

# Capacity Building Interventions in Health Information Systems

Action for Stronger  
Health Systems

May 2018



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## ABBREVIATIONS

DRC	Democratic Republic of the Congo
GESIS	Gestion du Système d’Information Sanitaire
HIS	health information system
HISSM	Health Information System Strengthening Model
HMIS	health management information systems
MOH	ministry of health
NAC	National AIDS Council
NMCP	National Malaria Control Program
PMI	United States President’s Malaria Initiative
USAID	United States Agency for International Development
WHO	World Health Organization

## BACKGROUND

Health information systems (HIS) represent a significant investment for global, international, and subnational groups and organizations that require evidence for accountability and informed decision making. However, despite such a compelling need for robust evidence of HIS function, these systems have not traditionally been a subject for rigorous study and evaluation. That lack limits learning, sharing, and cultivating best practices more widely.

MEASURE Evaluation, a five-year cooperative agreement with the United States Agency for International Development (USAID), helps countries improve HIS management, governance, and performance. In July 2014, USAID asked MEASURE Evaluation to implement activities to build an evidence base that would identify which investments in HIS are effective and useful. In response, MEASURE Evaluation developed an HIS Learning Agenda<sup>1</sup> to explore what works to strengthen HIS. The Learning Agenda seeks to answer questions such as these: What are the factors and stages of progress in HIS performance and how are they measured? What are the characteristics of a strong HIS?

The project is also implementing activities to build the evidence base on HIS strengthening. Our aim is to contribute to evidence-informed global work to strengthen HIS and health outcomes.

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<sup>1</sup> MEASURE Evaluation. (2015). Learning agenda. Chapel Hill, NC, USA: MEASURE Evaluation, University of North Carolina at Chapel Hill. Retrieved from <https://www.measureevaluation.org/resources/publications/fs-15-142>

# INTRODUCTION

MEASURE Evaluation works with global, national, and local partners to strengthen HIS in scores of countries. We have a set of prescribed results to achieve, many of which depend on successful capacity building—such as to strengthen the collection and use of routine health data, improve country-level capacity to manage HIS and conduct rigorous evaluations, and address health information gaps and challenges. We work to build country capacity to generate, manage, and use health information at national and subnational levels; foster country ownership and accountability for HIS; and promote the use of data for decision making.

The global health and development community has widely acknowledged the vital role that capacity building plays in strengthening health systems, particularly when sustainability and country ownership are a priority (Goldberg & Bryant, 2012). Despite the recognized importance of capacity building, it is a concept that is difficult to define (Goldberg & Bryant, 2012; Mizrahi, 2004) due—in part—to the wide range of applications and interventions that can fall under the umbrella term of capacity building. The World Health Organization (WHO) defines capacity building as “the development and strengthening of human and institutional resources” (World Health Organization, 2017). Other definitions talk about achieving increased human and institutional resources for the organization, including improving performance or meeting an institution’s stated goals (Goldberg & Bryant, 2012). The United Nations Research Institute for Social Development defines capacity as the ability “to perform functions, solve problems, and set and achieve objectives.”

## **Three types of capacity—clinical, management, and monitoring—are needed among people working in health systems:**

- Clinical—the knowledge and skills needed for service delivery. While clinical capacity largely refers to the capacity of a provider to manage patient care, this capacity also affects the quality of data entered in an HIS.
- Management—skills to manage strategies, resources, operations, and performance of a system overall. Competencies include strategic thinking, problem solving; human resource, financial, and operations management; performance management and accountability; governance and leadership; political analysis and dialogue; and community and customer assessment and engagement (E. H. Bradley et al., 2015).
- Monitoring—skills and knowledge to oversee data collection, data management, data quality, and interpreting and using data to improve health system performance in addressing health issues.

Capacity building can also be segmented by what is targeted: individual capacity, or organizational and system capacity—levels that are somewhat fungible, because interventions at the individual level are often part of a larger effort to build overall system-level capacity. For example, a district-wide intervention targeting the clinical capacity of nurses targets the individual nurses *and* the capacity of the district health system. In parallel, a set of interventions to improve an organization’s supervisory capacity also will affect the individual capacity of the manager and the person supervised (Management Sciences for Health, n.d.).

This synthesis—one of a series produced by MEASURE Evaluation—explores the importance of *individual* capacity building for people working with HIS and, in turn, how capacity building may help to strengthen HIS and health outcomes, thereby strengthening the health system overall.

## METHODS

To explore what works to strengthen HIS and to identify capacity-building components that might affect system functions, we conducted a literature review and examined our own activities in HIS strengthening. We then mapped what we found to MEASURE Evaluation’s Health Information System Strengthening Model (HISSM), a framework that outlines the domains affecting the HIS environment and performance.

For the literature review, we sought information on capacity building and HIS strengthening as a component of strengthening the overall health system. When searching, we looked for information on how capacity-building needs are assessed and what evidence-based capacity-building interventions are used to strengthen HIS. Using PubMed and Google Scholar, we also searched for lessons learned by those implementing capacity-building interventions meant to improve HIS functioning. Example search terms were “information system,” “capacity building,” “health information system,” “capacity,” and “health systems strengthening capacity building.” In addition to “capacity building,” alternate forms—“capacity strengthening” and “capacity enhancement”—were included.

Next, we reviewed all of MEASURE Evaluation’s activities—including those carried out through the project’s three associate awards from USAID—to determine which ones included capacity building as an approach for HIS strengthening. We identified those that used capacity building as part of a strategy to (1) improve capacity to manage HIS, resources, and staff; (2) involve methods, tools, and approaches improved and applied to address health information challenges and gaps; or (3) strengthen the capacity for collection, analysis, and use of routine health data.

**We found 64 activities, representing 16 percent of project activities that met these criteria, and selected three that provided clear examples of capacity building’s contribution to a strengthened HIS in several ways:**

- Activities where capacity building plays a large role in the strategy for HIS improvement
- Activities that, taken together, provided a diverse set of capacity-building interventions
- Activities far enough along so that conclusions could be drawn about the success of the strategy employed

**The three activities selected are:**

1. Capacity building in data analysis for national and university staff in Zambia
2. Capacity building in health management information systems (HMIS) and monitoring and evaluation (M&E) capacity strengthening in Burundi
3. Three capacity building activities (discussed as one) in the Democratic Republic of the Congo (DRC)

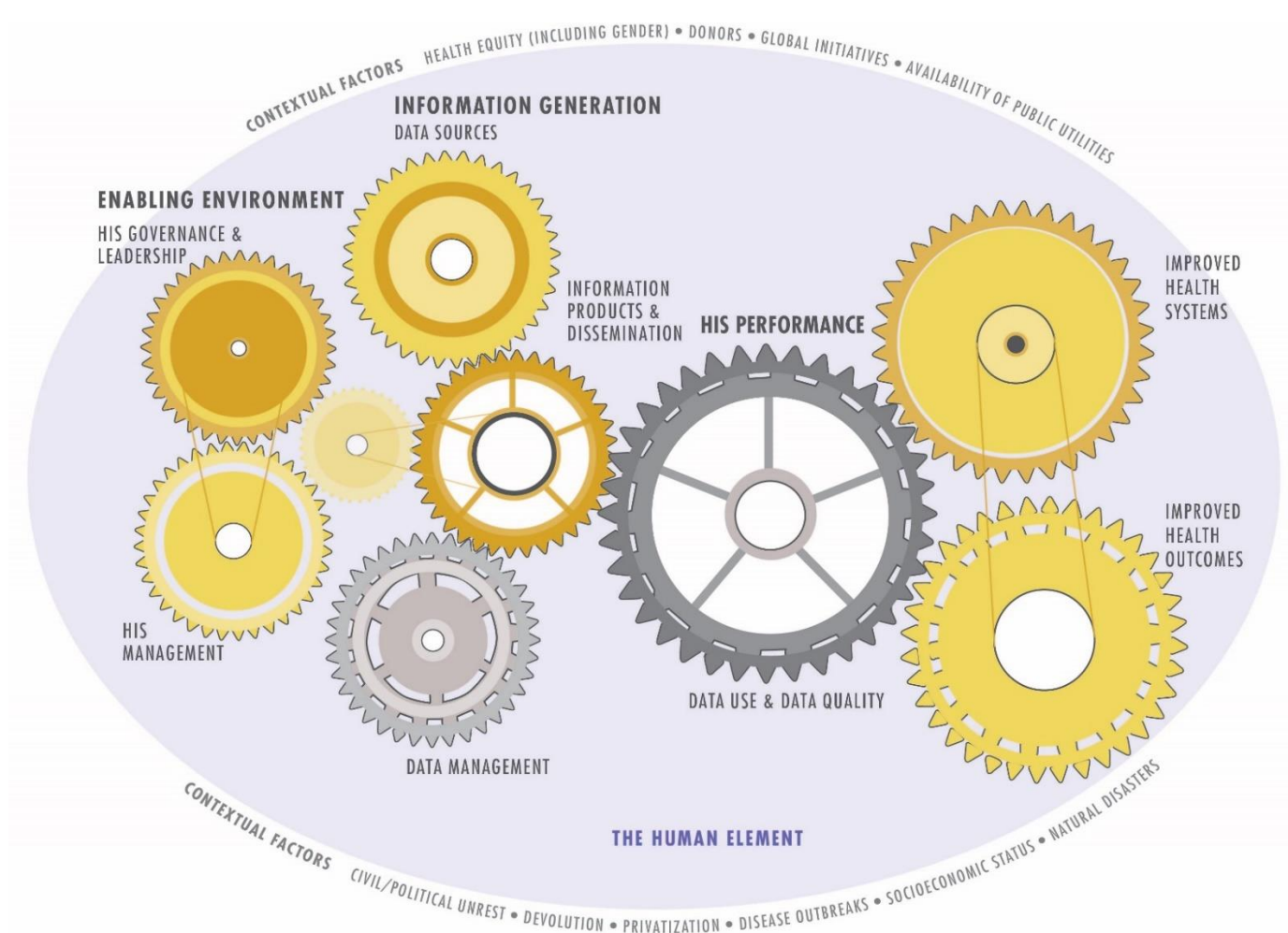
Having chosen the activities, we gathered information from the activity summaries available on MEASURE Evaluation’s management information system. Next, we shared this information with technical leaders of those activities to get detail and to ask additional questions about successes, challenges, and outcomes observed.



## Mapping to the HIS Strengthening Model

Next, we mapped the MEASURE Evaluation activities to the project's HIS strengthening model (Figure 1). (MEASURE Evaluation, 2016).<sup>2</sup> The HISSM provides a starting point for framing what we know and the gaps or opportunities available. We mapped each MEASURE Evaluation activity to the part of the HISSM it addresses. We anticipated that capacity-building interventions typically influence multiple areas delineated in the model—acting directly on the human element: the people who make an HIS function. For example, people may manage the whole of an HIS or be engaged in improving the functioning of subsets of an HIS, such as data use or data quality.

**Figure 1. HIS strengthening model**



<sup>2</sup> MEASURE Evaluation. (2016). Health Information System Strengthening Model. Retrieved from [www.measureevaluation.org/his-strengthening-resource-center/his-strengthening-model](http://www.measureevaluation.org/his-strengthening-resource-center/his-strengthening-model)

The HISSM is divided into several areas: the human element (workforce, data users, health system beneficiary); the enabling environment (HIS leadership and governance and HIS management); information generation (data sources, data management, and information products and dissemination); HIS performance (data quality and use); and contextual factors (civil/political unrest, devolution, privatization, disease outbreaks, socioeconomic status, and natural disasters).

The model includes capacity building as part of the human element, depicted as a backdrop for the health system. As other system elements are strengthened—for example, infrastructure improvements, streamlined data collection, and new technology—it is the people in the system who must react and perform if these changes are to transform the system into a higher-performing HIS. As HIS performance improves, capacity building has an important role to play in helping to translate these improvements to the health system as a whole, to achieve better health outcomes—through data use, improved governance and management, and evidence-based decision making.<sup>3</sup>

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<sup>3</sup> MEASURE Evaluation Health Information System Strengthening Model: A Summary, 2017

# RESULTS

## What We Learned from the Literature

We found few publications in the peer-reviewed literature describing how capacity building interventions may help to strengthen HIS, health systems, and health outcomes. This section reviews what we did find that is related to capacity building interventions in the context of HIS strengthening, how lack of capacity is a bottleneck in health system functioning, and effective individual level capacity building interventions that also work to strengthen HIS.

### Capacity Building Is an Essential Intervention

Capacity-building interventions are an essential component of a package of HIS strengthening interventions (Ahsan et al., 2017; Pappaioanou et al., 2003). Palen and colleagues note that a primary means to achieve long-term solutions includes capacity of national and local governments and institutions, including civil society (Palen et al., 2012). They cite capacity building as one of four activities to strengthen health systems and promote sustainability and country ownership of global health initiatives, such as the activities funded by the United States President's Emergency Plan for AIDS Relief (PEPFAR) and others (Palen et al., 2012). AbouZahr and Boerma specifically cited a core need for statistical capacity building for HIS system strengthening (AbouZahr & Boerma, 2005). Large-scale health sector reforms—such as decentralization of a health system—often leave gaps in health information skills. This is because some remote areas may have few staff with specialized skills and so are disproportionately affected (AbouZahr & Boerma, 2005).

As an HIS continues to change, capacity-building strategies are a way to keep the health workforce up to date with change. For example, the Republic of Bangladesh aligned capacity-building strategies with changes made to the HIS. As part of the M&E Strategy for the health sector, the Bangladesh Ministry of Health and Family Welfare outlined a capacity-building plan coordinated with improvements made to data collection systems. The thinking was that increased capacity to collect and analyze data would be required to monitor progress toward the Sustainable Development Goals, one of the main objectives of its M&E Strategy (Ahsan, et al., 2017). Ahsan and colleagues concluded that—even with in-service training—it remained a challenge for Bangladesh to ensure a skilled workforce for evidence-based monitoring (Ahsan et al., 2017).

### Lack of Capacity Is a Bottleneck

In a study aimed at understanding the underlying causes of maternal and newborn deaths, Dickson and colleagues found that lack of capacity in multiple domains served as a barrier to implementation of evidence-based interventions. In this study, Dickson and colleagues identified specific bottlenecks preventing implementation of essential interventions for improving maternal and newborn health in eight of the 13 countries with the most neonatal deaths. Lack of capacity came up as a bottleneck under leadership and governance, health workforce, health service delivery, and HIS. Specific examples of capacity-related bottlenecks were, “weak staff capacity for data management and use;” “absence of or weak supervisory, mentoring, and monitoring systems in health facilities;” and “shortages of staff, poor deployment, and maldistribution between urban and rural areas” (Dickson et al., 2014).

Capacity building was, therefore, also a common strategy identified as a solution to address existing bottlenecks. These strategies included regular capacity-building efforts for health managers and statisticians,

supply chain management, and procurement systems—including capacity building of health workers (Dickson et al., 2014).

## Evidence-Based Capacity-Building Interventions Are Effective

Common interventions for individual capacity building mentioned in the literature included in-service and pre-service training, mentoring, and supervised practice. One reported strategy was strengthening individual capacity as part of a capacity plan for a team, an organization, or a system. Other ways to increase the effectiveness and sustainability of interventions included the following:

### *Assessing Capacity*

An important step for targeting capacity building to areas of highest need is to start with a capacity assessment among a target group to determine existing gaps and build a responsive plan. This provides the opportunity for follow-up to assess changes from this baseline. Assessments may be conducted as a standalone exercise or as part of a larger health system assessment, needs assessment, or health facility assessment (Tyler J. Albert et al., 2015; Nickerson, Adams, Attaran, Hatcher-Roberts, & Tugwell, 2014; Pappaioanou et al., 2003).

### *Strengthening HIS Capacity*

*For decision making:* One comprehensive package of interventions for this purpose was implemented in the Data for Decision Making (DDM) project in Bolivia, Cameroon, Mexico, and the Philippines. Its objectives were to: (a) strengthen capacity to identify data needs for solving problems and to interpret and use data appropriately for public health decisions; (b) enhance the capacity of technical advisors to effectively provide quality data to decision makers; and (c) strengthen HIS to facilitate the collection, analysis, reporting, presentation, and use of data at all levels. Implementers conducted an assessment to identify problems, gaps, and desired data-use outcomes. They developed a problem-driven workplan for each country, including a training plan and tasks around HIS strengthening. These efforts were coordinated with the design and implementation of other HIS improvements. Independent evaluators conducted tailored assessments at baseline, midline, and end line. The interventions demonstrated a positive impact on data use for solving specific problems across the countries (Pappaioanou et al., 2003).

*For management:* Another important subset of HIS-related capacity-building interventions that we found were those targeting management capacity (E. H. Bradley et al., 2015; Rabbani et al., 2015). Bradley and colleagues assert that management holds promise as a fundamental leverage point for global efforts to achieve health system performance goals (Elizabeth H Bradley et al., 2015). These types of interventions support the enabling environment depicted in the HISSM.

The DDM project described above also had success in building management capacity for HIS and documented “enthusiastic application” of concepts included in trainings (Pappaioanou et al., 2003). The study team found rapid application of new skills in team building, action planning, and setting priorities following training (Pappaioanou et al., 2003).

Based on the evaluation of a successful in-service leadership and management capacity-building initiative in Zambia, Mutale and colleagues concluded that leadership and management training aids health system strengthening in low-income countries (Mutale et al., 2017). The training they described led to improvements

in shared vision, teamwork, and coordination in workplaces where a manager had been trained (Mutale et al., 2017).

A study of a leadership and management capacity-building intervention in Kenya found that the skills built by the participants contributed to improved service delivery, including improvements in the number of fully immunized children under one year old, women who delivered with a skilled birth attendant, and pregnant women who had four or more antenatal care visits (La Rue et al., 2012).

*For clinical capacity:* Interventions such as those undertaken by the Human Resources for Health program in Rwanda are designed to help meet immediate needs for clinical capacity within the health system and to build local capacity over time. This program established links with U.S.-based medical and academic institutions, forming a partnership with the government of Rwanda that focused on knowledge transfer, sustained collaboration, and the establishment of clinical training programs in Rwanda (Binagwaho et al., 2013). According to the authors this model facilitated curriculum development, clinical pedagogy, service delivery, and research capacity among Rwandan clinicians and educators who would take on teaching and care after seven years (Binagwaho et al., 2013). This program also addressed the related management capacity needs of the health system by establishing training programs for administration, financial management, and policy leadership (Binagwaho et al., 2013).

Another clinical capacity-building model that showed promise was the Airborne Outreach initiative in Botswana. Over the 12 months of project implementation, specialists flew to see more than 5,000 patients in remote areas who would never otherwise have seen a specialist, due to the long distances to reach referral clinics. These outreach visits also facilitated mentorship and teaching for doctors located at visit sites. Like the intervention in Rwanda, this activity targeted current clinical needs while strengthening long-term capacity in rural communities through mentoring (Reid et al., 2014).

### *Effective Training Practices*

Training is a common intervention used for building capacity. The literature provides some information on what increases training effectiveness (Tyler J. Albert et al., 2015; Pappaioanou et al., 2003; Schwarcz, Rutherford, & Horvath, 2015). Effective strategies involve providing opportunities to apply learning, especially within the participant's workplace. The DDM project, for example, highlighted the importance of post-workshop assistance to participants for applying new skills and tools following classroom training. The authors found that without on-the-job follow-up, participants frequently reverted to old practices (Pappaioanou et al., 2003).

On-site trainings were less disruptive to work flow than offsite trainings. They also allowed trainees to learn in their normal work environments, increasing applicability of the information (Schwarcz et al., 2015). Field-based management training—which occurs on the job rather than in a university setting—was called a best practice for African countries (Schwarcz et al., 2015). Management training in the workplace also reached those individuals more likely to contribute to the increased capacity of the system (Schwarcz et al., 2015). Mentoring was also an effective strategy and could be implemented in conjunction with training (Edwards et al., 2015).

## *Stakeholder Engagement*

Maintaining mutual investment and trust with stakeholders to successfully plan and implement capacity-building interventions is important for the long-term success of these interventions (Binanay et al., 2015; Edwards et al., 2015; Rutta et al., 2015). Rutta and colleagues worked with the Tanzania Ministry of Health and Social Welfare to develop a comprehensive intervention, with a large capacity-building element for drug shop owners and dispensing staff, designed to improve access to quality medicines and other pharmacy services. The full package of interventions was meant to reach all those who interact with retail drug shops, including customers, owners, or staff—in addition to shop owners and dispensing staff. The authors identified stakeholder engagement as the “linchpin of success” for the intervention (Rutta et al., 2015).

Binanay and colleagues worked to engage stakeholders, beginning with the vision-setting process for their academic partnership intervention to improve cardiovascular care in western Kenya. They noted that engaging stakeholders from all partners was essential to success (Binanay et al., 2015). Edwards and colleagues noted the important role stakeholder engagement plays in promoting sustainability (Edwards et al., 2015).

## **What We Learned from MEASURE Evaluation Work in Capacity Building for HIS**

We examined three MEASURE Evaluation activities—in Zambia, Burundi, and the DRC—to better understand capacity building for HIS.

### **Capacity Building in Data Analysis for National and University Staff in Zambia**

#### *Overview*

For this activity, MEASURE Evaluation worked with national stakeholders in Zambia and faculty at the University of Zambia to build capacity on using routine health monitoring data. The intervention targeted skills required to generate a dataset suitable for generating reliable analysis results, in data analysis using Stata, Excel, and EpiInfo—including interpretation and presentation of findings. The intervention included “data management” tasks, which are typically overlooked when building analytic capacity, but are essential to ensuring data quality and enabling decision makers to have confidence in the data and their analysis. Routine data sources were DHIS 2, the National AIDS Council (NAC) Management Information System, and a pilot version of the electronic SmartCare system (an electronic health record system). The intervention targeted a group of officials and data users from the Ministry of Health (MOH), the NAC, the Ministry of Community Development (MCD), and the University of Zambia. This work built on previous capacity building done by MEASURE Evaluation in Zambia, where the previous focus was on the capacity to manage, analyze, interpret, and present survey data.

This activity began in 2015 and was still active. During that time, MEASURE Evaluation supported four trainings, each lasting from two to four weeks. Training focused on different types and levels of data analysis, interpretation, and presentation skills.

#### *Capacity-Building Strategies Used*

Components of the activity were engagement with stakeholders, a tailored hands-on training approach, mentoring, and planning for sustainability.

## **Stakeholder Engagement**

Stakeholder engagement was a priority, beginning with a program launch at a formal meeting initiated by government stakeholders. At this meeting, MEASURE Evaluation staff heard from Zambia health ministry representatives and university faculty, as well as stakeholders at USAID/Zambia (the funder), and the Centers for Prevention and Disease Control (CDC). Stakeholders identified their capacity-building needs and priorities and submitted recommendations for the initial scope of work.

Follow-up meetings with stakeholders helped to understand capacity needs. MEASURE Evaluation staff met with staff from the MOH, the Ministry of Community Development Mother and Child Health, the National HIV/AIDS/STI/TB Council, the University of Zambia, and the Central Statistical Office. Staff described their immediate and long-term capacity needs and each ministry provided a memorandum outlining its requests. Meetings with ministry staff helped the MEASURE Evaluation team understand performance and operations of the DHIS 2 system, current challenges, and plans for growth and improvement so that trainings matched the context. With this information, the MEASURE Evaluation team tailored capacity-building interventions to the needs of the target groups. The team also worked with the relevant stakeholders to identify suitable candidates for each training.

## **Tailored Hands-On Training and Mentoring**

The training participants chosen were mid-level data users and data producers, mid-level government officials, and junior faculty at University of Zambia in the Department of Population Studies. Government officials included information officers; M&E advisors; HIV/AIDS data analysts from the Policy and Planning unit at the MOH; staff from the Central Statistical Office working in the surveys unit and the Information, Research and Dissemination unit; the senior health information officer from University Teaching Hospital; and provincial information technology and M&E officers from NAC.

In all trainings, emphasis was on “learning by doing.” Some didactic sessions were required, followed with hands-on exercises for individuals and for small groups. For example, one training focused on the calculation of provincial level HIV/AIDS indicators needed by the MOH and NAC. Participants brought the list of indicators, and the training then equipped them to prepare and clean the data, perform and validate the calculations, and explain any data limitations.

A six-week training implemented in two stages focused on producing policy-relevant findings from the analysis of health and HIV data. Each participant designed a policy-relevant research project, learned how to prepare a dataset for analysis, performed the analysis, and explained their findings to a non-technical audience of decision makers. Each participant produced a poster of findings in a format suitable for display at a scientific forum. The workshop program allocated 80 percent of the time for hands-on work and paired or individual mentoring.

## **Sustainability**

A primary motivation for including faculty from the University of Zambia was to help prepare the Department of Population and Social Studies to offer a similar set of certificate trainings for government staff. Drawing from instructional materials prepared for the workshops, MEASURE Evaluation and the University of Zambia developed two training modules that are now included in the university curriculum to provide access to ongoing training in data analysis for government officials and working professionals.

## *Expected Effects on HIS Performance, Health Systems Strengthening, Service Delivery, and Health Outcomes*

According to observers working with the program for several years, capacity-building efforts had a lasting effect on the data environment and culture. This was achieved by working primarily with government staff, tailoring trainings around data readily available and already in use by staff, and by teaching data users aspects of data management and analysis. Data users became invested in the potential of data to provide answers to important questions as they understood the mechanics of data management. Observers said these participants experienced “ownership” of the data and data systems. Seeing first-hand the impact of poor data quality on their own research led participants to discuss how to improve and maintain data quality throughout the system. The opportunity to conduct a “real time” research project—from the outset of formulating an appropriate research question, to understanding a data set, to performing analysis, and finally to interpreting and explaining the results—offered a deeper comprehension of the challenges for the national HIS and an enhanced awareness of its potential usefulness for health and policy decision making. Additionally, collaboration with the University of Zambia provided the intervention team with an on-the-ground training partner that can provide similar trainings as the health system continues to evolve.

## Health Management Information System and Monitoring and Evaluation Capacity Strengthening in Burundi

### Overview

The HMIS and M&E strengthening activity that began in 2014 in Burundi has two main capacity building goals: (1) to strengthen the National HIV/AIDS Program’s capacity to collect and analyze data and (2) to strengthen the HIS and M&E capacity at the Ministry of Public Health and HIV/AIDS Control (MSPLS). Both goals benefit from support MEASURE Evaluation is providing for the rollout of DHIS 2 in Burundi. This support focuses on which indicators to include, modules developed for inclusion, and interoperability with existing systems. Because this rollout will mean a significant process change for those working in the health system, capacity building is an integral component. To accomplish these goals, MEASURE Evaluation has employed a wide range of strategies.

For example, an important strategy to strengthen analysis of data in DHIS 2 was to ensure that users understood the contents of the guidance given on analysis. To enhance this understanding, MEASURE Evaluation supported central-level supervisors in organizing meetings during which they helped users to practice creating data dashboards for analysis and analyzing data consistency and reporting. This coaching and mentoring helped supervisors assess users’ capacity and provide immediate training to address evident knowledge and practice gaps.

This activity is far-reaching and includes multiple components that this report does not cover. These include the development and implementation of multiple reports and guidelines, work around community-based information systems, and an assessment of the national HIS using the Performance of Routine Information System Management (PRISM) tool developed by MEASURE Evaluation.



## *Capacity Building Strategies Used*

### **Coaching and Supportive Supervision**

At the start, MEASURE Evaluation coached central-level supervisors to develop the Gestion du Système d'Information Sanitaire (GESIS)-HIV/AIDS electronic reporting system to effectively collect data and assess the performance of province-level HIS staff on data management and quality control of services in five provinces. MEASURE Evaluation staff attended multiple meetings to coach and support staff on the review of data generated by the GESIS software to assure accuracy and completeness. As rollout of DHIS 2 continued, training for staff shifted to focus on M&E and reporting, with training around generating dashboards. Coaching continues in data analysis.

The activity also sought to build the capacity of the national MOH staff to coach district-level staff. MEASURE Evaluation trained senior officials on M&E and strategic planning. The project also collaborated with UNICEF to support countrywide supervisory visits in all health districts to coach supervisors to improve quality of services for prevention of mother-to-child transmission of HIV and data management for recording HIV and sexually transmitted infections.

### **Technical Assistance**

Working with local partners, MEASURE Evaluation staff provided technical assistance as needed. For example—for the National Health Information System Directorate—the project assisted with data collection and analysis for an assessment of the organizational systems in health facilities.

Continued challenges to data quality continue. For example, HIV-related mortality rate estimates are not accurate because of inadequate recording of deaths at the community level. The causes of certain deaths are unknown because many do not know their HIV status. MEASURE Evaluation worked with partners to build an integrated community-based information system and to develop mechanisms and strategies to identify causes of deaths. This effort should improve the capacity of the MOH to collect and report complete and accurate data for the overall health system.

### **Assessment and Planning**

Provincial-level supervisors conducted data quality control and assessed HMIS activities in health facilities. Based on the assessment, staff at the facility, district, and provincial levels developed action plans.

### **Training**

MEASURE Evaluation has provided or supported numerous trainings and trainings-of-trainers as part of efforts to build capacity to support HIS strengthening in Burundi. The trainings covered topics such as defining new indicators and HIS hospital tools, data analysis using DHIS 2, statistical analysis and epidemiology surveillance, use of the GESIS database for routine health information, and supervisory training.

MEASURE Evaluation supported the scale-up of DHIS 2 in five of 18 provinces in Burundi. Support included training data managers and hospital staff, and follow-up coaching visits with newly trained users. MEASURE Evaluation is also continuing to monitor users in these five provinces.

## *Expected Effects on HIS Performance, Health Systems Strengthening, Service Delivery, and Health Outcomes*

Through capacity building support for the rollout of DHIS 2, MEASURE Evaluation is leveraging changes and progress in infrastructure so that they lead to progress and improvement in health service delivery and health outcomes. With simultaneous effort on data quality, data analysis, and data use, staff at each level of the health system are poised to take advantage of increased available data. Through targeted training paired with coaching, and supportive supervision and training for supervisors, capacity-building efforts aim to effect sustainable improvements in health system capacity.

## Capacity Building Activities in the Democratic Republic of the Congo

### Overview

MEASURE Evaluation has implemented two simultaneous activities for health systems strengthening in the DRC, both working with the National Malaria Control Program (NMCP) and the HMIS division, and a third activity to establish and support centers of excellence (COEs) for M&E.

The two NMCP-focused activities support a central database for M&E of malaria control activities while working more broadly to strengthen the M&E capacity of the NMCP. In the HMIS division, MEASURE Evaluation contributed to the implementation of the national HMIS using the DHIS 2 platform in targeted health zones supported by the U.S. President's Malaria Initiative (PMI). The third activity to establish COEs involved the selection of facilities to become COEs and support for M&E capacity at each of these. These activities are interrelated and reported together here.

### *Capacity Building Strategies Used*

#### **For NMCP-targeted Interventions**

**Assessment and planning.** In 2015, MEASURE Evaluation used the Monitoring and Evaluation Capacity Assessment Tool (called “MECAT”)<sup>4</sup> to evaluate the M&E division of the NMCP and nine provincial health divisions. This assessment led to the development of a capacity-building plan for data management in the NMCP and provincial health divisions. MEASURE Evaluation supported weekly M&E meetings of the NMCP, which served to monitor ongoing activities and to plan the next week. In addition to weekly meetings, MEASURE Evaluation and malaria partners supported quarterly meetings and joint supervisory visits. At the provincial level, MEASURE Evaluation trained 13 provincial health division staff in an M&E workshop.

MEASURE Evaluation used data demand and use tools to assess the capacity of the NMCP and all nine provinces supported by PMI. Based on the assessment, MEASURE Evaluation recommended several interventions to promote the use of data in decision making and support the NMCP and provinces.

**Supervision.** The second activity began in 2015 and focused on provincial-level capacity for NMCP database management to improve data quality. To support the effective rollout of the new database, MEASURE Evaluation visited provincial data managers to help improve data completeness and ownership by provincial

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<sup>4</sup> MEASURE Evaluation. (2017). Monitoring and Evaluation Capacity Assessment Toolkit. Retrieved from <https://www.measureevaluation.org/pima/m-e-capacity/me-capacity>

teams. In addition, MEASURE Evaluation assisted provinces in supervising health zones supported by PMI to assist with the implementation of DHIS 2.

**Tailored training.** MEASURE Evaluation continues to monitor changing needs to tailor training and other interventions. For example, MEASURE Evaluation staff found that following the decentralization of the health system, newly created provinces were not submitting timely and complete reports. MEASURE Evaluation trained 13 staff from provinces supported by PMI in M&E skills. All NMCP division heads, all provincial HMIS managers, all NMCP provincial heads, and their data managers were trained by MEASURE Evaluation in M&E workshops.

#### *For Centers of Excellence:*

**Supervision and mentoring.** Ongoing supervision visits enabled observation of project implementation, identified bottlenecks, and suggested recommendations to solve challenges. With MEASURE Evaluation support, the health zone teams visit the COEs monthly and the provincial teams visit the COEs quarterly.

**Training.** MEASURE Evaluation provided training to COEs on monitoring capacities such as data management and short message service (SMS, or text) transmission for data. Computer skills and experience were a limiting factor among facility staff. To meet this need, MEASURE Evaluation organized a computer training for staff and DHIS 2 training for COEs. These COEs are currently the only health facilities in DRC using DHIS 2.

**Additional support.** Resource constraints limited capacity improvement in several facilities. MEASURE Evaluation therefore provided resources—data management tools, solar kits, and computers—to meet many of these needs, in addition to training and other capacity-building support.

MEASURE Evaluation also provided technical and logistical support for data validation through monthly meetings for all COEs and provided Internet connectivity for data collection in DHIS 2.

#### *Expected Effects on HIS Performance, Health Systems Strengthening, Service Delivery, and Health Outcomes*

Implementing these three activities together allowed MEASURE Evaluation to act at both the highest level of the system—the national level—and at the smallest unit—the facility. Building capacity at both ends of the spectrum helped ensure that all parts of the health system were moving in the same direction. In addition, lessons learned could be shared among levels of the health system. We hope the synergies of these interrelated activities will catalyze improved data quality through two means: (1) strengthening the M&E capacities of the NMCP, provinces, and the establishment of the COEs, and (2) increasing the availability of different data management tools, regular data validation meetings, and regular supervisory visits. Increased production of high-quality data that can provide strategic information to decision makers should ultimately lead to the improvement of the health system and, therefore, the health of the country's people.

## DISCUSSION

Making a direct causal link between capacity building and a stronger HIS is difficult, because capacity-building interventions are usually part of a package of strategies that includes stakeholder coordination, rollout of DHIS 2 and other software platforms, and development of strategies and action plans. In addition, capacity-building interventions take time to show effect and the interventions themselves are not easily controlled—making a direct tie from them to outcomes difficult.

**The three activities also illuminated more detail about the interconnected strategies involved in strengthening HIS, as well as the complex and coordinated interventions needed to address gaps in capacity. These examples highlighted the application of some best practices in effective capacity building, namely to:**

- Work with partners and bring together stakeholders for assessment of capacity needs, effective planning, and buy-in by all those involved
- Simultaneously implement capacity building interventions in multiple areas of the HISSM, e.g., leadership and governance, data management, and data use
- Employ multiple capacity building strategies, including training, workshops, coaching, mentoring, hands-on skills application (learning-by-doing) and practices to reinforce acquired capacities through supervision and training of trainers
- Implement multi-year capacity building strategies that can guide actions to reinforce and update capacities as the HIS strengthens and changes

Even so, the benefits of integrating capacity building in HIS strengthening efforts emerged as a best practice from the examples we examined—both from the literature and from MEASURE Evaluation’s work. Lack of capacity was found to be a bottleneck to service delivery. Capacity building interventions improved the culture of data use, ownership of HIS, and allowed people working in the health system to make better use of improved HIS at all levels. Capacity building intervention are necessary for sustainability and so that people working in the health sector keep pace with improvements in HIS.

The literature provided insight into strategies for strengthening components of HIS that mapped closely to many areas and elements outlined in the MEASURE Evaluation HISSM: individual capacity building in skills that affect data use, data management, and data sources (the information generation area). The literature also supported capacity building as a way to strengthen the HISSM’s enabling environment, through management and leadership training. While other improvements in these areas would add to gains in the HIS overall—for example, improvements in infrastructure and technology—decision makers and staff in the health sector must be able to take advantage of these advances or improvements in the systems will not be realized.

We found that the three MEASURE Evaluation activities, taken together, reflected all elements described in the HISSM: building capacity for HIS governance, leadership, and management (the enabling environment); providing in-service training on data use and data quality (HIS performance); providing in-service training for data management (information generation); building capacity by working directly on the human element; and working with partners to promote the institutionalization and sustainability of interventions.

## CONCLUSION

We found scant evidence of capacity-building effects on HIS that could be separated from a package of other interventions. Nevertheless, we conclude that strengthened capacity helps to leverage strengthened HIS infrastructure and, likewise, that addressing multiple capacity gaps can be an important impetus for realizing improvements in HIS.

We recommend continued research to document the capacity-building components of HIS strengthening interventions and the links among capacity, HIS functioning, service delivery, and health outcomes. Specifically, a case study method could help surface evidence of the effects of capacity building embedded within HIS strengthening work. Case studies could provide examples of specific strategies for capacity building in the HIS context and describe their observed benefits to the health system, service delivery, and health outcomes.

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