

Facilitators and Barriers to Data Use

Learning from the MEASURE
Evaluation Strategic Information for
South Africa Associate Award

September 2018



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MEASURE Evaluation
University of North Carolina at Chapel Hill
123 West Franklin Street, Suite 330
Chapel Hill, North Carolina 27516
Phone: +1 919-445-9350
measure@unc.edu
www.measureevaluation.org

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ABBREVIATIONS

DDU	data demand and use
DHMIS	district health management information system
DOH	Department of Health
EBHM	Evidence-Based Health Management
HIM	Health Information Management [team or unit]
HPCSA	Health Professions Council of South Africa
M&E	monitoring and evaluation
MEval-SIFSA	MEASURE Evaluation–Strategic Information for South Africa
NIDS	National Indicator Data Set
POE	portfolio of evidence

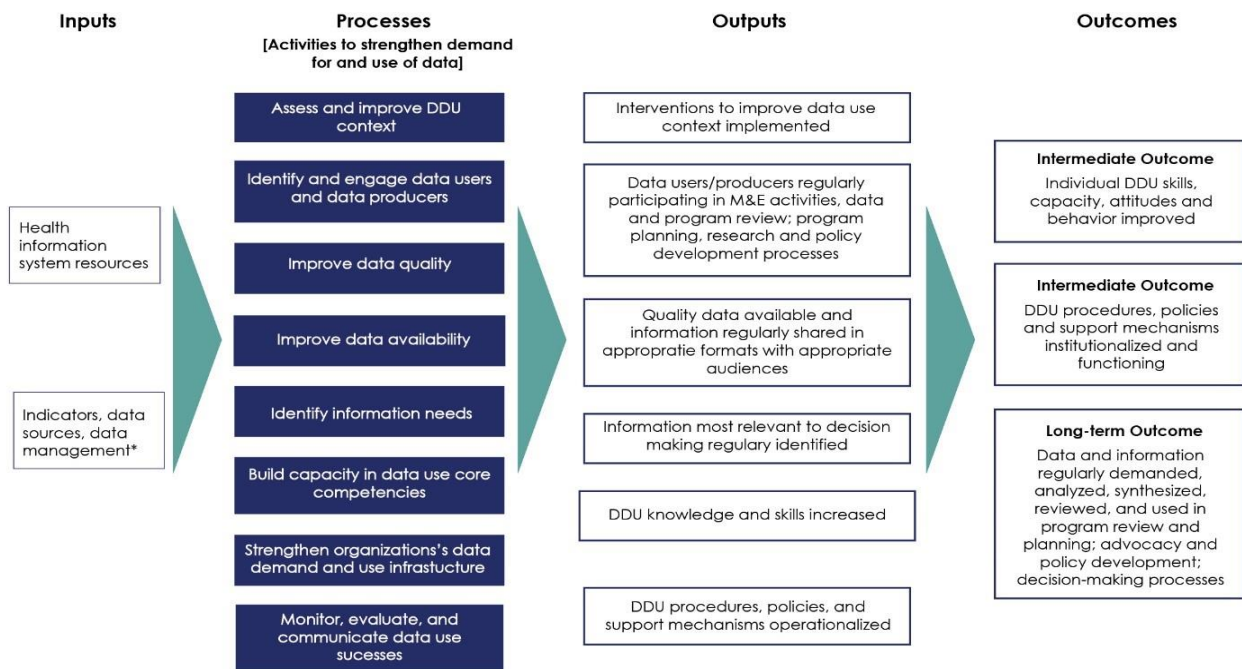
BACKGROUND

MEASURE Evaluation works to strengthen capacity in developing countries to gather, interpret, and use data to improve health. High-quality data are essential for effective and efficient decision making in health, to promote transparency, and to strengthen the accountability of decision makers. MEASURE Evaluation developed an organizing framework that maps how data use intervention inputs and activities influence the outputs and outcome of regular sustained use of data in program review, planning, and policy (Nutley & Reynolds, 2013). This framework provides a comprehensive and practical strategy for developing interventions to strengthen the demand for and use of data in decision making. The interventions cover eight domains of activities that were identified in the literature and by MEASURE Evaluation's implementation experience as critical to affect the technical, behavioral, and organizational determinants of data-informed decision making. The intervention is tailored to specific country and program contexts, such that all of the interventions may not need to be implemented to improve the demand for and use of data.

The domains are (Figure 1):

- Assess and improve the data use context
- Engage data users and data producers
- Improve data quality
- Improve data availability
- Identify information needs
- Build capacity in data use core competencies
- Strengthen the organization's data demand and use (DDU) infrastructure
- Monitor, evaluate, and communicate DDU successes

Figure 1. Logic model for strengthening an organization's use of health data in decision making



*Defined as processes by the Health Metrics Network

†The data demand and use approach broadly defines an organization as a division of the ministry of health at the national, state, or district levels; a specific program within the ministry; or a nongovernmental organization or program.

Source: Nutley & Reynolds, 2013

This framework has been used to guide the design of interventions to improve data-informed decision making, which were implemented as part of larger health information system and monitoring and evaluation (M&E) strengthening projects in Kenya, South Africa, and Tanzania (the MEASURE Evaluation associate awards). To understand progress made by each associate award in improving data use, MEASURE Evaluation explored the facilitators and barriers contributing to the effectiveness of specific DDU interventions implemented at the *subnational* level in Kenya, South Africa, and Tanzania. MEASURE Evaluation established the following objectives for this learning exercise:

- (1) To describe the results of DDU intervention activities.
- (2) To understand the factors that contribute to successful data use in country health information systems.

This report presents the results of the South Africa DDU learning exercise. Findings for Kenya and Tanzania are presented separately. These reports are meant to be shared with country governments, programs, and donors implementing DDU interventions to sustain a culture of decision making in health programs.

MEASURE Evaluation-Strategic Information for South Africa

MEASURE Evaluation–Strategic Information for South Africa (MEval-SIFSA) was a five-year project (2013–2018) supported by the United States Agency for International Development (USAID) with funding from the United States President’s Emergency Plan for AIDS Relief (PEPFAR). The project’s goals were to support the Department of Health (DOH) and their implementing partners to improve strategic information for evidence-based management of HIV and related health programs. The project sought to advance the management of health information systems (HIS) and monitoring and evaluation (M&E), by implementing and facilitating state-of-the-art approaches to M&E, HIS and data use. The project focused on three priorities:

- Implementation of strategies and policies to enhance HIV strategic information
- Strategic information capacity building for data quality and use
- Strategic information capacity building to strengthen health information systems

This learning exercise focuses on the second objective, to enhance capacity in the use of strategic information to improve the efficiency and effectiveness of South Africa’s health programs. MEval-SIFSA applied a comprehensive data use intervention adapted to the local context and specific needs of the project. An initial assessment of the data use context was conducted to inform the adaptation of the DDU intervention approach in South Africa. Activities to identify priority information needs were not implemented at the subnational level as ongoing work was focused on the identification and definition of a revised set of indicators at the national level (the National Indicator Data Set, NIDS). Instead, other areas of greater need were prioritized at the subnational level. The DDU capacity enhancement approach in South Africa involved formal training workshops, ongoing technical assistance, and the development and provision of information products. Table 1 describes the DDU interventions implemented in South Africa. The number of dots (1 to 3) represents whether the intervention area was a priority for the project’s DDU intervention approach (3=high priority and 1=low priority).

Table 1. DDU activities implemented by MEval-SIFSA

	South Africa	Description	Activities implemented by MEval-SIFSA
Assess and improve the data use context	●●●	Assessing the organizational, technical, and behavioural factors that affect decision making.	Group self-assessment assessing constraints to data demand, quality, and use (MEval-SIFSA, 2015a). This assessment consisted of 44 statements (10 on data demand, 16 on data quality, and 18 on data use) rated on a scale of 1 to 4.
Identify and engage data users and data producers	●●●	Improving the interaction and collaboration between data producers (i.e., those who design and manage information systems) and data users (i.e., those who use data in program improvement and development).	Ensure that both data users and data producers participate in data use training sessions together; institute collaborative data query forums (pre-performance review meetings) for data review and interpretation.
Improve data quality	●	Ensuring that data are accurate, complete, and timely.	Data quality activities were implemented at the national level. A data quality review was conducted in Gauteng province.
Improve data availability	●	Improving data synthesis and communication such that information is available in easily interpretable formats responding to information needs. Ensuring that data users can access and share data easily outside of regular dissemination processes.	Development and institutionalization of data visualization tools to facilitate quarterly performance reporting.
Identify information needs		Focusing on the practical questions that data users have to effectively run their health programs and their upcoming policy or planning decisions.	Not implemented at the subnational level. At the national level, MEval-SIFSA informed the development of the NIDS, identifying indicators of interest, and key analyses on which to focus.
Build capacity in data use core competencies	●●●	Data use core competencies include skills in data analysis, interpretation, synthesis, presentation, and the development of data-informed programmatic recommendations.	Development and implementation of training curricula, including <i>Evidence-Based Health Management</i> , <i>Communicating Data for Decision Making</i> , and <i>Data Analysis for Routine Health Data</i> , and targeted mentoring and technical assistance on target setting, abstract writing, and data analysis and visualization.
Strengthen the organization's DDU infrastructure	●	The rules, processes, values, and systems of an organization that support an individual's ability to use data in decision making.	Data use champions approach to build leadership in DDU and institutionalize informal capacity-building approaches.

Across the three associate awards, few activities were implemented to monitor, evaluate, and communicate the results of the DDU interventions. This learning exercise helps respond to this need.

METHODS

To select a region for inclusion in South Africa's DDU learning exercise, a mapping exercise was conducted to identify the geographic areas in South Africa that had participated in the largest number and variety of DDU activities across the DDU intervention areas supported by MEval-SIFSA (Appendix A). Based on this mapping, Gauteng Province and its associated districts (Sedibeng, Tshwane, and West Rand) were selected for this exercise.

Twelve interviews with 34 people who had experience and exposure to MEASURE Evaluation's DDU interventions were conducted, including program and/or M&E staff at the district and provincial levels, partners, and MEval-SIFSA staff (Appendix B). One-on-one key informant interviews, small group interviews (two respondents), and focus group discussions (10 to 11 respondents) involving people with similar job titles in the same geographic location were conducted. A lead researcher conducted each interview in English using a semistructured interview guide designed to explore stakeholder views on how the DDU interventions were implemented; the expected and unexpected changes seen because of the interventions; and the contextual factors that may have shaped the uptake and impact of the interventions. All interviewees provided verbal informed consent, and the interviews were audio-recorded using digital recorders. The recordings of the interviews were transcribed and analyzed using NVivo 11. An index code book with a priori themes was created before data collection, to identify and categorize responses. Codes were developed based on the questions and themes in the interview guide. Two independent coders initially coded one transcript to test the reliability of the coding scheme and recommend changes to the coding structure. Subsequently, one researcher coded each interview. Both researchers analyzed the data, updated the codebook based on emerging themes, and agreed on salient themes and common patterns.

FINDINGS

The following sections describe the activities implemented by MEval-SIFSA in each DDU intervention area and the factors that facilitated or hindered the effectiveness of the activities to strengthen demand for and use of data.

Assess and Improve the Data Use Context

Baseline assessments on data use were conducted in Gauteng Province to identify the priority technical, organizational, and behavioral barriers to data use. The data use assessment facilitated the adaptation of the DDU intervention to meet the specific contextual needs.

In South Africa, nine districts completed a rapid group self-assessment to identify constraints to data demand, quality, and use; this included three district teams in Gauteng Province (MEval-SIFSA, 2015b). The assessment consisted of 44 statements (10 on data demand, 16 on data quality, and 18 on data use), rated on a scale of 1 to 4. The assessments were often conducted as part of M&E and DDU training workshops in *Evidence-Based Health Management* and *Communicating Data for Decision Making* (see below). The exercise found that the main barriers to data use were: managers, clinicians, and other healthcare workers lacked the knowledge, skills, and confidence to calculate targets for indicators; poor skills in data communication and visualization; and consideration of data as an extra burden, additional to service provision and other work responsibilities. Based on the data use assessments, the district teams developed action plans to address their identified gaps and constraints to data use, including proposed activities to overcome the constraints, person(s) responsible, and timelines. A manager participating in the DDU self-assessment found it to be a useful tool to begin a dialogue about data use. She replicated the assessment with her own team at the facility level.

The assessments also informed the content for new training programs and the revision of existing training curricula in the MEval-SIFSA project.

We heard the voices of our potential beneficiaries from that rapid assessment...we [heard] the frustration of those at the national level around data quality and aspects about data quality were included in that training to see how right from the ground, the quality of the data can be improved. We knew the frustrations of districts and provinces..., we designed this training and ensured that the flow of the training was around the data, the importance of data quality and then going on into the differences between data and information because a lot of the times feedback was only on data. (Key informant, MEval-SIFSA)

Facilitators

DDU assessments were conducted in tandem with capacity building. Incorporating the DDU assessment with training sessions on M&E and DDU was identified as a good approach because the teams were able to reflect on their scores and discuss the factors in their work environments that constrained their ability to use data. These discussions simultaneously functioned as a learning moment for the teams about the importance of data demand, data quality, and data use, and increased the relevance and motivation for subsequent training. The teams learned about technical, organizational, and behavioral barriers to data use of which they were unaware prior to doing the assessment.

It was important to engage decision makers, program managers, and data producers in the DDU assessment. The selection of respondents for the assessment was identified as a significant factor for the successful development and implementation of the subsequent DDU strengthening action plan:

They made sure that their district manager was in the room. During the self-assessment, we would make sure that all the powers that be were there, the head at the provincial level and district level would have to be around during the assessment and also at the results of the assessment. But then there were also the doers who would make sure that the plan was completed and that the plan was implemented. (Key informant, MEval-SIFSA)

Barriers

There was limited follow-up on action plans. Respondents stated that they had limited ability to monitor the status of the data use improvement plans developed from the assessments. Some key informants could not identify or remember the data use improvement plans developed, and few teams reported back on the implementation of their data use improvement activities. The ability to monitor implementation of DDU strengthening plans is important to capture the benefits of investing in strengthening DDU. Communicating the successes of DDU activities is one of the activity areas in the DDU intervention to generate demand for data and continue the cycle of collecting high-quality data and using them in decision making.

Build Capacity in Data Use Core Competencies

To build sustainable capacity for using data in decision making, core competencies to demand and use data should exist at all levels of the health system. The competencies include skills in data analysis, interpretation, synthesis, and presentation, and the development of data-informed programmatic recommendations and policies. Both data users and data producers should be targeted for capacity-building activities. MEval-SIFSA was designed as a strategic information technical assistance project, prioritizing the development of M&E capacity of DOH teams. Capacity-building initiatives included training programs to address the priority barriers identified in the DDU assessments described above. In Gauteng Province,¹ capacity-building activities were:

- *Evidence-Based Health Management (EBHM)*, a five-day training curriculum focused on key concepts in system strengthening to improve health, routine health information management, M&E, data quality, and use of information for evidence-based health management. This training program was accredited for 30 continuing education units with the Health Professions Council of South Africa (HPCSA).
- *Communicating Data for Decision Making*, a four and one-half day curriculum focusing on DDU concepts, data analysis, and data visualization using charts, graphs, and pivot tables in Excel, data interpretation, and communication of information to key stakeholders. The training program was also accredited for 30 continuing education units with the HPCSA.

¹ MEval-SIFSA also developed a three and one-half day training curriculum entitled *Data Analysis for Routine Health Data*, which aimed to develop the basic knowledge and skills of data users and data producers to analyze, interpret, and use routine health data. The course content covered basic concepts in statistics, understanding routine health data, and basic analyses of routine health data. This course was not conducted in Gauteng Province, and is therefore not discussed in this learning exercise.

- One to two-day targeted training workshops on various topics, such as target setting and abstract writing.
- Coaching and mentoring of data use champions (see below) on such topics as data analysis, interpretation, visualization, and use.

Capacity building generated an increased appreciation for M&E and data-informed decision making. Respondents described an increased awareness of the value of data for decision making, and shared this appreciation with their teams. For example, a subdistrict manager described making a concerted effort with his team to improve data quality and routinely make sense of the data they collected and reported.

When we came back from training [on communicating data for decision making], I took my Health Information System Officer and I took my subdistrict team and I taught them how to make sure that the reports that they send to me make sense and [that they] know how to properly analyze the reports because that was critical to me. I would get a report that does not make sense. With the MEval-SIFSA training, now I am able to ask questions like why? And in my view, people now start to know that I will always ask them: how did you come to this? How did you do it, and what area did you use? (Subdistrict manager, West Rand)

Retention of DDU skills one to two years post training was high. Respondents in Gauteng described how they had acquired practical skills in analyzing, interpreting, and using data to address programmatic challenges. One to two years after the training sessions, respondents were able to speak in detail about the concepts and skills they took away from MEval-SIFSA capacity-building activities. Many respondents noted that they learned practical skills in data communication and presentation, including how to effectively use graphs and tips for conveying information to audiences.

I learned that I need to communicate in the simplest ways...we were advised that when we are doing a graph, it is important for that particular graph to talk to the person who is reading it....be as informative as you can, give people information, do not assume that people will know. Your graph must talk to people to say...what is the target...and how far are the subdistricts [from the target]? (M&E Officer, West Rand)

Facilitators

A focus on practical and relevant DDU skills improved facility work functioning. Capacity building on data use competencies focused on the development of practical skills that could be applied in people's regular work settings. Respondents described how they directly applied their new skills to improve how they worked. For example, respondents noted that they learned new concepts about target setting, including how information on budget allocations, supply chain, and human resources are needed to set accurate targets.

It was greatly beneficial because when we looked at [our own] operational plans, we'd find that our targets were actually off base...most of us would just [increase by] 10% or 15%; just thumb sucking. We actually needed to analyze our data and look at: is my adding 10% the real thing, is it what the district needs, is it aligning with the province, is it aligning with the national? So the training gave us that perspective: that we need to consider all those factors when setting targets and also the district where you are; the target population... (Program Manager, Sedibeng)

Following the training sessions on data communication, there was an improvement in the quality of data visualization, the level of technical discussion and examination of data, and their interpretation in regular

data forums in South Africa. The quality of discussions in data review meetings improved because participants were able to interrogate the data and understand performance on a more technical basis. As an M&E officer stated:

I attended a couple of joint management meetings after [the training]...it was really very impressive to see facilities being able to communicate data in the way they were communicating data. I saw beautiful graphs that were actually making sense, you could see that this person took time and this person actually learned the skill and even in the district, I saw a lot of improvement; there are program managers that can run pivot [tables]. (M&E Officer, West Rand)

The applicability and relevance of practical exercises facilitated the use of learned DDU skills.

Respondents enjoyed the practical sessions that helped them build relevant skills, with guided support from facilitators/trainers. The training materials and curricula were designed to be relevant to the specific context in South Africa, with exercises and examples taken from people's day-to-day work. For example, the training program on Communicating Data for Decision Making had learning activities based on real-life tasks for program managers, such as calculating targets based on provincial or national targets. The relevance of the learning exercises facilitated the diffusion of new skills back to respondents' places of work. In one instance, a program manager from Sedibeng District described conducting a target setting exercise at the facility level to understand how each facility in the district contributed to its overall targets. This helped the manager identify underperforming facilities that required additional support to achieve their targets. A learning exercise to create dashboards spearheaded the development of a reporting template in Sedibeng, as described below.

The engagement with real-life data increased the quality and relevance of the training sessions.

Trainees were encouraged to come with their own data relevant to their respective programs and geographic areas of interest. This improved the applicability of the training sessions, and also helped draw attention to some of the real-life issues that people were likely to encounter when working with their own data (e.g., working with missing or outlier data). Trainees reported that they were more actively involved because the data they worked with were current and immediately relevant to their programs. Moreover, participants left the training sessions with timely, concrete products (visualizations, tables, abstracts, speeches) that they could present to their teams.

The interactive training sessions led to internalized DDU skills. Participants described the training sessions as highly interactive and participatory, using action-oriented adult learning methodologies focused on learning and doing to internalize new skills. Dynamic and skilled facilitators were able to direct large and small group discussions to keep participants engaged throughout the training sessions. Multiple participants pointed to the development of a data-informed elevator speech as a practical skill they appreciated the most from the training on data communication.

Organizational incentives for DDU training workshops enhanced the importance of the topic and promoted participation. MEval-SIFSA accredited training curricula with the HPCSA, giving people additional professional and personal motivation to actively participate in training workshops. Further, the training on EBHM was necessary for program managers to complete their portfolio of evidence (POE), a competency requirement of the South African Qualifications Authority. Linking the content of the EBHM training to the POE encouraged participation and engagement in the training program, and reinforced the importance of data use as a critical responsibility of those in this role. As one respondent stated,

The POE approach requires that managers are trained on evidence-based health management... [the EBHM training] has given them a better understanding on knowing [how to assess performance] or do a gap

analysis, such that setting up a POE became easier for the people that attended the EBHM training. (District Information Officer, Sedibeng)

Barriers

Infrastructure challenges inhibited the application of new DDU skills. Some respondents discussed how infrastructural, personnel, and technological challenges affected the extent to which they were able to apply the skills and knowledge acquired. Respondents noted that it was difficult to implement new skills after a three- to five-day training program, especially when returning to workplaces that lacked computers and access to the Internet. As one participant noted: “After that training, I felt empowered to do my own graphs and analysis. I was excited, but it ended there, because of the [ongoing] challenges we have.” Other respondents noted that the lack of support and buy-in on a data use culture from management teams inhibited the success of capacity-building efforts.

There was a lack of follow-up and continuous capacity-building support. Multiple respondents reported a lack of follow-up post training to understand whether those who attended the training were able to apply new skills or to identify challenges faced when doing so. One respondent suggested a follow-up mechanism from management teams to monitor how those sent for training are carrying these skills forward when they return to work, and understand the challenges and successes in applying the skills. Setting up an expectation of follow-up from capacity-building activities also could help build accountability and motivate those trained to implement new skills.

Improve Data Availability

For data use to occur, data needs to be easily accessible, synthesized into easily understandable formats, and communicated to different target audiences. To facilitate the review and monitoring of program progress and targets, MEval-SIFSA provided ongoing technical assistance to develop an Excel-based monthly data reporting and visualization template. This template improved data availability and access by automating data aggregation and displaying information for priority decisions.

Following the training program on data communication discussed above, a data use champion (discussed below) identified the need to improve the presentation and reporting of data at quarterly district performance review meetings to enhance the ownership of data by program managers. Data presented at these meetings were prone to aggregation errors because monthly data were manually extracted from the DHIS 2 and summed to generate quarterly figures in Microsoft PowerPoint templates. A reporting tool, developed in Microsoft Excel, was prepared to prevent frequent data compilation errors and promote the use of data visualizations. The tool was prepopulated with district baseline figures and targets. Monthly performance indicator data were then entered in the template and aggregated in quarterly figures, allowing users to easily calculate performance variances using a colour-coded traffic light scheme to indicate performance against targets. Data visualizations were also autogenerated to easily compare performance between reporting units and to facilitate regular program monitoring, with space to record data interpretations and conclusions (Appendix C).

Data visualization tools facilitated data review, action planning, and improved data communication. Respondents noted that the template streamlined the synthesis and visualization of data, thus “made life easier for [those who are compiling data]... because it automatically gives us the variances and the graphs.” This process enabled program managers to review their data, examine trends, and add meaning to the information presented in the template; for example, adding reasons for a deviation from a target next to the graph itself. Respondents cited a marked improvement in the quality

of presentations made during performance reviews, transitioning from reciting numbers to more confident presentations with analyses and interpretation.

After the development of the tool, they would really look at the tool before they go into the quarterly review meeting...now by the time they go for the review meetings, they know what to say, how to say it, and were starting to move from just reading to more analysis and making sense out of the data. (Key informant, BroadReach)

At the time of this learning exercise, the template had been recently introduced at quarterly review meetings at the district level. There was further interest in adapting and using it at the subdistrict and provincial levels.

Facilitators

Integrating data visualization tools in performance review meetings increased transparency and the ability to follow up on action plans. The reporting template was used to collate and visualize data to prepare program managers for their quarterly review meetings. This increased the quality of the discussions during the performance reviews, allowing more time for critical thinking, action planning, and following up on action plans.

[During the quarterly review] they talk to the issues, they elaborate more and [have] that probing session to say that now that you have this, what are you going to do, then it gets meaning...the template is linked to the meeting minutes [to follow up on] what you have committed yourself to. (District Information Officer, Sedibeng)

Locally-driven solutions to improve data availability increased data use. The reporting template was a customized solution that addressed a critical need identified by the district information officer, who noted frequent challenges preparing for quarterly performance review meetings. The district information officer was deeply engaged in the process of prototyping and developing the template, and trained others in its use. This engendered ownership and commitment to the template, hereby helping ensure its sustainability

Barriers

Data users did not view tasks to improve data availability as their responsibility. The data reporting and visualization template was developed to improve the ownership of data — “to get program managers to actually look at their data prior to presentation and do a thorough analysis of the data.” However, respondents noted that “there was a bit of resistance...they wanted us [data producers] to do everything for them.” This highlights the importance of including data-related tasks explicitly in job descriptions, defining data use roles and responsibilities or performance management tools for program managers, and developing guidelines that outline expectations and requirements for data review meetings.

Lack of instructions on how to auto-update the tool inhibited its sustainability. A potential barrier to the future regular use of the reporting tool will be the lack of an auto-update function. The data still need to be manually entered in the template, as opposed to an automatic upload using existing data aggregations. This additional step can introduce data entry errors. Baselines and targets also need to be continually updated. One respondent noted that parts of the template are locked so it can be difficult to change the targets.

Improve Data Quality

High-quality data that are accurate, complete, and timely are needed for consistent data demand. Without high-quality data, decision makers lack confidence in the data they consult and demand for data drops.

MEval-SIFSA supported the DOH to develop and strengthen data quality strategies, policies, and programs; build capacity in data quality improvement; and strengthen the capabilities of provinces and teams to monitor the quality of their own data. Examples of the activities implemented in this area are: curriculum development for a course on data quality for managers; tool development (including a routine data quality assessment tool and checklist); intensive mentoring on data quality for Health Information Management (HIM) teams; and conducting a baseline data quality assessment in Gauteng Province to inform provincial data quality improvement plans (Gauteng Department of Health, 2016).

We were not able to interview the personnel involved with MEval-SIFSA's data quality interventions for this learning exercise. The outcomes of these activities were published in end-of-project briefs.

Identify and Engage Data Users and Producers

Meaningful engagement between data users and data producers is essential for improved and strengthened data-informed decision making. Their interaction facilitates the interpretation of data, conversations about data quality, requests for additional analysis, and the clarification of existing data sources. This continued interaction builds a culture of data use and stimulates further demand for and use of data. Through all interventions, MEval-SIFSA sought to strengthen the engagement between data users and data producers to foster shared understanding and ownership of data.

Collaboration engendered a shared understanding of data quality and M&E processes. Both data users and data producers jointly participated in capacity-building activities to discuss data processes, data quality challenges, and roles and responsibilities. One benefit of the joint training sessions, as described by a subdistrict program manager, was improved communication between data users and data producers that created a shared understanding of the terminology about data verification processes, especially for data accuracy, completeness, consistency, and relevance.

Facilitators

Collaborative data query forums improved data quality and facilitated meaningful data use during data review meetings. Respondents stated that the project strengthened the interaction between data users and data producers during provincial quarterly performance review meetings. The goal of these meetings was to regularly review program progress, jointly analyze and interpret data, and link data back to program improvement efforts. At these meetings, program managers would not normally be engaged in the preparation of the data, even though they were responsible for delivering the presentation of program performance. Disagreements would often arise at these meetings because program managers questioned the validity of the data, blamed others for the poor data quality, and lacked ownership of the data they were presenting. This derailed the purpose of the meeting and decreased the opportunity for data interpretation, the identification of programmatic implications, and the development of plans for program improvement.

To address this, MEval-SIFSA supported district-level pre-performance review meetings, bringing together a smaller group of program managers and health information management staff to review and interpret data among themselves in structured ways before presenting to a more diverse group. The pre-

performance review meetings were described as “name and shame” meetings, which gave the teams dedicated time to review data quality issues, clarify indicator definitions, verify figures, and more fully understand the reasons for program achievements and remaining gaps. This helped promote shared responsibility among the teams, and a collective understanding of the reasons for performance and next steps for improvement before presenting in front of senior managers and directors at the quarterly review meeting. Respondents stated that this led to a more effective use of time and resources at the larger provincial meetings, which were used to focus on more productive discussions about performance, service delivery gaps, and advocating for data-informed interventions to senior managers and directors who attended these meetings.

This is the only time when the program managers and the HIM [team] were in the same room because most of the time, the program managers, the owners of the data, always see the data for the first time during the quarterly review meeting and they would be happy to say that this is not my data. But for the pre-reviews, if they disagree with the data, then they must provide the correct answer because the HIM person is using what is gleaned from DHIS... the program people can provide explanations for what happens on the ground. If you have the two in the room, they are able to complement each other well, the other ones are the ones generating the data, the others take ownership of the data and say that the results are in this manner because of X, Y, Z and this is how we can improve 1.2.3 with the following interventions. (Key informant, MEval-SIFSA)

The reporting and visualization template described above was also developed as a way to facilitate ownership among both data users and data producers. The template was designed to encourage program managers to engage with their data prior to the performance review meetings, with the help of the data producers who entered the data. The use of this tool has started to improve the quality of presentations at the performance review meetings because program managers have a better understanding of performance trends and whether they are meeting their targets.

Capacity building and training sessions on data use improved accountability. Respondents noted that the skills gained from the data use training programs (such as the Communicating Data for Decision Making curriculum) contributed to the preparation and quality of quarterly review meetings. One respondent noted: “We are now able to interrogate each other on a more technical level, compared to beforehand where it was very subjective. We are holding each other accountable in our reporting.” Program managers were able to apply their knowledge about how to best use different types of graphs to present information optimally during the review meetings.

Barriers

Organizational structures inhibited collaborative data review. Respondents noted difficulties engaging data users and data producers in data review due to entrenched team and organizational dynamics. For example, one respondent noted that even though data producers and data users worked in the same building, they did not often interact. They relied on MEval-SIFSA’s assistance to request data, which “goes from there to SIFSA and then it comes back.” This attitude can permeate the data reviews, where conflict and defensiveness can act as a barrier to a more in-depth program review.

Identify Information Needs

There were no activities conducted specifically in Gauteng Province to identify information needs.

Strengthen the Organization's DDU Infrastructure

An organization that clearly supports data use in its values, mission, and organizational infrastructure is more likely to develop and sustain a data use culture. Clear guidance, policy, tools, and processes for data use are needed to institutionalize data use.

MEval-SIFSA helped support training and orientation on South Africa's District Health Management Information System (DHMIS) policy and standard operating procedures. These procedures lay out the standards, roles, and responsibilities for implementing the DHMIS to improve the availability, quality, and use of health information. MEval-SIFSA also developed and strengthened organizational guidance to govern data processes and support data-informed decision making (e.g., data governance framework). In addition, the project helped districts formally adopt and institutionalize new tools in support of national policy and data use, such as the data reporting and visualization template described earlier. Respondents interviewed were committed to the tool and continued to use it during performance review meetings after project support ended. At the subnational level, MEval-SIFSA also implemented a data use champions initiative.

Data use champions facilitated data use by generating local solutions to overcome local data use barriers. To build leadership in DDU and institutionalize informal capacity-building approaches, MEval-SIFSA identified DDU champions at the provincial and district levels to reposition and mobilize support for data use.² The champions selected were influential and respected people who visibly promoted the demand for and use of data. They received intensified and continuous technical assistance in data analysis, interpretation, visualization, and communication from MEval-SIFSA to increase their ability to mentor their team members at lower levels of the healthcare system to enhance capacity in core data use competencies.

The data use champions acted as change agents, conveying the benefits of data use interventions to decision makers. In Sedibeng district, a data use champion led the development of the data reporting and visualization template described earlier. For this template to be developed and implemented, this champion (a member of the HIM team) successfully advocated for the importance of this data use intervention to the decision maker (Director of Health) in the district. Champions also took the initiative to motivate their own teams to improve data quality and use. For example:

I know one other thing that motivates the data capturer is acknowledgement. You know I just did a simple thing at the end of the year last year where at the end of the year I printed an acknowledgement certificate for all our employees in the HIM unit. I did not realise because, as you were giving them out, people were literally in tears, in tears and the word that they said was you know what, we never knew that we were so important in this unit. We thought that we were just doing what we were supposed to do, now that we are getting this, it actually says to us that we are important in this unit and we make our commitment that at least somebody recognises our importance. And they started moving further and that on its own brought them together more closely. If I had funds, I was saying to her, I wanted to buy a trophy and I am going to do data capturer of the month. It's four trophies, one per subdistrict and one for the district office; I do the data capturer of the month. At the subdistrict level, we do the best performing facility in terms of data management for the month and it becomes his own trophy. That on its own is going to encourage the performer to be able to perform more to accelerate, that is how we can bring a difference. (District Information Officer, Sedibeng)

² Gauteng Province had one provincial champion (Deputy Director, Nutrition), along with champions at the district level (e.g., Tshwane District Assistant Director of Nutrition, Sedibeng District HIM Manager, West Rand M&E Officer)

Most of the time, if you have only the facility manager who is knowledgeable on how to use data or who knows how to interpret data...but if you have a data use champion, usually he is able to facilitate or to encourage colleagues to make sure that the data that they collect are actually accurate and reliable and even the colleagues see that actually it is not only the facility manager who sees this as important, it is important for all of us. So, they are a form of encouragement and they reinforce data management issues in the facility with this champion. (District Training Officer, DOH)

The champions approach created space to innovate data use interventions from the perspective of health workers who faced barriers to data use in their daily work settings, and built local leadership that values data-informed decision making. One data use champion was promoted and built the capacity of her new team to use data during quarterly review meetings:

The way that they conducted business at their quarterly review meetings, they had embedded data use into it. They were asking: do you know your targets, are your targets realistic, how far are you from your targets, what are the implications of your status? I could see that coming in her approach [to leading the meeting]. (Key informant, MEval-SIFSA)

Another champion, a provincial director in the nutrition program, was supported by MEval-SIFSA to access data and perform data quality checks, conduct analyses to monitor performance and identify under-performing sites, and conduct site visits to further understand the reasons for poor performance in one district. Following this support, the champion used the knowledge and skills gained to independently replicate the process in other districts.

Facilitators

Commitment to data informed decision making motivated data use. DDU champions were perceived to have initiative and showed commitment to support others by sharing data use-related knowledge and skills. Champions also tended to have the ability to motivate others; one was described as “young, energetic, and passionate.” These characteristics were reported as crucial to encourage others to use data.

Recognition and support motivated data use. Respondents noted that the champions were motivated by the recognition they received from their peers. The champions did not receive any monetary benefits or remuneration, but often received additional training and mentoring, and took on additional responsibilities for conducting training sessions at lower levels. Champions were often supported to write abstracts for conferences as a way to showcase their ability to analyze data and to communicate a story.

Champions facilitated the use of data to improve linkages between program areas. Champions were tasked with engaging other teams and programs to successfully achieve their data use initiatives. Program coordinators would identify focal points from other programs (e.g., the planning unit, M&E, and health information management) for support when championing the use of data. For example, one data use champion was a provincial nutrition manager who noticed that vitamin A coverage was low, flagging a potential need for community campaigns if parents were not bringing their children to the clinic for immunization. This champion recognized the need to track facility-based child health indicators in other program areas, and noted that de-worming coverage was high, signalling that children were, in fact, coming to the health facility. This indicated the need to work better with other programs to ensure that children were being reached with comprehensive health services at the facility.

Barriers

Roles and responsibilities of champions need to be formalized in the facilities for a successful champions program. Formalized workplans outlining specific scopes of work, expected outputs, benchmarks for data use initiatives, and reporting mechanisms were not developed. This made it difficult to ensure the accountability of champions. Roles and activities for champions were discussed and agreed to with supervisors and department heads at the beginning of the initiative but were often de-prioritized due to the individual's workload and competing priorities. Some champions found that they did not have the support of their superiors, resulting in limited authority and decision space for data use initiatives.

Measurement and follow-up of champions were challenging. It was difficult to monitor progress in the data use champions initiative, especially because each champion undertook different types of data use strengthening initiatives. Because the champions were geographically spread out around the country, it was not always feasible to provide sufficient in-person follow-up support. The project did not have monitoring tools or incentives for champions to self-report on progress in their activities. With the short time frame for implementation, it was especially difficult to understand the results achieved by team members who were mentored by data use champions.

LESSONS LEARNED AND CONSIDERATIONS

Based on these findings, we present lessons learned for country governments, programs, and donors implementing DDU interventions.

- **Dedicate time to review data to understand program performance.** In an emerging health information system, the review of data is often focused on ensuring data quality and identifying issues to strengthen data management. Because of the often significant data quality improvement needs, little time and resources remain to review the data to understand program performance. MEval-SIFSA highlighted the need to dedicate time to reviewing and interpreting data to understand program performance and to developing data-informed recommendations to improve performance.
- **Build understanding of the value of data before embarking on sophisticated skills building in DDU.** MEval-SIFSA mentored people according to their current level of capacity and their priority needs. Technical assistance did not always focus on data analysis, visualization, and communication during the start of project implementation; it instead centered on simpler needs to first build the value of data use.
- **Recognize data use as a continuum.** The comprehensive data use intervention implemented by MEval-SIFSA considered data use as a continuum that progressively builds on previous stages. For example, the first interaction with teams occurred during training sessions on DDU, in which people saw the value of DDU and learned tools and skills to apply in their work. Data use champions were often identified during the training, and with continued mentoring and support, their skills in data analysis and visualization improved. As champions, these people exhibited leadership and commitment to improve DDU in their teams, and developed their own DDU interventions. In some cases, they advocated with decision makers in their districts to formally adopt and institutionalize new tools to support data use, such as the data reporting and visualization template.
- **Use existing organizational incentives and forums to promote data use interventions.** MEval-SIFSA made use of existing organizational support as a foundation for its data use activities. For example, the capacity-building training program was accredited with health professional associations and contributed to the health workers' POE, a competency requirement of the South African Qualifications Authority. This highlighted the importance of data use for health workers and increased the incentive for people to participate in the training sessions. Moreover, in South Africa, quarterly review meetings were well-established, occurred regularly, and were mandatory for people to attend. Embedding data use activities, such as the pre-performance review meetings and the data reporting and visualization template, helped promote the sustainability of these initiatives.
- **Support locally-driven ideas for data initiatives.** MEval-SIFSA supported data use champions to develop their own solutions to their identified barriers to data use. For example, the data reporting and visualization template was conceptualized by a district information officer who was frustrated by the poor aggregation and visualization of data during performance review meetings. The front-end user was involved throughout the development process, providing input that was incorporated in each iteration, thereby increasing ownership of the tool.

- **Provide ongoing support for capacity building.** Training alone is insufficient to build capacity in data use core competencies. Continuous technical assistance and mentoring reinforced the skills learned during the training courses. Sustainable mechanisms are needed to follow up and support staff to practice their skills. The data use champions approach to mentoring was well received, and was reported as a promising approach to reinforce skills learned during training and to diffuse them to team members who did not attend the training events. However, more structure, support, and follow-on are needed for this approach to be fully effective.
- **Understand and address organizational dynamics that inhibit data use collaboration.** MEval-SIFSA worked to bring together data users and data producers to improve data use; however, respondents noted that existing team and organizational issues continued to act as barriers to successful data use collaboration. One respondent described the team dynamics among senior managers as “volatile,” with many issues of mistrust evident among the teams. Fully understanding these issues can improve the interactions between data users and data producers to further strengthen the cycle of information use.
- **Support staff to apply new data use skills directly in their work.** Data use training curricula were designed to address the specific needs of trainees, as identified by the baseline data use assessment. This resulted in applied and practical training materials that covered data use topics regularly encountered in the participants’ job responsibilities. Learning exercises used during the training sessions included action-oriented relevant approaches that helped build the value of data analysis and communication, and which could be directly applied to existing job tasks. MEval-SIFSA worked with trainees to further apply the skills they learned once they returned to their workplaces, e.g., by helping apply the data visualization and reporting template and providing technical assistance on understanding and setting targets. This continuous engagement with the teams helped reinforce data use skills and concepts learned and identify further barriers to data use.
- **Engage senior managers and decision makers to lead the data use interventions.** Senior managers and decisions makers are crucial for motivating their teams to engage in data-informed decision making. They reinforce the value of data-informed decision making when they model the desired behaviour of promoting data use interventions. They can also advocate for organizational support to enable data use (funding, policies, meetings, etc.). Building their communication and advocacy skills is a viable intervention to support them in this effort.

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APPENDIX A. MAPPING OF DATA USE INTERVENTIONS IN MEVAL-SIFSA

DDU Strategy Components	DDU Activities	Gauteng			KwaZulu-Natal			North West	Free State	Eastern Cape	Limpopo
		Tshwane District, GP	West Rand District, GP	Sedibeng District	uThungulu District, KZN	Uthukela District, KZN	Ugu District, KZN	Ngaka Modiri Molema District	Free State Province (FS)	Amatole District, EC	Waterberg District, LP
Assess and improve data use context	DDU assessment conducted using the Facilitated Group Self-Assessment on Data Demand, Data Quality, and Information Use	x	x	x	x	x		x	X	x	x
	DDU improvement plan written	x	x	x	x	x		x	x	x	x
Engage data users and producers	Technical assistance provided for performance prereview and/or review meeting	x	x	x				x			
Improve data availability	Reporting templates developed for data use champions	x	x	x							
Build capacity in data use core competencies	Data users and producers trained on the importance of DDU, target setting, data visualization, and data interpretation	x	x	x	x	x		x	x		x
	Communicating Data for Decision Making training workshop conducted	x	x	x	x	x		x	x		

DDU Strategy Components	DDU Activities	Gauteng			KwaZulu-Natal			North West	Free State	Eastern Cape	Limpopo
		Tshwane District, GP	West Rand District, GP	Sedibeng District	uThungulu District, KZN	Uthukela District, KZN	Ugu District, KZN	Ngaka Modiri Molema District	Free State Province (FS)	Amatole District, EC	Waterberg District, LP
	Evidence-Based Health Management (EBHM) training workshop conducted				x					x	x
	Data Analysis for Routine Health Information System Data training workshop conducted at provincial level								x		
	Training workshops and technical assistance provided on target setting and writing abstracts	x		x	x				x		
Strengthen organizational DDU infrastructure	Data use champions identified and mentored	x	x	x		x	x	x			
Total number of DDU interventions		8	7	8	6	5	1	6	6	3	4

APPENDIX B. LIST OF RESPONDENTS

Interview Number	Position	Location	Data user, data producer, or other
1	Former District Training Officer	Gauteng	Data user
2	Deputy Director, Health Information Management (DDU champion)	Sedibeng District	Data producer
	District Information Officer	Sedibeng District	Data producer
3	Program Managers (11)	Sedibeng District	Data user
4	Primary Health Care Program Manager	Tshwane	Data user
5	Deputy Chief Director	West Rand District Council Area	Data user
6	District and Subdistrict Managers (10)	West Rand	Data user
7	Area Managers (2)	West Rand	Data user
8	Subdistrict Manager	West Rand	Data user
9	Monitoring and Evaluation Officer	West Rand	Data producer
10	Health Manager, BroadReach	Not applicable	Other
11	DDU Advisor, MEval-SIFSA	Not applicable	Other
12	Data Analyst, MEval-SIFSA	Not applicable	Other
	Senior Data Analyst, MEval-SIFSA	Not applicable	Other

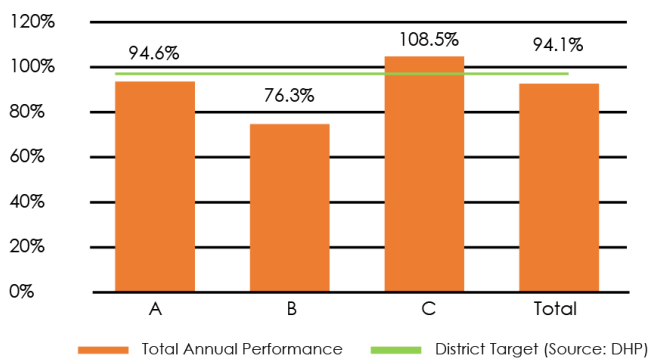
APPENDIX C. REPORTING TEMPLATE DEVELOPED IN SEDIBENG

The template is prepopulated with baseline figures and targets. Monthly indicator data are manually entered. Quarterly figures are automatically generated and compared to their targets. Traffic light indicator system shows whether the indicator is on track or off track. Data visualizations are also automatically generated based on the data entered.

Performance Indicator: Client tested for HIV

Sub-district	Baseline (actual performance) 2015/2016 (Source: DHIS)	District Quarterly Target				Actual Performance				Total Annual Variance	Total Annual Performance	% Annual Performance	
		District Target (Source: DHP)	Q1	Q2	Q3	Q4	Q1	Q2	Q3				Q4
A	200253	190428	47607	47607	47607	47607	41938	47546	48585	42157	-10202	180226	95%
B	23979	20652	5163	5163	5163	5163	5309	2816	4600	3033	-4894	15758	76%
C	34717	18356	4589	4589	4589	4589	5372	5836	4203	4514	1569	19925	109%
Total	258949	229436	57359	57359	57359	57359	52619	56198	57388	49704	-13527	215909	94%

Client tested for HIV (including ANC)



Reason for variance or performance status

Supporting partner put more resources to increase coverage

Data interpretation

MEASURE Evaluation
University of North Carolina at Chapel Hill
123 West Franklin Street, Suite 330
Chapel Hill, North Carolina 27516
Phone: +1 919-445-9350
measure@unc.edu
www.measureevaluation.org

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