Data Use in the Democratic Republic of the Congo's Malaria Program

Results from Seven Provinces

December 2017

USAID
FROM THE AMERICAN PEOPLE

MEASURE Evaluation

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CONTENTS

FIGURES

TABLES

ABBREVIATIONS

DDU	data demand and use
DPS	Division Provinciale de la Santé (Provincial Health Division)
DRC	Democratic Republic of the Congo
DSNIS	Division du Système National d'Information Sanitaire (Division of the National Health Information System)
M&E	monitoring and evaluation
NMCP	National Malaria Control Program
PRISM	Performance of Routine Information Systems Management
SNIS	Système National d'Information Sanitaire (National Health Information System)

BACKGROUND

Evidence-informed decision making is essential for the success of health systems, programs, and services. Global commitments to improving health systems and outcomes have led to improved monitoring and evaluation (M&E) and health information systems, thus providing an opportunity to use data for decision making and not simply for reporting.

Overall, the relationships among improved information, demand for data, and continued data use constitute a cycle that leads to improved health programs and policies. Improving data demand and use (DDU) is necessary to improve the effectiveness and sustainability of a health system.

MEASURE Evaluation, which is funded by the United States Agency for International Development and the United States President's Malaria Initiative, undertook an assessment to understand the data use context for those working in the Democratic Republic of the Congo (DRC) in the National Malaria Control Program (NMCP) at the provincial and health zone levels in seven provinces (Bukavu, Haut Lomami, Kasai Central, Kasai Oriental, Lomami, Sankuru, and Tanganyika), as well as implementing partners working with the NMCP at the provincial level. The purpose of this assessment was to identify how data are currently being used for decision making and how future interventions can be designed to promote the demand for and use of data in decision making.

METHODS

This mixed-methods assessment was based on MEASURE Evaluation's conceptual approach and logic model that provides guidance on best practices in data-informed decision making and data use. The model looks at three determinants of data use: technical, organizational, and behavioral. These determinants are adapted from the Performance of Routine Information Systems Management (PRISM) framework developed by Aqil, et al. (Aqil, et al., 2009). The assessment used four tools to assess an organization's data use capabilities, as well as key barriers to and facilitators for developing and sustaining a culture of data use.

The **semi-structured interview guide** contained 15 open-ended questions that covered eight themes: (1) assessing and improving the data use context, (2) engaging data users and data producers, (3) improving data quality and data availability, (4) identifying information needs, (5) building capacity in data use core competencies, (6) strengthening the organization's DDU infrastructure, (7) monitoring and evaluating, and (8) communicating DDU successes. These eight themes make up the MEASURE Evaluation DDU conceptual framework, which describes the "specific interventions that can improve the demand for and use of data from all health information systems." The conceptual framework "demonstrates how information systems improve the other health system building blocks [and] outlines the underlying assumptions and activities that are necessary to achieve the desired outcome of increased data-informed decision-making" (Nutley, 2012).

The **self-assessment survey** looked mostly at the technical and behavioral determinants of data use. First, it asked about the perceived skills of data users and producers in data use core competencies. It then examined these competencies with a short test that demonstrates the actual skills of data users. The self-assessment survey was designed to identify concrete areas that need to be addressed to build the technical capacity of an organization. The tool also asked questions about people's perceived notions of organizational capacity where they work.

The **group assessment tool** asked questions about the organizational determinants of data use, specifically the existence of data use guidance documents, the regular use and communication of information in decision making, and the existence of supportive supervision and feedback.

The **site visit checklist** served as additional evidence to support the group assessment tool by having interviewers check to see whether the guidelines, procedures, and information products mentioned in the group assessment are present in health facilities.

Together, these four tools provided a complete picture of the eight components of the DDU conceptual framework, as well as the three determinants of data use from PRISM, in order to understand the data use context of an organization, along with the barriers to and facilitators for institutionalizing a culture of using data in the decision making process.

Semi-Structured Interviews

The team conducted qualitative interviews with 22 informants using a semi-structured interview guide. Respondents were from the Division Provinciale de la Santé (DPS, or Provincial Health Division) in each province, as well as the NMCP, health zones, and implementing partners. Participants represented two levels of the health system (provincial and health zone), and they included representatives from seven provinces: Bukavu, Haut Lomami, Kasai Central, Kasai Oriental, Lomami, Sankuru, and Tanganyika.

The MEASURE Evaluation team asked respondents about the use of data in decision making, barriers to and facilitators for data use in their department or organization, organizational support for facilitating data use, data flow and data review procedures, technical capacity and assistance for data use, and data-communication guidelines and procedures. Interview facilitators took notes to capture direct quotes and summary responses from participants. A codebook was created and applied to each interview to identify and categorize responses. Codes were developed based on the questions and themes in the interview guide, and the data were organized based on how they corresponded to each code. Each interview report was initially read for data content and quality. Codes were applied during a second reading.

The team manually analyzed coded text using Microsoft Excel software for frequency, the intensity of discussion, and context. After coding the data, we looked for common patterns and organized the responses around themes, which provided answers to the research questions.

Self-Assessment Survey

A self-assessment survey collected data on skills and confidence in data analysis, interpretation, and use. The sample of respondents consisted of 72 people (32 provincial-level respondents, 25 health zone-level respondents, and 15 implementing partner respondents). The respondents were a mix of data users and data producers.

Respondents were asked to rate their self-efficacy and confidence in performing a variety of tasks related to using data in decision making on a scale of 1 to 4. A rating of 1 indicated no confidence, and a rating of 4 indicated high confidence. Table 1 shows the full list of tasks assessed.

Table 1. Self-assessment survey: Assessing confidence to perform tasks

Tasks	
1	Understanding the information needs of your organization
2	Organizing a meeting with decision makers to discuss data for a program review
3	Creating graphs that effectively communicate health data
4	Explaining M&E findings and their implications for programs
5	Using data to identify program gaps and set targets
6	Calculating means and medians correctly
7	Communicating variation of reported numbers from a target
8	Calculating percentages and rates
9	Accessing health data as needed for program management
10	Using data to make decisions about health programs

Respondents were also asked questions regarding the use of data in their organization, including the frequency of data review meetings, the allocation of resources based on the review of data, the usefulness of indicators in decision making, and the existence of official records based on data review meetings.

Group Assessment

Two DDU group assessment workshops were conducted with health zone, provincial, and implementing partner-level representatives using the DDU group assessment tool. The group assessment tool is a modified version of the 12 Components Monitoring and Evaluation System Assessment Tool, developed by the Joint United Nations Programme on HIV/AIDS (UNAIDS) to assess the essential components of an M&E system and create action plans to improve them for organizations working in the HIV and AIDS sector. MEASURE Evaluation adapted and expanded the data use component of this tool and

facilitated a stakeholder meeting with representatives from the NMCP and the Division du Système National d'Information Sanitaire (DSNIS, or Division of the National Health Information System) from the national level and all three provinces.

During each workshop, participants formed 13 groups based on their location and division. There were two groups from each province except for Tanganyika, which had one group. Each group reviewed its organization against 16 criteria related to data use and then classified the criteria as completely present, partly present, or not at all present. Table 2 provides the full list of criteria.

Table 2. Group assessment data use criteria

Criteria	
1	Data use plan or strategy exists.
2	Stakeholder information needs have been assessed.
3	Information products are regularly disseminated to those who collect or report data.
4	Information products are regularly sent to a wide variety of other stakeholders.
5	Information products meet stakeholders' information needs.
6	Information products are used in decision making.
7	There are guidelines to support the analysis, presentation, and use of data.
8	Data-review meetings are held quarterly at the sub-national level.
9	Directors and district medical officers request information before and during data review, planning, or program costing meetings.
10	In the last 12 months, the quality of data available has been sufficiently adequate for decision making.
11	M&E staff participate in program management and planning teams.
12	Stakeholders have access to data and information products in the public domain.
13	Directors and district medical officers use the health management information system for day-to-day management activities.
14	Supportive supervision guidelines have been defined.
15	Supportive supervision has been conducted in the past six months.
16	Supportive supervision results have been recorded and feedback provided.

Site Visit Checklist

The site visit checklist served as the final assessment tool. The team used this checklist to observe the presence of procedures, activities, and guidance that facilitate the use of data in decision making. Activities were ranked as either completely, partly, or not at all present during the site visit. The purpose of this tool was to validate findings from the other assessments. The MEASURE Evaluation team visited 14 health facilities—two in Haut Lomami, two in Kasai Central, three in Kasai Oriental, two in Lomami, three in Sankuru, and two in Tanganyika.

RESULTS

Program Decisions and the Decision-Making Process

Respondents were asked about the types of decisions they regularly make in their services or programs. Decisions are typically made through a consultative process and informed by data; however, there are no clear plans or systematic strategies for how data are used in decision making.

> "The different programmatic decisions are taken on the basis of the results we obtain in the way the structures work. We analyze the indicators, for example, at the monitoring meeting and we orient the things that do not work."
>
> *—Health zone level respondent*

Decisions are made at the provincial and health zone levels of the health pyramid. Implementing partners also make decisions related to their programs and based on the same data. At the health zone level, decisions are commonly made related to quality of care improvement, programming, supply chain management, planning for service development, and human resource recruitment. At the provincial and implementing partner levels, many of these same types of decisions are made, in addition to decisions around supportive supervision and other M&E activities.

Data Use in Decision Making

Respondents were asked whether and how they used or consulted data to inform decisions about malaria and other health programs. We identified four main domains of decision types: disease surveillance, planning responses to epidemic outbreaks, supply chain management, and compliance with protocols.

Data were rarely used for advocacy, fundraising, or identifying gaps in service delivery. Moreover, most respondents acknowledged limited engagement in the documentation of success stories that involve the use of data for decision making. This could compromise their ability to generate evidence-based strategies for scaling up good practices.

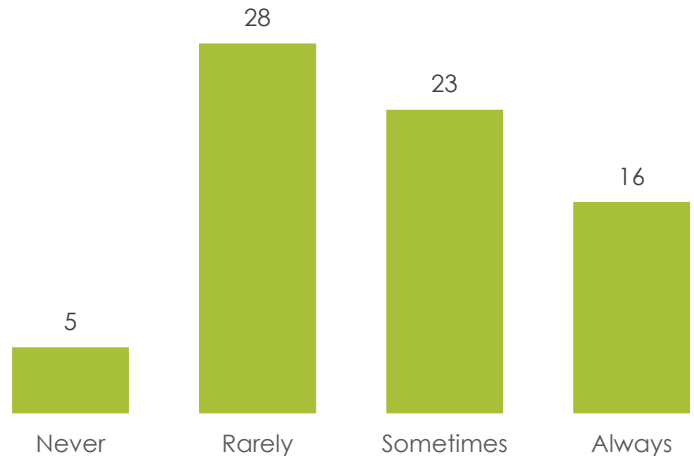
Examples of data use in decision making:

- After analyzing data on bed net distribution, an implementing partner was able to work with healthcare providers to strengthen communication activities, such as advocacy, home visits, and community mobilization, to increase the use of bed nets within Bukavu Province.
- A cholera epidemic prompted Haut Lomami Province to analyze water quality in several health zones. They used these data to work with stakeholders to develop a disease response plan.
- Data on people living with HIV and antiretroviral therapy distribution enables health zones to make decisions about the quantity of specific drugs to order and the quantity that should be sent to each health facility.

Some respondents were able to provide examples of success stories related to the use of data in program implementation. In these instances, the use of data resulted in positive outcomes. For example, in Haut Lomami, documentation of data using during a typhoid fever epidemic led to the dissemination of weekly epidemiological reports and the better mobilization of drugs to combat the epidemic. In Sankuru, documenting a success story on the value of accurate and timely analysis and use of data during a measles epidemic outbreak resulted into better case management of patients and reduced mortality.

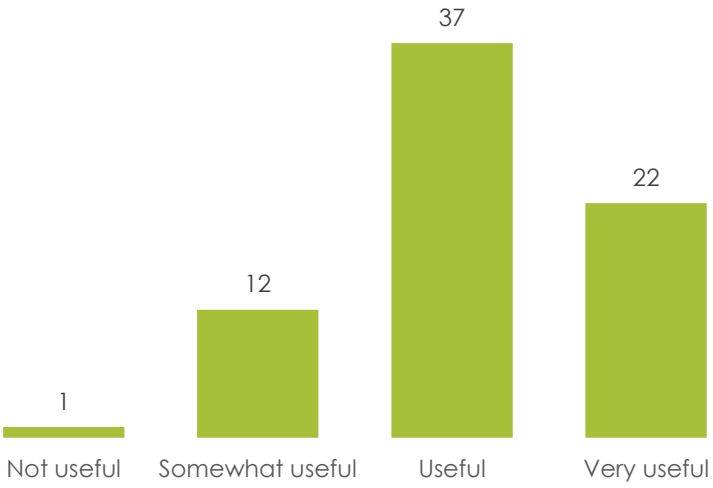
Based on the self-assessment findings, senior managers do not commonly use data to inform resource allocation. Of the 72 respondents, 39 percent (n=28) felt that senior managers rarely allocated resources based on the review of data, and 32 percent (n=23) believed that they sometimes did so.

Figure 1. How often do senior managers allocate resources based on data?



Despite these results, most of the respondents (82%, n=72) felt that program indicators were useful or very useful to senior managers in their respective organizations for planning and decision making.

Figure 2. How useful are program indicators to senior managers when making decisions?



The results from these two questions are confusing and somewhat contradictory. Although data seem to be used in decision making, albeit not systematically, and although respondents believe that indicators are useful for decision making, the majority of respondents believe that data are only rarely or sometimes used in budgetary decisions. It is unclear whether data are less frequently used for decisions strictly related to the budget, whether the lack of systems for using data in decision making makes data use inconsistent, or whether participants' perceptions on data use are different from how data are actually used. Senior managers should prioritize implementing data use systems, policies, and procedures to formalize the process of data use, so that data use becomes more consistent in all areas, including budgeting.

Data Sources and Data Management

According to respondents, the main sources of data for decision making are the Système National d'Information Sanitaire (SNIS, or National Health Information System), which in most cases is DHIS 2; monitoring reports; epidemiological surveillance data; and routine data on service utilization, such as data collected through registers of care for different services. In terms of data collection and management

processes, respondents noted that there are formalized standard processes for everything from data collection through data review and reporting. Data are collected, analyzed, reviewed, and validated through discussion meetings with those involved in the collection process. The data management processes are well outlined, and activities involved differ by level of service provision. The use of standard databases and forms was a common theme; respondents also noted that data were routinely entered in DHIS 2 and that for the most part standard forms are used for data collection.

To support data management, participants noted the presence of DSNIS procedure manuals that describe data collection procedures. At the health zone level, respondents reported the presence of different manuals and registers, epidemiological surveillance guides, policies such as the national malaria control policy, and several other data management guides. They also mentioned the availability of data collection tools in the structures that are supported by the Ministry of Health. In all except one instance, respondents reported the presence of designated staff for data management. Implementing partners noted that data management and analysis are mainly carried out at the provincial level.

During the group assessment, respondents were asked about the presence of guidelines to support the analysis, presentation, and use of data at the subnational and facility level, such as graphs on walls showing cumulative coverage. Each province had two groups respond to the question. Ten groups said that this was completely present, two groups said that it was partly present, and one group said that it was not at all present. The full results are shown in Table 3.

Table 3. Guidelines exist on analysis, presentation, and use of data at the subnational and facility levels

Group	Response
Bukavu 1	Completely
Bukavu 2	Completely
Haut Lomami 1	Completely
Haut Lomami 2	Completely
Kasai Central 1	Partly
Kasai Central 2	Completely
Kasai Oriental 1	Completely
Kasai Oriental 2	Completely
Lomami 1	Not at all
Lomami 2	Completely
Sankuru 1	Completely
Sankuru 2	Completely
Tanganyika 1	Partly

During the site visit assessment, we used a checklist to ask health facilities about the existence of guidelines, standard operating procedures, and protocols on (1) aggregating, analyzing, and manipulating data for each level of the reporting system; and (2) completing data collection forms and tools and reporting data from these forms and tools. Of the 14 health facilities visited, guidelines for aggregating, analyzing, and manipulating data were not at all present at seven facilities, were completely present at four facilities, and were partly available at one facility; this indicator was not applicable to two of the facilities (see Table 4). Regarding policies and procedures on data collection and reporting, these were not at all present in six facilities, completely present at five facilities, and partly present at two of the facilities (see Table 5). The full results are highlighted below.

Table 4. Guidelines, standard operating procedures, and protocols on aggregating, analyzing, and manipulating data are available at health facilities

Facility	Response
Haut Lomami 1	Not applicable
Haut Lomami 2	Not at all
Kasai Central 1	Not at all
Kasai Central 2	Not at all
Kasai Oriental 1	Partly
Kasai Oriental 2	Not at all
Kasai Oriental 3	Not at all
Lomami 1	Not applicable
Lomami 2	Completely
Sankuru 1	Completely
Sankuru 2	Completely
Sankuru 3	Completely
Tanganyika 1	Not at all
Tanganyika 2	Not at all

Table 5. Guidelines, standard operating procedures, and protocols on data collection and reporting are available at health facilities

Facility	Response
Haut Lomami 1	Not applicable
Haut Lomami 2	Completely
Kasai Central 1	Not at all
Kasai Central 2	Not at all
Kasai Oriental 1	Not at all
Kasai Oriental 2	Not at all
Kasai Oriental 3	Partly
Lomami 1	Partly
Lomami 2	Completely
Sankuru 1	Completely
Sankuru 2	Completely
Sankuru 3	Completely
Tanganyika 1	Not at all
Tanganyika 2	Not at all

Although many respondents noted that standardized policies and procedures for data collection, management, analysis, and reporting exist, the mixed results on whether health facilities have these guidelines on hand may lead to issues with data quality. If health facilities are not aware of the official policies on these topics, it is possible that they are following correct procedures, which can lead to issues with the quality of data collected, how they are entered into forms and databases, what schedule they are reported on, and other procedural issues that affect the timeliness, completeness, and accuracy of data collected at the health facility level. It is important that these policies and procedures are not only widely disseminated and available at all health facilities, but also that staff at these health facilities are trained on these procedures, aware of their importance, and following the guidelines.

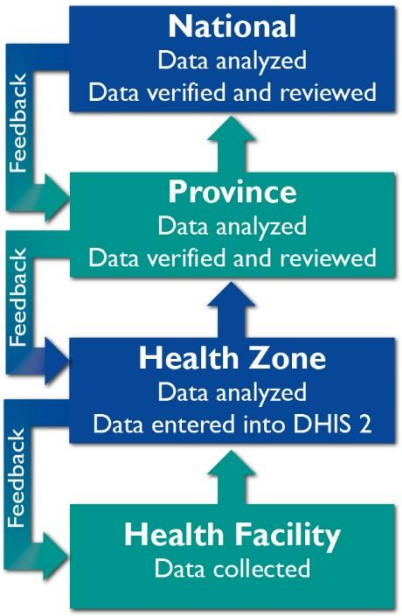
Data Flow Process

Data are collected at the health facility level and entered in data collection tools and forms. These tools and forms are sent monthly to the health zones for review, analysis, and entry in DHIS 2. After entry in DHIS 2, the data are sent to the provincial level for consolidation and further analysis and review with support from the national level. Finally, data are sent from the provincial level up to the national level,

where they are disseminated or archived as determined necessary. At all levels of the data flow process, feedback is supposed to be sent back down to lower levels to address any inconsistencies or errors. In addition, at all levels, designated staff oversee data management. The frequency of sending feedback was not clearly stated by respondents. Inconsistent feedback is a limitation that could compromise data quality improvement initiatives and interrupt the improvement of the data use cycle.

At the implementing partner level, data are collected by the health facilities supported by each project. These data are also entered in DHIS 2 after analysis and review, but based on our interviews, it was unclear how these processes were linked to Ministry of Health processes.

Figure 3. Data management flow and processes



Access to Data for Decision Making

Data are collected through forms and entered in online databases, predominantly DHIS 2. The majority of respondents noted that it was easy to access these data for decision making. Nonetheless, several limitations to data access were highlighted. Some respondents noted that sometimes they need data that were not available in DHIS 2, such as data on finance or on diseases not included in the database. In these cases, users must identify other sources of data, which may mean using parallel information systems or going directly to health facilities for source data. These limitations make some data more difficult to access.

The most notable limitation hindering access to data was the lack of Internet in many health facilities and health zones. DHIS 2 is an online system, and thus an Internet connection is necessary to access the data. When the Internet connection is limited, compromised, or unavailable, data users cannot access the data they may need for decision making. In some circumstances, respondents noted that they also kept malaria data in Excel databases, available offline. Although this is a potential workaround when DHIS 2 is unavailable, it could

> "The malaria data [are] stored in hard [copy] on the forms, in the Excel database, in the [dashboard] then in the DHIS 2. It is easy to obtain malaria data at the health information office level."
>
> —Provincial-level respondent, Tanganyika

also lead to problems with the inconsistency of different versions of data and the creation of confusing parallel systems, leading to extra work and potential data quality issues.

There are also limitations regarding knowledge of how to use DHIS 2. Even if an Internet connection is available, if a data user has not been trained on how to use DHIS 2, then these data will not be accessible to the user. Finally, there are issues with data quality, including timeliness and completeness, of data available in DHIS 2. If data are not reported on time, or not reported in full, then they will not be available when needed for decision making.

Institutional Support for Data Collection and Use

Policies and Guidance

The presence of guidelines, policies, or procedures regarding the use of data in decision making is a crucial step in ensuring an institutional culture of data use. Official data use policies not only provide guidance for both data users and data producers on how, why, and when they should use data in decision making, but they also send a message that an organization or institution values and requires the use of data in decision mkaing.

> "[Data use] guidelines are only verbal but not written in a document."
>
> —Health zone-level respondent, Tanganyika

When asked about the existence of organizational guidance or policies on data use, respondents said that these did not exist. Most respondents pointed instead to guidance on data management and collection, as noted above, which is not the same as guidance or policies on data use. Although the absence of data use policies or guidance does not mean that data use is not occurring, it greatly reduces the likelihood that data use will be institutionalized throughout the DRC health system, and it does not indicate strong managerial support for data use from senior leadership.

During the group assessment, each group was asked about the existence of a data use plan or strategy, such as an operational plan or as part of an M&E plan. Of the 13 groups assessed, one group said that this was completely present, nine groups said that this was partly present, and three groups said that this was not at all present.

Table 6. Existence of data use plan or strategy

Group	Response
Bukavu 1	Partly
Bukavu 2	Partly
Haut Lomami 1	Partly
Haut Lomami 2	Partly
Kasai Central 1	Not at all
Kasai Central 2	Not at all
Kasai Oriental 1	Partly
Kasai Oriental 2	Partly
Lomami 1	Not at all
Lomami 2	Completely
Sankuru 1	Partly
Sankuru 2	Partly
Tanganyika 1	Partly

When each group was asked to elaborate on these plans, however, it was clear that many groups were not able to differentiate between the existence of a data management plan and a data use plan. Both groups from Bukavu, for example, said that data use plans were partly present; however, when asked about these plans, they spoke only of plans and guidelines related to data collection and analysis.

> "The DPS has an operational action plan, but does not include strategies for the use of data."
>
> —Group assessment, Lomami

According to one of the groups from Kasai Central, although no plans or procedures existed, data use still occurred to some extent:

> *"The peripheral level does not have a plan or strategy for the use of the data produced…. Some data are used…but not in a systematic way."*

One group noted that an M&E plan existed, but it had not been updated in the past year. It was also not clear whether these M&E plans included specific guidance or language on data use.

The creation of a data use policy or strategy for each province in DRC should be a priority. A written policy, along with procedures, is a necessary step in clarifying what data use is for all those involved in processes that affect data use and in communicating the importance of data use in decision making in the Ministry of Health and the National Malaria Program. It is clear from this assessment that not only do these policies not currently exist but also that many respondents are not aware of the difference between data management and data use, thus impeding improvement and institutionalization of data use.

Supportive Supervision

Respondents were asked about whether supportive supervision visits for M&E and data quality focused on the topic of data use. Most respondents said that when supportive supervision visits occurred, they focused predominantly on issues of data quality and typically did not focus on M&E and did not touch on data use at all. According to a provincial-level respondent in Kasai Central,

> *"A lot of [supportive] supervision does not revolve around the use of data."*

Data quality supportive supervision visits aim to support data quality improvement initiatives through the provision of feedback. During the group assessment, respondents were asked whether each province had any guidelines or procedures related to supportive supervision. Of the 13 groups assessed, six groups said that guidelines were completely present, and seven groups said that guidelines were partly present. Groups were also asked whether they had received any type of supportive supervision in the last six months. Nine groups said that this was completely true, and four groups said that this was partly true. Finally, groups were asked whether supportive supervision results were recorded and whether feedback was provided to supervisees. Five groups said that this was completely true, and eight groups said that this was partly true. The full results are presented in Tables 7–9.

> "We have no notion about the use of data."
>
> —Health zone-level respondent, Bukavu

Table 7. Supportive supervision procedures, guidelines, and responsibilities are defined.

Group	Response
Bukavu 1	Partly
Bukavu 2	Completely
Haut Lomami 1	Partly
Haut Lomami 2	Completely
Kasai Central 1	Completely
Kasai Central 2	Completely
Kasai Oriental 1	Partly
Kasai Oriental 2	Partly
Lomami 1	Partly
Lomami 2	Completely
Sankuru 1	Completely
Sankuru 2	Partly
Tanganyika 1	Partly

Table 8. Supportive supervision was conducted in the past six months.

Group	Response
Bukavu 1	Partly
Bukavu 2	Completely
Haut Lomami 1	Partly
Haut Lomami 2	Completely
Kasai Central 1	Partly
Kasai Central 2	Completely
Kasai Oriental 1	Completely
Kasai Oriental 2	Completely
Lomami 1	Completely
Lomami 2	Partly
Sankuru 1	Completely
Sankuru 2	Completely
Tanganyika 1	Completely

Table 9. Supportive supervision results are recorded and feedback provided to supervisees.

Group	Response
Bukavu 1	Completely
Bukavu 2	Partly
Haut Lomami 1	Completely
Haut Lomami 2	Partly
Kasai Central 1	Partly
Kasai Central 2	Partly
Kasai Oriental 1	Partly
Kasai Oriental 2	Partly
Lomami 1	Completely
Lomami 2	Partly
Sankuru 1	Completely
Sankuru 2	Completely
Tanganyika 1	Partly

Although these results regarding supportive supervision seem to indicate a partially functioning system, when probed on some of these questions, groups provided more clarity on some of the issues they were facing regarding supportive supervision. In Bukavu, one group said that although supportive supervision had occurred in the last six months, it had not been consistent, and not all health facilities had been visited due to lack of funds. The group also said that although feedback was reportedly provided through immediate feedback in the supervision notebook, standard supervision reports had not been transmitted to supervisees, and recommendations through immediate feedback were difficult to follow. This sentiment was echoed in several other provinces, where immediate verbal feedback was provided, but structures never received formalized written feedback on areas for improvement.

> "Some [health zones] do not benefit from formative supervision due to lack of resources because there is a problem of geographical and safety accessibility."
>
> —Group assessment, Bukavu

During the site visit assessment, we used the checklist tool when checking for the presence of trip reports or checklists from recent M&E supportive supervision visits. In three health facilities these were completely present, in three health facilities they were partly present, and in three health facilities they were not at all present. In the three remaining health facilities, this question was not applicable because the facilities had never received an M&E supportive supervision visit.

Capacity Building and Technical Assistance

When respondents were asked about perceived technical capacity in data use core competencies, results were mixed. At the implementing partner level, respondents were confident in their technical capacity across the board in terms of data collection and analysis. At the health zone and provincial levels, however, although some respondents expressed confidence in staff members' ability in data analysis, collection, and use, others said that technical capacity was lacking and much more training was needed. The respondents cited problems in data transmission due to poor Internet connection and a lack of appropriate data collection tools. In some instances, the lack of functional M&E units to coordinate this role was a mentioned as a challenge. According to a provincial-level respondent in Lomami:

> "The monitoring and evaluation unit is not yet in place, there is only one person at the DPS who is in charge of this activity."
>
> *—Provincial-level respondent, Lomami*

> *"We find a problem in the transmission of data by certain health zones in difficulties of coverage Internet network, sometimes there is lack of the tools of data collection."*

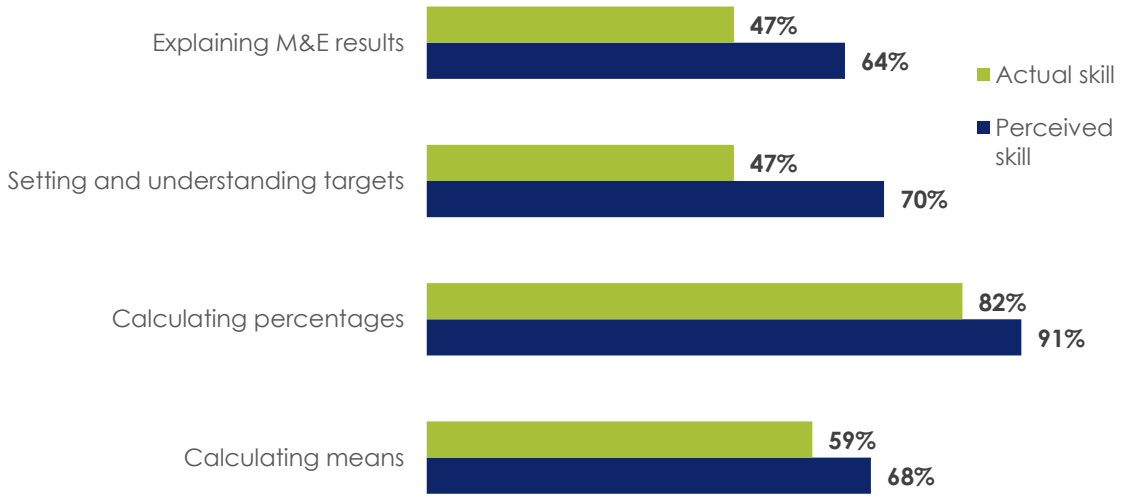
According to a respondent in Sankuru, although staff had capacity to collect, analyze, and use data, they lacked capacity in using DHIS 2:

> *"The organization has staff capable of carrying out the collection, review, and use of the data, but there is need for capacity building on the use of new tools and DHIS 2."*

During the self-assessment, we asked respondents to rate their confidence in performing tasks related to using and analyzing data on a scale of 1 (not confident) to 4 (very confident.). Respondents were then tested on their ability to perform these data analysis tasks to understand the relationship between their real and perceived skills in data use core competencies. Selected results follow.

Respondents felt most confident in their ability to calculate percentages, and their actual skills most closely matched their perceived skills. Respondents felt least confident in their ability to explain M&E results, which was the area in which respondents also performed the lowest.

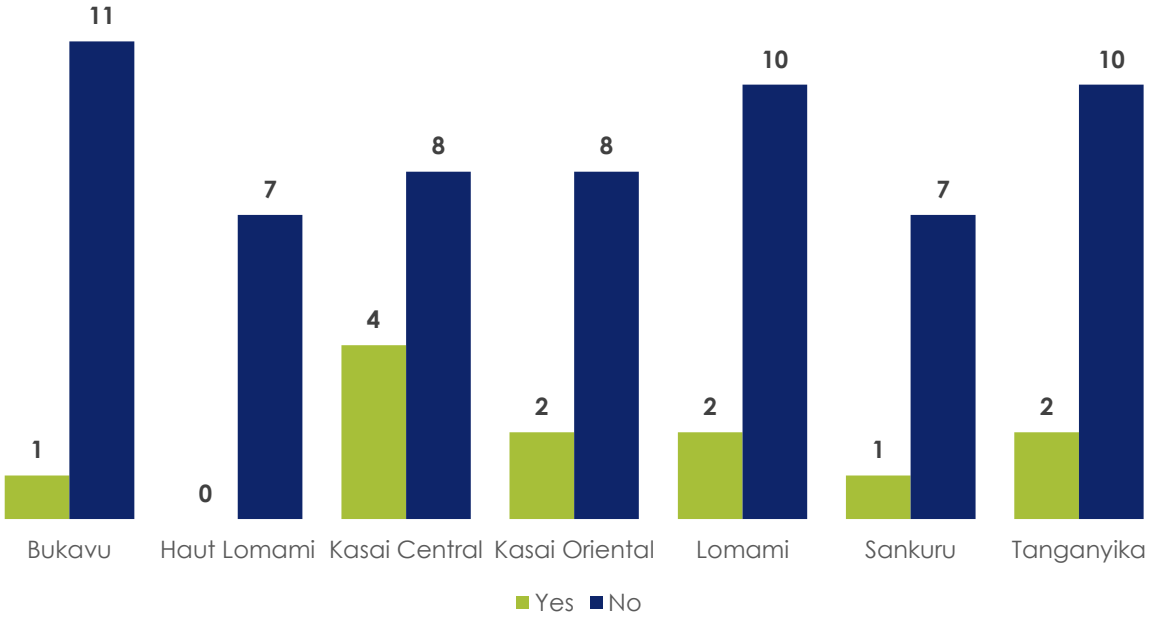
Figure 4. Perceived skills compared to actual skills



During the self-assessment, respondents were also asked whether they had received any type of M&E training in the past year (see Figure 5).

Most respondents had not received any M&E training in the last 12 months.

Figure 5. Receipt of M&E training in the last 12 months



Measures to Promote the Use of Data in Decision Making

Respondents described various measures that were being taken to promote the use of data in decision making. In Bukavu, provincial-level staff were trained in June 2016 on how to manipulate and analyze data in DHIS 2. Since then, the use of DHIS 2 has increased and improved in the province. In Lomami, efforts have been made increase the use of data quality assessments (DQAs) and routine data quality assessments (RDQAs) to improve data quality. Other respondents noted that the receipt of computers, capacity building in a variety of data use core competencies, and regular analysis of health data had helped promote the use of data in decision making.

> "[A June 2016] coaching mission allowed us to improve the use of DHIS 2 and the analysis of our data."
>
> —*Health zone-level respondent*, Bukavu

Other respondents, however, noted that the concept of data use was not yet fully understood in many of the provinces, which was impeding the promotion of data use. According to a respondent in Tanganyika:

> *"[We have] not [been promoting data use] because we did not really know what it meant. It is now that we will be able to do something."*

Although incremental progress in data use promotion has been made in several provinces, a larger focus on capacity building around data use must be made, as well as sensitization on the concept of data use and why it is so important in the decision-making process.

Data Review Meetings

Data review meetings are an important aspect of the data use process. Data review meetings should be held on a regular basis (quarterly or semiannually), and data should be reviewed for quality and, more importantly, for programmatic implications. Data review meetings should have equal representation from data users and data producers, and action plans should be developed during these meetings, with recommended next steps for improving data or making decisions based on the data that are reviewed. To ensure the quality and consistency of data review meetings, organizations should develop data review meeting guidelines that include how to set up meetings, how to prepare for them, what to present and discuss during the meetings, how to develop action plans, and how to follow up on the meetings.

> "[There is a] financial inability to organize [data review] meetings regularly with decision makers."
>
> —Group assessment, Lomami

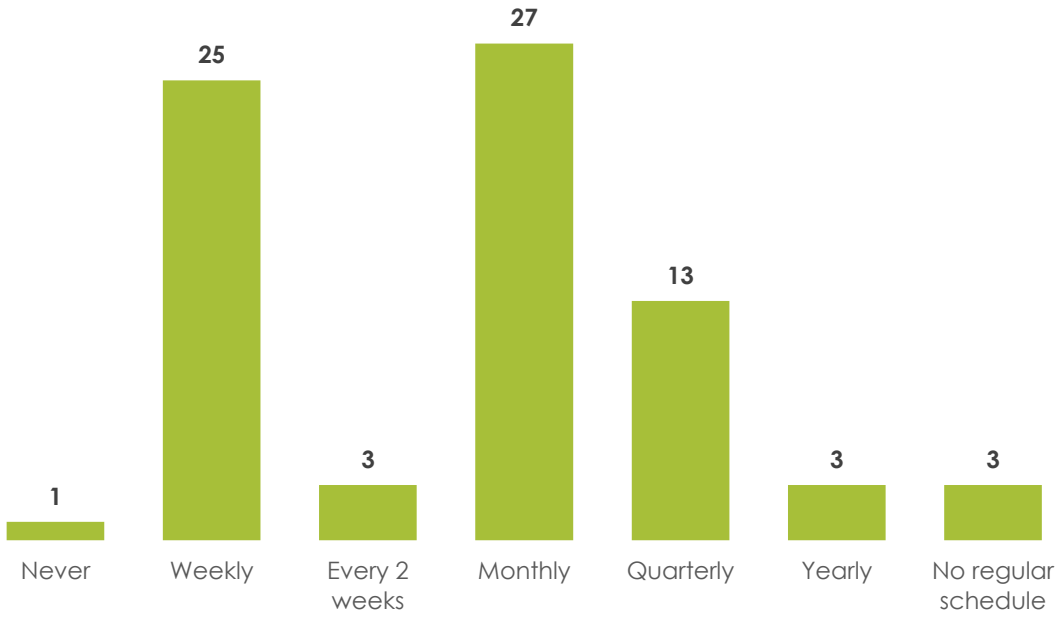
During the group assessment, all groups were asked whether data review meeting were held quarterly at the subnational level to discuss key program indicators with program managers and other decision makers. Of the 13 groups involved, five said that this was completely true, and eight said that this was partly true.

When probed for more details regarding the regularity of data review meetings, many respondents said that data review meetings were not held regularly due to a lack of funding. According to one of the groups from Kasai Central, quarterly meetings with program managers were irregular. This sentiment was echoed in Kasai Oriental, where data review meetings were also held inconsistently.

During the self-assessment, respondents were asked how frequently their organizations hold routine meetings for managerial or administrative matters where heath data are discussed (see Figure 6). More probing would be needed to understand whether these meetings were official data review meetings, as well as whether data were discussed for quality only or if they were also discussed for their programmatic implications.

Most respondents stated that health data are discussed in routine meetings weekly or monthly.

Figure 6. Frequency of data review meetings



During the key informant interviews, respondents were asked about the data review process and who was responsible for reviewing data. Most respondents spoke about reviewing data for quality as a part of the general data management process, rather than holding meetings to review data for programmatic performance. This is a key distinction that needs to be made in order to improve data use and institutionalize it within the DRC health system.

Data Quality

Poor data quality was described as a barrier to effective data use. Data quality issues included problems with accuracy, completeness, and timeliness, and responses varied on whether these issues were major problems regarding data quality. Some respondents said that accuracy and completeness were problematic due to inconsistencies in data collection tools and staff who were not properly trained on data collection forms and registers. Other respondents said that timeliness was the biggest problem, which included health facilities that are remote and difficult to access, as well as problems with Internet connectivity.

Issues also occurred regarding quality control and data review processes. In some instances, such as in Tanganyika, respondents noted that even when data were collected, they were not analyzed or reviewed before being entered into forms or registers. This system of simply reporting data up the health system chain without reviewing them for accuracy can cause data quality problems down the line, particularly when staff responsible for data collection and management are not trained in or not aware of the importance of data quality and data use.

> "The data we receive from the health zones still pose a major problem [in terms] of quality, completeness, and promptness. [Some] health zones… [are] too far from the Central Office and difficult [to] access. The data arrive late and [there is] no way to control their quality."
>
> *—Implementing partner, Bukavu*

As stated earlier, during the site visit, we confirmed that five health facilities said that guidelines that describe reporting requirements, deadlines, and instructions on how to complete data collection and reporting forms and tools were completely present, three facilities said that these were partly present, and three said that these were not at all present. During the site visit, we also asked about the existence of guidelines that describe how to manage data to ensure quality. Five health facilities said that these guidelines were completely present, and four facilities said that these were not at all present. It is clear that knowledge of data collection and management procedures, as well as the importance of data quality, is not consistent throughout the provinces.

Despite these findings, in 10 health facilities there was evidence of analyzed data displayed using a table, graph, map, or other format from the previous two months or two quarters. This tells us that there are people in these health facilities that have knowledge regarding data management and data analysis; however, these are potentially not the same people who are responsible for data collection and data entry, thus causing a gap that leads to data quality issues.

Other impediments to data use that were mentioned were the multiplicity of tools and canvases that need to be filled out, staff overloads, and a lack of motivation to properly use data.

Data quality checks and audits do occur, but their frequency varies among the provinces. Most provinces said that these checks were supposed to happen monthly, but some respondents said that in reality they occurred much less regularly. In fact, one respondent said that their program had not had a data quality audit in two years.

> "No data quality audit missions have been organized since 2015."
>
> *—Provincial-level respondent, Tanganyika*

Findings from the group assessment support statements made during the key informant interviews. When asked whether data quality in the last 12 months had been sufficiently adequate to be used in decision making, 10 of the 13 groups noted that this was only partly true. Only one group said that this was completely true, and two groups said that this was not at all true. The full results are provided in Table 10.

Table 10. In the last 12 months, the quality of data available has been sufficiently adequate that it can be confidently used in decision making.

Group	Response
Bukavu 1	Not at all
Bukavu 2	Partly
Haut Lomami 1	Not at all
Haut Lomami 2	Partly
Kasai Central 1	Partly
Kasai Central 2	Partly
Kasai Oriental 1	Partly
Kasai Oriental 2	Completely
Lomami 1	Partly
Lomami 2	Partly
Sankuru 1	Partly
Sankuru 2	Partly
Tanganyika 1	Partly

If decision makers lack full confidence in the quality of their data, they are less likely to use the data to make decisions, thus impeding the data use cycle and the institutionalization of a data use culture within the DRC. MEASURE Evaluation's data use theory posits that the more positive experiences decision makers have using data in their jobs, the more likely they are to continue to use data moving forward. If decision makers are trying to use data but are not finding them of sufficient quality to make decisions, it is less likely that they will be motivated to value data-informed decision making.

Data Communication

Responses varied on the existence of guidelines for communicating data. Some respondents said that the SNIS normative framework addressed data communication, and others said that no formal guidelines existed on this topic area. Some systems are in place for reporting information products up the hierarchy. At all levels of the health system, efforts are made to segment information products according to their intended audience.

> "[Communication is segmented] because the target [audience] is different. Data are communicated according to the target [for example] in simple and less technical terms [for the general public."
>
> *—Health zone-level respondent, Bukavu*

Information dissemination is limited, however, due to lack of funds available. Commonly used channels for data communication were reports, weekly bulletins, and emails. Bukavu respondents stated that they were just starting to share written feedback rather than verbal feedback. For example, one health zone respondent noted that only the Health Information System Bulletin is shared with other stakeholders, including partners.

During the site visit, only one of the five chief health officers had copies of the newsletters or a report that staff from the site had published in the last 12 months.

Understanding Information Needs

Information needs can be defined as priority or key questions that policymakers or decision makers need answers to so they can make informed or evidence-based policies and decisions. It is critical that there is a succinct understanding of the data needed if data-informed decisions are to be made.

An important aspect of understanding information needs is conducting an information needs assessment, which can take the form of a workshop to identify core program data analyses, a research priority-setting workshop, or the harmonization of program indicators. During the group assessment, participants were asked whether their information needs had been assessed. One group said that stakeholder information needs had been completely assessed, 10 groups said that they had been partly assessed, and two groups said that information needs had not at all been assessed. According to a group from Kasai Central, the assessment of information needs varies depending on the program, but official stakeholder needs assessments have not been conducted.

Groups were asked whether national and subnational information products met the information needs of stakeholders. One group said that information products completely met stakeholder needs, and 11 groups said that they partly met stakeholder needs. With more formalized needs assessments, the information products will improve and be developed to more effectively meet the needs of those who request them or need them. Finally, groups were asked whether information products were regularly used in decision making for programs and services. Five groups said that this was completely true, and eight groups said that this was partly true. If information needs are well understood, the right data will be collected to address the information need gap. In addition, data dissemination strategies will be tailored to the priorities of the target audiences, and information products will be used in decision making.

During the self-assessment, respondents were asked whether they understood the information needs of their respective organizations. Of the 74 respondents, the majority (84%) said that they were confident or very confident in their understanding of their organization's information needs. There seems to be a disconnect between the perception of individuals' understanding of information needs and the perception of the usefulness and use of information products. Data producers and data users must find a way to bridge the gap between the understanding of information needs and the translation of those needs into effective information products that can be used in decision making.

SUMMARY OF KEY FINDINGS AND RECOMMENDATIONS

Based on the analysis of interview responses and the responses from the group assessment, self-assessment, and site visit checklist, the MEASURE Evaluation team recommends several interventions for agencies in the DRC to promote the use of data in their decision-making processes.

Finding 1: Organizational policies and guidance on data use do not exist.

Recommendation:

Develop written protocols for organizational guidance promoting data use. One of the most effective facilitators for data use is the existence of organizational support for data use at the highest levels. Such frameworks give standardized guidance on processes and procedures to be followed in the use of data for decision making. Respondents consistently noted that data were not being used by senior managers to inform budgetary decision making. In addition, respondents said that while some data were used in decision making, there was no systematic process by which this was done. To promote and sustain a culture of data use, the NMCP should develop an overarching plan to support and improve the use of data in decision making at all levels of health service delivery. The data use plan should provide clear guidance on the following: schedules for data quality reviews; schedules and guidance on data review meetings (see Recommendation 2 for more details); data use roles and responsibilities for all cadres of staff; infrastructure requirements for data use; guidance on stakeholder engagement for data-informed planning; and a repository of tools, guidance documents, and capacity-building materials to facilitate data use. A comprehensive data use plan will guide the NMCP in its data use activities, help prioritize data use interventions, and establish a culture of data use throughout all levels of the health system.

Finding 2: Data review meetings do not have the necessary resources to occur regularly.

Recommendations:

Increase funding. Although the SNIS normative framework includes guidance on regularly convening data review meetings, many respondents stated that due to insufficient funding, these meetings were either held infrequently or not conducted effectively. Funding should be allocated specifically for this purpose to ensure that data are regularly discussed, analyzed, and reviewed.

Develop operational support. Guidelines for data review meetings should be created so the meetings become standardized in terms of timing, processes, attendance, and follow-up. It is unclear whether these meetings currently focus on reviewing data for quality or whether data are also used for reviewing program performance. The meetings should focus on using data for programmatic decision making. A regular schedule should be developed to ensure proper planning and attendance. Guidance on who should attend and their roles and responsibilities before, during, and after the meetings should be developed. Guidance on how to prepare for and follow up on recommendations from the meetings should be elaborated in the document. With robust support for data review meetings, NMCP and DSNIS will be able to track the frequency of data-informed decision making. Staff should also be trained in data analysis, presentation, and interpretation, as well as on how to follow up on data-informed recommendations in preparation for the meetings to improve data-informed decision making.

Finding 3: Staff at all levels of the health pyramid have a low awareness of what constitutes data use and why it is important.

Recommendations:

Conduct data use training at all levels of the health pyramid. Many respondents said that data use activities were not actively being promoted in their provinces because people did not truly know what data use was. Specific trainings on data use should be conducted to emphasize the importance of data use, provide relevant examples of how data can improve health service provision, improve skills in data use core competencies, and provide tools that can be used on the job to promote data use in decision making.

Conduct regular supportive supervision for M&E at the health zone level. Although supportive supervision for data quality is currently conducted, this is not occurring for M&E. Supportive supervision in this area, when combined with consistent M&E and data use training, can contribute to increased individual capacity and regular learning at the health zone level. Supportive supervision visits should go beyond providing feedback on data quality by also helping teams to answer key programmatic questions using available data, both routine and nonroutine. Direct mentoring in M&E and data use and joint problem solving for data used during supervision visits will ensure that skills are reinforced and relevant to job functions. A plan for structuring supportive supervision visits and ensuring that they are systematic in their support of teams will be key to their success.

Finding 4: Data availability and access are impeded by unstable Internet connections and low confidence in the use of DHIS 2.

Recommendations:

Increase funding for Internet access in all health facilities and health zones. DHIS 2 has the potential to greatly increase the availability and ease of access to routinely collected health data; however, this online system requires a working Internet connection. Due to unstable Internet connections in some health facilities and health zones, staff have resorted to creating parallel information systems in Excel where they keep and access data when DHIS 2 is not available. This can create confusion in data quality and version control issues that can be avoided if access to DHIS 2 is consistent.

Train facility and health zone-level staff in DHIS 2. Some respondents mentioned that they had received training in DHIS 2 that had greatly increased their confidence in analyzing and manipulating data in the system, and had thus increased their use of the system. Others mentioned that DHIS 2 use was low because of low capacity to use the system. All facility and health zone-level staff should be trained on how to enter and access data in DHIS 2 to ensure that the data are being used consistently throughout the health system and to reduce the use of parallel reporting systems.

Finding 5: Poor data quality impedes the use of data in decision making.

Recommendation:

Implement standardized data quality assurance protocols and train staff on data quality. Many respondents mentioned that data quality was poor and that there were issues with completeness, accuracy, and timeliness. This contributes to low confidence in available data and stagnant data use in decision making. Data quality audits should be conducted routinely at all health facilities to understand specific data quality issues and implement tailored interventions to address weaknesses. Facility-level staff should

be trained in data collection and management, including how to fill out various forms. Health facilities should also ensure that they have enough forms and that they have the correct forms so that healthcare providers are not creating ad hoc forms, further contributing to data quality issues. In addition, staff should be increased in health facilities where possible to reduce the workload associated with healthcare providers who must also be involved in data collection and management. Finally, facility-level staff should be trained in the importance of data quality in the data use cycle so they have increased motivation to focus on improving the quality of the data that they collect and enter.

Finding 6: Provincial-level staff have low capacity in data analysis and M&E.

Recommendation:

Build capacity in data analysis and M&E skills at the provincial level. Findings from the self-assessment tool showed relatively low capacity for provincial-level staff to conduct data analyses. Of note, many respondents perceived their skills to be much higher than they actually were. Understanding the basics of data analysis concepts is an important component of data use. Training on data analysis should be strengthened to increase number literacy, understanding of basic data analysis concepts, and data analysis skills. When asked whether respondents had received training in M&E in the past year, the majority of respondents said that they had not. If data users and producers do not understand how indicators are calculated, how to interpret analyzed data, how to set and monitor targets, and how to evaluate performance, then programs and decisions will not truly be data informed.

Finding 7: Data use success stories are not effectively communicated to advocate and encourage increased data use.

Recommendations:

Develop standardized guidance on data use communication protocols. Communicating data use successes not only enables programs to advocate more funding and support for various activities but also encourages further use of data in the future. Most respondents were not able to point to data use success stories they had developed or instances when they had used data for advocacy purposes. The first step in improving data communication is to develop standardized guidance on communication protocols, including how to develop communication strategies, how to identify different audiences for targeted communication, and how to advocate decisions based on analyzed data.

Conduct an information use assessment and use the results to create tailored information products. The assessment of information needs in the various provinces had mostly been ad hoc and thus many of the information products that had been created did not fully meet the information needs of stakeholders and were not effectively used to make decisions. Conducting a formal information needs assessment will allow each province to understand the information needs of its stakeholders and decision makers, develop tailored information products based on those needs, and ensure that the information products are used to make decisions.

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APPENDIX 1. SUMMARY OF GROUP ASSESSMENT RESULTS

Consistent with findings from the semi-structured interviews and site visits, the data demand and use group assessment workshops identified several areas as needing significant improvement. These include the need to strengthen supportive supervision and the need for specific guidelines on data use. In addition, there is a need to ensure that information products are regularly disseminated to those who collect and report data. See Table A1 for scores from the group assessments and Table A2 for a full explanation of items identified as needing improvement in the group assessments.

Table A1. Summary of results from group assessments

Key:

1=completely present, 2=partly present, 3=not at all present

	Criteria	Bukavu	Haut Lomami	Kasai Central	Kasai Oriental	Lomami	Sankuru	Tanganyika
1	A data use plan or strategy exists, such as an operational plan or as part of a monitoring and evaluation (M&E) plan.	2	2	3	2	2	2	2
2	Stakeholder information needs have been assessed.	2	2	2	2	2	2	2
3	Information products are regularly disseminated to those who collect and report data.	2	2	2	2	1	2	2
4	Information products are regularly sent to a wide variety of stakeholders, other than those who collect and report data.	2	2	2	2	2	2	2
5	Subnational information products meet stakeholders' information needs.	2	2	2	2	2	2	2
6	Information products disseminated are regularly used in decision making for programs and services (provide examples).	1	2	2	2	2	2	2

	Criteria	Bukavu	Haut Lomami	Kasai Central	Kasai Oriental	Lomami	Sankuru	Tanganyika
7	There are guidelines to support the analysis, presentation, and use of data at the subnational and facility levels, such as graphs on walls showing cumulative coverage.	1	1	2	1	2	1	2
8	Data review meetings are held quarterly at the subnational level to discuss key program indicators with program managers and other decision makers.	2	2		2	2	1	2
9	Directors and provincial and district medical officers request information before or during data review, planning, or program costing meetings.	1	1	1	2	2	1	2
10	In the last 12 months, the quality of data available has been sufficiently adequate that it can be confidently used in decision making (completeness, accuracy, timeliness, etc.)	2	2	2	2	2	2	2
11	M&E personnel are part of program management and planning teams.	3	3	2	2	2	2	2
12	Stakeholders have access to the data and information products in the public domain (online or through a central information center).	1	1	2	2	2	2	2
13	Directors and provincial and district medical officers use the health management information system for day-to-day management of their facility or districts.	2	2	2	1	1	1	2

	Criteria	Bukavu	Haut Lomami	Kasai Central	Kasai Oriental	Lomami	Sankuru	Tanganyika
14	Supportive supervision procedures, guidelines, and responsibilities are defined.	2	2	1	2	2	2	2
15	Supportive supervision was conducted in the past six months.	2	2	2	2	2	2	2
16	Supportive supervision results are recorded and feedback is provided to supervisees.	2	2	2	3	3	1	3

Table A2. Summary of results from group assessments

Assessment item	Results
A data use plan or strategy exists.	No standard data use plan was cited by health zone, provincial, and implementing partner representatives. Bukavu, Kasai, and Lomami cited the presence of some guidelines in the monitoring and evaluation, National Health Information System, or operational action plans, but these do not inform data use. Tanganyika has certain elements of a plan, such as deadlines for data collection, dissemination, information gathering, reporting, feedback, and information analysis, but these do not inform data use
Stakeholder information needs have been assessed.	Implementing partners felt that for some areas of intervention the needs were being assessed and are known but not addressed partly due to a lack of technical capacity. For example, the Bukavu group felt that DHIS 2 does not include all information needs and data (such as mental health). In Lomami, one group felt that needs are identified during monthly reviews, and another group felt this was not being done.
Information products are regularly disseminated to those who collect or report data.	Partly present. Some groups felt that this was done on a small scale and not at all in other some provinces. In Kasai Oriental, respondents felt this was due to lack of funding.
National and subnational information products meet stakeholders' information needs.	Only partly present. Health zone and provincial respondents mentioned the existence of data gaps, such as instances where they need specific data that are not available.
Information products disseminated are regularly used in decision making for programs and services.	In six of the seven groups (Lomami being the exception), information dissemination was limited. For example, in Bukavu, only the health bulletin was shared, and in Kasai Oriental, dissemination was not being conducted due to a lack of funding.
Data review meeting are held quarterly at the subnational level to discuss key program indicators with program managers and other decision makers.	Data review meeting are irregular. Completely present in one of the seven groups.
Directors and provincial and district medical officers request information before or during data review, planning, or program costing meetings.	Completely present in three of the seven groups. The use of data for planning or program costing meetings was rare. Data were commonly used for program implementation. As noted by the Lomami group, "It is on the basis of the data that these decision makers make decisions and evaluate the results and the impact of the different supports."
Supportive supervision was conducted in the past six months.	Completely present in three of the seven groups.

APPENDIX 2. DEFINITIONS OF GROUP ASSESSMENT QUESTIONS

Data use plan or strategy exists—A data use plan or strategy is a formal document that describes when and how data should inform decision making. This document can include the following: the specific planning and decision making forums data should inform; how often data analysis and review should take place; guidance on who should be involved; guidance on ensuring accountability (e.g., how to move findings from data analysis into action); and how to follow up on data-informed recommendations and track data use. This can be a stand-alone document or part of a monitoring and evaluation plan or other guidance.

Stakeholder information needs have been assessed—Information needs refer to the priority questions program managers or policymakers have about their programs. An assessment can take the form of a workshop to identify core program data analyses, a research priority-setting workshop, or the harmonization of program indicators.

Information products are regularly disseminated to those who collect or report data—Information products exist that summarize findings from data analysis. They can include malaria bulletins or district summary reports. These products should be disseminated to anyone in the program or organization who is involved in data collection and decision making at least semiannually, preferably quarterly.

Information products are regularly sent to a wide variety of stakeholders, other than those who collect and report data—This can include implementing partners, funders, the media, and universities. These products should be sent at least semiannually, preferably quarterly.

National and subnational information products meet stakeholders' information needs—Information products provide valuable data and information that can help stakeholders better implement their programs or make better informed decisions. Decision makers are not experiencing data gaps.

Information products disseminated are regularly used in decision making for programs and services (provide examples)—Information products are referred to and provide data during program planning and monitoring such as during annual work planning and program performance review meetings. Respondents should be able to cite examples of when these products have been used.

There are guidelines to support the analysis, presentation, and use of data at the subnational and facility levels, such as graphs on walls showing cumulative coverage—Guidelines exist that discuss what analyses should be done; what data should be used; how data should be presented and displayed (e.g., graphs, charts); which indicators should be analyzed; and how this information should be used at the provincial, district, and facility levels.

Data review meetings are held quarterly at the subnational level to discuss key program indicators with program managers and other decision makers—Data-review meetings are held at a minimum every six months and ideally every quarter to monitor data for program performance. Data review meetings include data users and data producers.

Directors and provincial, zonal, and facility heads request information before and during data review, planning, or program costing meetings—Decision makers request data on key indicators

being discussed in meetings before the meetings occur so they are already aware of trends, analysis, and performance.

In the past 12 months, the quality of data available has been sufficiently adequate that it can be confidently used in decision making (e.g., completeness, accuracy, timeliness)—Data are assessed for completeness, accuracy, and timeliness. Decision makers trust the quality of data needed to inform National Malaria Program decision making.

Monitoring and evaluation personnel are part of performance monitoring and planning teams—Data producers, such as monitoring and evaluation personnel or information records officers, are included in teams with data users during data review meetings to explain the results of data analysis, the information presented in graphs, and how indicators are constructed to ensure a clear understanding of the data being reviewed.

Stakeholders have access to the data and information products in the public domain (online or through a central information center)—Data can be accessed via a website or central server (such as DHIS 2, a website that houses past information products and data sets).

Directors and provincial, zonal, and facility heads use the health management information system for day-to-day management of their facility or districts—DHIS 2 or another information system is accessed on a regular (i.e., weekly or monthly) basis to refer to data and look at trends.

Supportive supervision procedures, guidelines, and responsibilities are defined—Standardized processes and guidelines for the supportive supervision of data collection, management, and use exist. Guidelines include what is required before, during, and after supportive supervision and what is expected of everyone involved.

Supportive supervision was conducted in the past six months—Supportive supervision of those involved in malaria data collection, management, and use was conducted in at least 50 percent of provinces in the past six months. Respondents should be able to provide documentation in the form of supervision schedules and site visit reports.

Supportive supervision results are recorded and feedback provided to supervisees—Findings and information from supportive supervision visits is fed back down to the supervisees at least 75 percent of the time to ensure learning and improvement.

APPENDIX 3. SITE VISIT ASSESSMENT

Key:

1=completely present, 2=partly present, 3=not at all present, N/A=not applicable

	Criteria	Haut Lomami	Kasai Central	Kasai Oriental	Lomami	Sankuru	Tanganyika
1	Guidelines, standard operating procedures, or protocols are present that describe steps to aggregate, analyze, or manipulate data for each level of the reporting system.	2	3	2	1	1	3
2	Guidelines, standard operating procedures, or protocols are present that describe how to develop and disseminate data synthesis products to a variety of stakeholders.	2	N/A	2	2	1	N/A
3	For a healthcare entity that routinely reports data, there are guidelines present that describe reporting requirements, deadlines, and instructions on how to compete data collection and reporting forms and tools.	1	3	3	2	1	3
4	For a healthcare entity that routinely collects and reports data, there are guidelines present that describe how to manage data to ensure quality.	1	N/A	3	2	1	N/A
5	A training schedule is present. PROBE: If yes, comment on whether training topics include: data management, data analysis, data interpretation, or data use.	3	2	3	N/A	1	2
6	Staff are able to present analyzed data displayed using a table, graph, map, or other format from the previous two months or two quarters. PROBE: If yes, comment on staff positions responsible for data analysis.	1	1	2	1	2	1

	Criteria	Haut Lomami	Kasai Central	Kasai Oriental	Lomami	Sankuru	Tanganyika
7	Staff are able to show evidence that analyzed data were shared with facility or district managers (e.g., meeting minutes, activity report, email, information product).	1	2	2	1	2	1
8	There are specific data review meetings to present and discuss findings from analyses.	1	2	2	1	1	2
9	Data visuals, such as a chart, graph, map, or other format, are displayed in the office. PROBE: If yes, identify the data sources.	1	1	2	1	2	1
10	A map of the catchment area is displayed in the office. PROBE: If yes, identify the data sources.	1	1	2	1	2	1
11	An estimated summary of populations in the catchment area by target group is displayed in the office. PROBE: If yes, identify the data sources. PROBE: If yes, indicate when last updated.	1	1	2	1	2	2
12	Feedback reports on the accuracy, completeness, and timeliness of reported data are present. PROBE: If yes, indicate the dates of the reports.	2	N/A	3	2	3	N/A
13	Feedback reports on program performance are present. PROBE: If yes, indicate the source of the feedback (e.g., National Malaria Control Program, district, province, or other organization).	N/A	3	3	2	3	3

APPENDIX 4. SEMI-STRUCTURED INTERVIEW GUIDE

Introductory Script

The purpose of this questionnaire is to identify the strengths and weaknesses in your organization's data use culture and infrastructure. The assessment information will be used in conjunction with other assessment materials to draft a plan of action to promote data use.

In health systems as well as in organizations, the purpose of collecting and analyzing data is to improve programs by enabling more informed decisions or decisions based on data. However, information is not always available to make decisions. If it is available, it is not always used.

Your participation is requested to provide insight about the current situation within your organization. Your participation is very important, but is entirely voluntary. Your responses will be treated as confidential, and we will ensure that any statements or comments you make cannot be linked to you as an individual. We will use the interviews to develop potential interventions to strengthen the demand for and use of data in decision making.

Do you have any questions? May we begin?

Part 1: Decisions

1. What are the different types of program decisions that are made in your organization?

    - Probe: For example, there may be decisions related to where to provide services, how to allocate resources or plan for new activities. How are decisions like these made in your organization?
    - Probe: Who is involved in the decision-making process?
    - Probe: What sources of information do you think they rely on to make decisions?

2. Could you give me some examples of times during your work when you consulted data to inform a decision about a health service or program?

3. What specific targets are you currently tracking for your malaria-related programs?

    - Probe: How do you know when a program is not meeting these targets?
    - Probe: If you are aware that a program is not meeting expectations, what kinds of things can you do about it?

4. Could you tell me about any current organizational plans, policies, procedures, or guidelines that relate to the collection, review, or use of data?

    - Probe: Does anyone's job description specifically address the review or use of data?
    - Probe: What are their job titles?

Part 2: Assessing Data Demand and Use

5. Can you tell me what typically happens in your organization with data collected by your organization?

    - Probe: How often do you think decisions in your organization are informed by data?
    - Probe: When data are available, who in the organization reviews them?
    - Probe: Who among your colleagues discuses new data or reports?

6. Has your organization ever taken steps to improve the use of data?

    - Probe: If so, please tell me about those efforts.
    - Probe: Did they result in improvements for the organization?
    - Probe: What were the obstacles?

7. Does your organization need data that you don't have?

    - Probe: How do you identify data that you need?
    - Probe: What process do you go through to get the data?

8. In your opinion, what is the biggest obstacle to data use in your organization?

Part 3: Data Availability and Quality

9. Tell me about the availability of data within your organization. When you need to access them for decision making, how easy is it to do so?

    - Probe: How easy is it to get the data from each section or unit (e.g., M&E unit) (different areas and different data collection points)?

10. Can you give me an example of a time when you provided input on the design of data collection instruments?

    - Probe: Can you give me an example of a time when you provided input on the design of an indicator?

11. Tell me about the data quality in terms of accuracy, timeliness, and completeness of the information available to you from both routine and non-routine sources.

    - Probe: Who is responsible for managing data and assuring data quality within the organization?
    - Probe: In your opinion, what are the primary causes of data quality issues?
    - Probe: How often do you perform data quality checks?
    - Probe: When supportive supervision visits are conducted for M&E and data quality do the supervisors spend time on facilitating the use of the data?

Part 4: Capacity in Data Use

12. What do you think about the technical capacity within your organization to collect, analyze, review, and use data?

    - Probe: What kinds of technical assistance in M&E or data review have you received in the past six months?
    - Probe: Who provided the technical assistance?

Part 5: Communicating Data

13. Does your organization have a protocol, policy, or written guidance for sharing or communicating data internally or externally? Please describe them.

    - Probe: Does sharing data include both directions, that is from communities up to headquarters AND feedback from headquarters down to service providers?

14. Do you segment your communication to different audiences?

    - Probe: Who are your audiences for data generated by your programs?
    - Probe: How do you communicate data to your different audiences?
    - Probe: What types of information products are available to you?
    - Probe: What kinds of performance feedback does your team receive?
    - Probe: How frequently do you receive feedback?

15. Has your organization ever documented success stories that involved the use of data?

    - Probe: If yes, how were these stories identified and disseminated?
    - Probe: Have they resulted in additional funding for programs, more data use activities, M&E system improvements?

APPENDIX 5. SELF-ASSESSMENT TOOL

Introduction

The purpose of this survey is to collect information from individuals on their skill level analyzing and using data. Please express your opinion honestly. Your individual responses will remain confidential. Aggregate information from across all surveys will be analyzed to inform an assessment of capacity and use of data for the DRC health system. We appreciate your cooperation in completing this questionnaire. It should take approximately 1 hour to complete. Thank you.

A1. Date completed survey: _____
A2. Name of organization you work for: _____
A3. Your professional title in this organization: _____
A4: Your age:
Please circle one. a. Below 30 years b. 31–39 years c. 40–49 years d. 50 years and above
A5: Gender
1. Female
2. Male

A6: Your highest level of formal education:
1. Diplôme d'Etat
2. Gradué
3. Licencié ou Equivalent
4. Master's degree (15 to 16 years)
5. Doctorate or Ph.D.
6. Professional diploma or degree: Specify: _____
7. Other type of education: Specify: _____

A7: Years of professional career employment: ____

A8: Did you receive any training in Monitoring and Evaluation in the last year?
1. Yes
2. No

SELF-EFFICACY

This part of the survey is about your confidence in performing tasks related to using and analyzing data. High confidence indicates that you could perform the task listed, while low confidence means there is room for improvement or training. Please rate your confidence that you can accomplish the activities listed. Rate your confidence for each activity with a percentage from the following scale:
1 not confident
2 somewhat confident
3 confident
4 very confident

B1: I understand the information needs of my organization.	**1**	**2**	**3**	**4**
B2: I can organize a meeting with decision makers to discuss data for a program review.	**1**	**2**	**3**	**4**
B3: I can create graphs that effectively communicate health data.	**1**	**2**	**3**	**4**
B4: I can explain M&E findings and their implications for programs.	**1**	**2**	**3**	**4**
B5: I can use data for identifying program gaps and setting targets.	**1**	**2**	**3**	**4**
B6: I can calculate means and medians correctly.	**1**	**2**	**3**	**4**
B7: I can communicate the extent to which a series of reported numbers vary from a set target.	**1**	**2**	**3**	**4**
B8: I can calculate percentages and rates.	**1**	**2**	**3**	**4**
B9: I can access health data as needed for program management.	**1**	**2**	**3**	**4**
B10: I can use data to make decisions about health programs.	**1**	**2**	**3**	**4**

C1: How often do you think senior managers in your organization allocate resources based on a review of data?

Never.....All the time
1 2 3 4

C2: How useful are program indicators to senior managers in your organization when they make planning decisions?

Not Useful.....Very Useful
1 2 3 4

C3: How frequently does your organization have routine meetings for managerial or administrative matters where health data are discussed? SELECT ONLY ONE RESPONSE.

1. Never
2. Weekly
3. Every 2 weeks
4. Monthly
5. Quarterly
6. Yearly
7. There isn't a regular schedule

C4: Is an official record maintained of management meetings where health data are discussed?

1. Yes
2. No

C5: In June, the National Malaria Control Program initiated a new pilot training for nurses who provide IPTp [intermittent preventive treatment in pregnancy] to pregnant women attending ANC [antenatal care] clinics. The goals of the training were to: 1) attract new clients to ANC services and 2) increase the number of pregnant women receiving IPTp. The Monitoring and Evaluation (M&E) Specialist for the project collected the following data on routine indicators from the clinic:

Table 1: IPTp services at ANC clinic for 2012

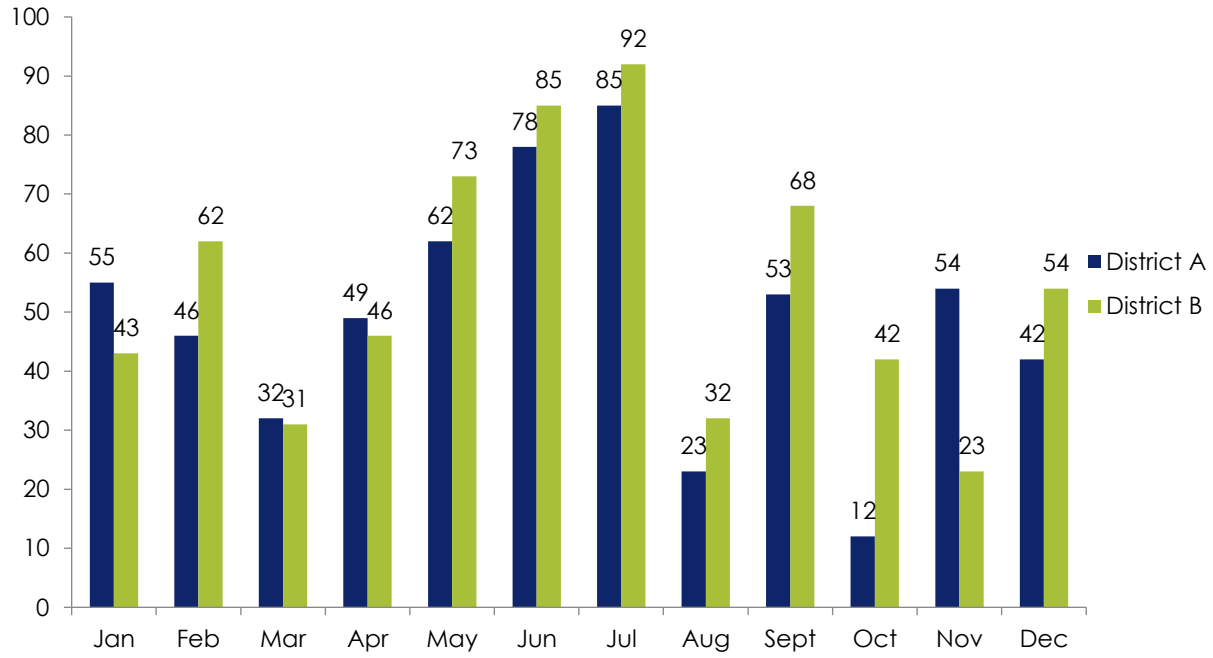
Indicators	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Number of ANC visits	350	375	355	358	303	340	401	488	495	525	507	455
Number of women receiving at least two doses of IPTp	107	112	121	112	102	114	133	189	199	221	233	212
Proportion of pregnant women attending ANC who received two or more doses of IPTp	31%	30%	34%	31%	34%	34%	33%	39%	40%	42%	46%	47%

C5a. Create a graph that the M&E Specialist can use to best communicate to the National Malaria Control Program the effect of the pilot nurse training on the number of people accessing malaria services.

C5b. Create a graph that the M&E Specialist can use to best communicate to the Ministry of Health the effect of the pilot nurse training on the number of pregnant women receiving IPTp.

C6. In June, the National Malaria Control Program initiated a new pilot training for community health workers in two districts. The goals of the training were to: 1) increase the number of people sleeping under an ITN [insecticide-treated net] and 2) increase the number of pregnant women sleeping under an ITN. The M&E Specialist for the project collected data from each household on the indicator: proportion of population of all ages who slept under an ITN the previous night. The data were displayed with this graph:

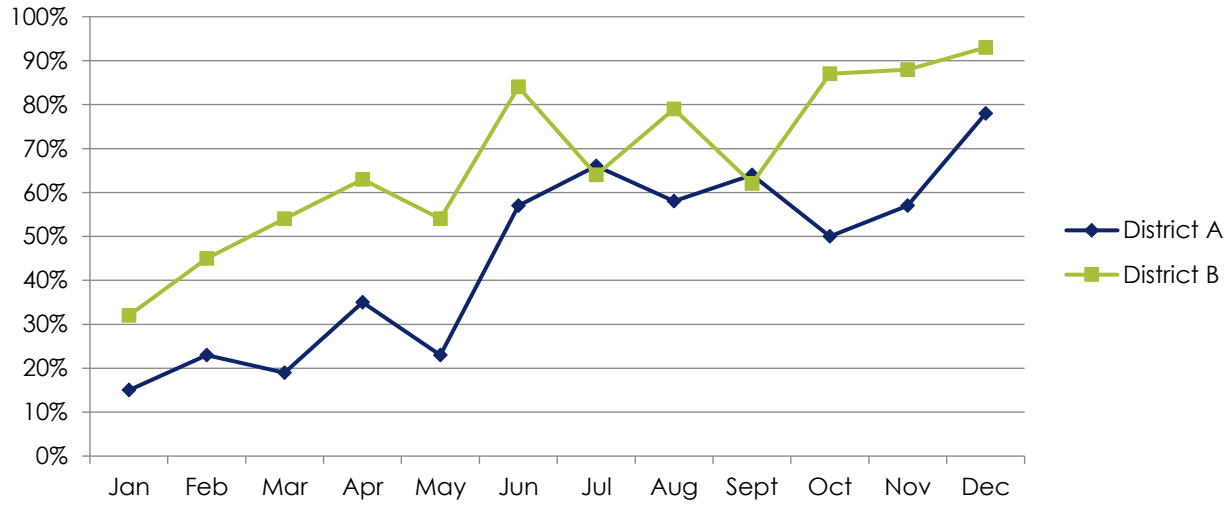
Proportion of population of all ages who slept under an ITN the previous night, two districts, 2012



C6a. What do the data in this graph indicate about the new pilot training for community health workers?

The M&E Specialist for the project also collected data from each district on the indicator: Proportion of pregnant women who slept under an ITN the previous night. The data was displayed with this graph:

Proportion of pregnant women who slept under an ITN the previous night, two districts, 2012



C6b. Since the new pilot training for community health workers, the proportion of pregnant women who slept under an ITN the previous night in these two districts has:

1. Increased
2. Remained the same
3. Decreased
4. No visible trend or pattern in the data

C6c. Based on these two graphs in question C6, select the option that provides the most precise conclusion about the pilot community health worker training program:

1. The program was effective in increasing the proportion of people of all ages sleeping under an ITN the night before.

2. The program was effective in increasing the proportion of people of all ages sleeping under an ITN the night before, but less so in increasing the proportion of pregnant women sleeping under an ITN the night before.

3. The program was effective in increasing the proportion of pregnant women sleeping under an ITN the night before, but less so in increasing the proportion of people of all ages sleeping under an ITN the night before.

4. The program was not effective in increasing the proportion of people of all ages sleeping under an ITN the night before or the proportion of pregnant women sleeping under an ITN the night before.

C7. The M&E Specialist shared with the community health workers in both districts a table presenting the average proportion of pregnant women who slept under an ITN the night before and after the pilot training in June.

Table 2. Average percentage of women who slept under an ITN the previous night in two districts for 2012

District	January to June	July to December
District A	29%	62%
District B	55%	79%

The community health workers in District A requested advice on setting a reasonable target for improving their performance in increasing the proportion of pregnant women who slept under an ITN the night before over the next 6 months, from January to June 2013. Which of the following six-month targets would you recommend?

1. 100%
2. 45%
3. 75%
4. 65%

C8. The table below shows the number confirmed malaria cases at District B hospital in 2012.

Table 3. Number of confirmed malaria cases at District B hospital for 2012

Indicators	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Confirmed malaria cases	350	375	355	358	303	340	401	488	495	525	507	455

C8a. What is the mean number of confirmed malaria cases for 2012 (write a single digit in each box and round to the nearest whole number)?

C8b. What is the median number of confirmed malaria cases for 2012 (write a single digit in each box and round to the nearest whole number)?

C8c. What is the standard deviation relative to the mean number of confirmed malaria cases for 2012 (write a single digit in each box and round to the nearest whole number)?

C9a. In 2009, a health center had 31,155 confirmed malaria cases. During that same time period, 1,536 patients died from malaria. What was the mortality rate for malaria patients in this health center for 2009 (type a single digit in each box and round to the nearest whole number)?

deaths per confirmed cases

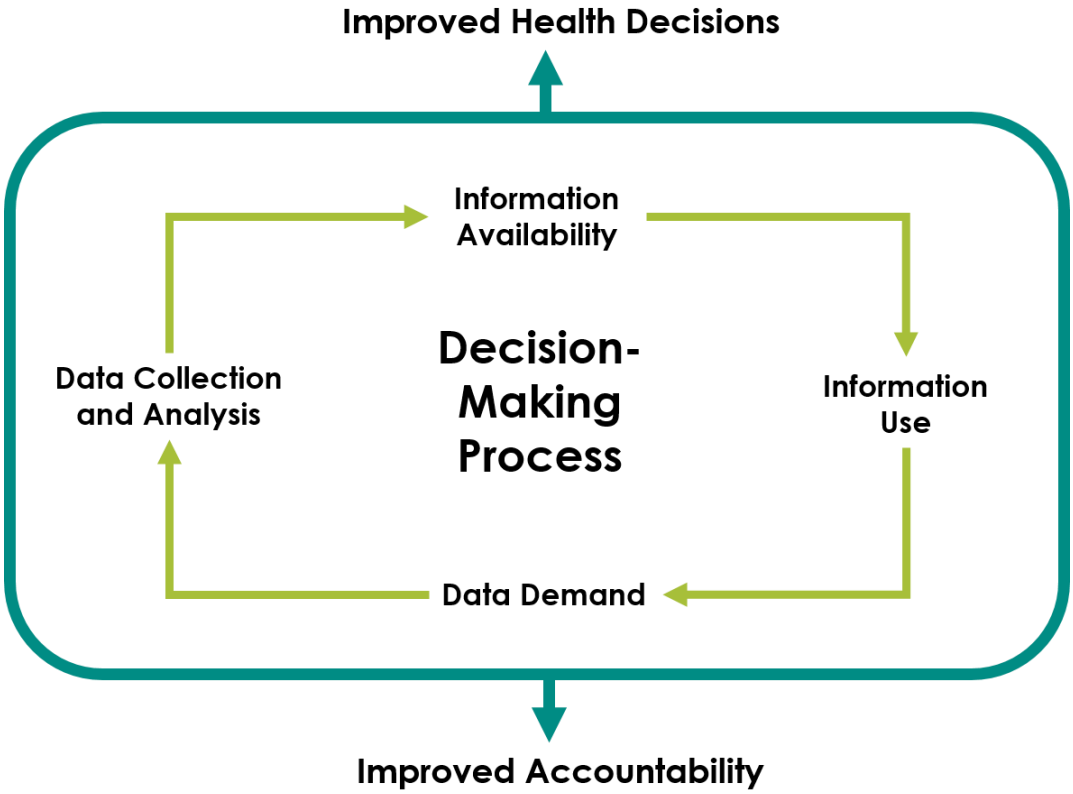
C9b. The estimated number of pregnant mothers in the catchment area for a health center is 340. Antenatal clinics have registered 170 pregnant mothers for IPTp. What is the percentage of pregnant mothers in the catchment area attending antenatal clinics (type a single digit in each box and round to the nearest whole number)?

APPENDIX 6. SUMMARY OF SELF-ASSESSMENT TOOL RESPONDENTS

Demographic	Response
Age of respondents	<30: 2 31–40: 27 41–49: 31 ≥50: 15
Sex	M: 63 F: 12
Education level	State diploma: 1 Graduated: 14 License or equivalent: 50 Master's degree: 12 Doctoral or PhD: 3 Professional degree: 4 Other: 0
Years of experience (average)	11.1

APPENDIX 7. DATA DEMAND AND USE CONCEPTUAL FRAMEWORK

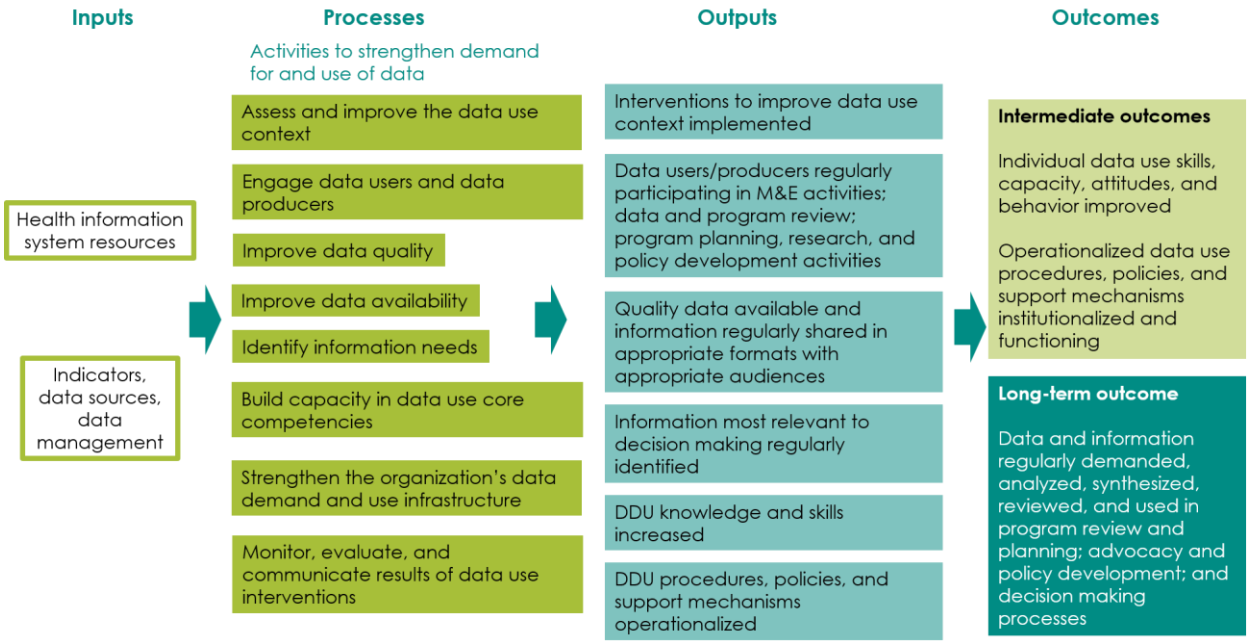
The data demand and use conceptual framework[1] provides guidance on best practices in data-informed decision making and data use. It looks at three determinants of data use: technical, organizational, and behavioral determinants. These determinants are adapted from the Performance of Routine Information Systems Management framework developed by Aqil, et al.[2] The framework describes the "specific interventions that can improve the demand for and use of data from all health information systems." The conceptual framework "demonstrates how information systems improve the other health system building blocks [and] outlines the underlying assumptions and activities that are necessary to achieve the desired outcome of increased data-informed decision making."[3]



[1] Foreit, K., Moreland, S., & LaFond, A. (2006). *Data demand and use in the health sector: A conceptual framework.* Chapel Hill, NC: MEASURE Evaluation, University of North Carolina.
[2] Aqil, A., Lippeveld, T., & Hozumi, D. (2009). PRISM framework: A paradigm shift for designing, strengthening and evaluating routine health information systems. *Health Policy and Planning, 24*(3), 217-228.
[3] Nutley, T. (2012). *Improving data use in decision making: An intervention to strengthen health systems.* Chapel Hill, NC: MEASURE Evaluation, University of North Carolina.

APPENDIX 8. LOGIC MODEL FOR STRENGTHENING THE USE OF HEALTH DATA IN DECISION MAKING

This logic model[4] builds off of the data demand and use the conceptual framework and describes the inputs, processes, outputs, and outcomes involved in improving the use of data in decision making, particularly in the health sector. The eight processes listed in the logic model comprise the eight data use core interventions that MEASURE Evaluation implements to strengthen the demand for and use of health data.



[4] Nutley, T., & Reynolds, H. (2013). Improving the use of health data for health systems strengthening. *Global Health Action, 6*.

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