased reporting of fevers/ malaria. Data are also reviewed/ discussed during quarterly coordination meetings with partners. Key indicator data from the various technical programs plus administration and management aspects [are discussed].

Consistent, frequent data review meetings to assess trends and address discrepancies are essential for actors at all levels of the health systems, and these meetings allow health staff to make informed service delivery recommendations. At a COE, a staff member described how a data review meeting revealed that thick smears were still used to confirm malaria cases instead of the rapid diagnostic tests, a method that is faster and requires fewer lab materials, and explained the actions to address this issue:

[We] instructed [staff] on the use of the rapid diagnostic tests. We looked at data for thick smear and rapid tests, [specifically] suspected malaria cases, rapid tests conducted, thick smears performed. The recommendations were two things: definitions of simple malaria versus serious malaria were clarified for [health facility] personnel; and rapid diagnostic tests were being properly prescribed and used. The result was that going forward the practice of doing thick smears was practically eliminated.”

At the national level, senior NMCP staff described how a data review allowed for a targeted mass treatment of malaria in the province of Kivu Nord:

Since that is also part of the area affected by the Ebola epidemic, it was important to investigate. By being there early, [NMCP] teams were able to begin implementing responses, including mass treatments for malaria.

Although data review meetings have demonstrated their long-term benefit to HIS, many are still financially supported by implementing partners, such as MEASURE Evaluation. When discussing the NMCP annual review meeting, one senior NMCP staff member expressed disbelief that it would have happened without MEASURE Evaluation support, bringing to light the need to continually secure sustainable future funding mechanisms, either within the NMCP or from other implementing partners.

CONCLUSION

Findings from this qualitative data collection activity demonstrate how respondents at the health facility, health zone, provincial, and national levels of the DRC health system perceive MEASURE Evaluation's contributions to facilitate a stronger HIS. The following three main lessons emerged: access to DHIS 2 supported capacity building in data collection and reporting; the capacity to oversee and participate in data quality assurance practices facilitated more timely and complete routine data; and the establishment of data review mechanisms at all levels of the health systems provided opportunities for stakeholders to make key data-informed decisions. Each of these contributions have resulted in improved data quality and data use, thus improving overall HIS performance.

This data collection effort involved the following limitation: a small convenience sample size was used, and as a result, the findings may not be representative of the health system recipients of MEASURE Evaluation support in the DRC.

Although respondents noted that some challenges remain, the milestones described have been observed at all levels of the health system. These observations demonstrate the effectiveness of these HIS interventions and that these approaches represent best practices that could be adapted and implemented in other country contexts.

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