

A Review of Constraints to Using Data for Decision Making

Recommendations to Inform the Design of Interventions



A Review of Constraints to Using Data for Decision Making

Recommendations to Inform the Design of Interventions



MEASURE Evaluation is funded by the United States Agency for International Development (USAID) through Cooperative Agreement GHA-A-00-08-00003-00 and is implemented by the Carolina Population Center at the University of North Carolina at Chapel Hill, in partnership with Futures Group International, ICF Macro, John Snow, Inc., Management Sciences for Health, and Tulane University. The views expressed in this publication do not necessarily reflect the views of USAID or the United States government. August 2010 (TR-10-77).

Acknowledgements

This report documents the work of numerous MEASURE Evaluation colleagues, including Anwer Aqil, Teresa Harrison, Scott Moreland, and Sonja Schmidt. In addition, several in-country agencies and organizations were the driving forces behind the assessments of health system performance and constraints to data use as described in this document. Teresa Harrison and Tara Nutley of MEASURE Evaluation were responsible for conceptualizing and writing this summary report.

About MEASURE Evaluation

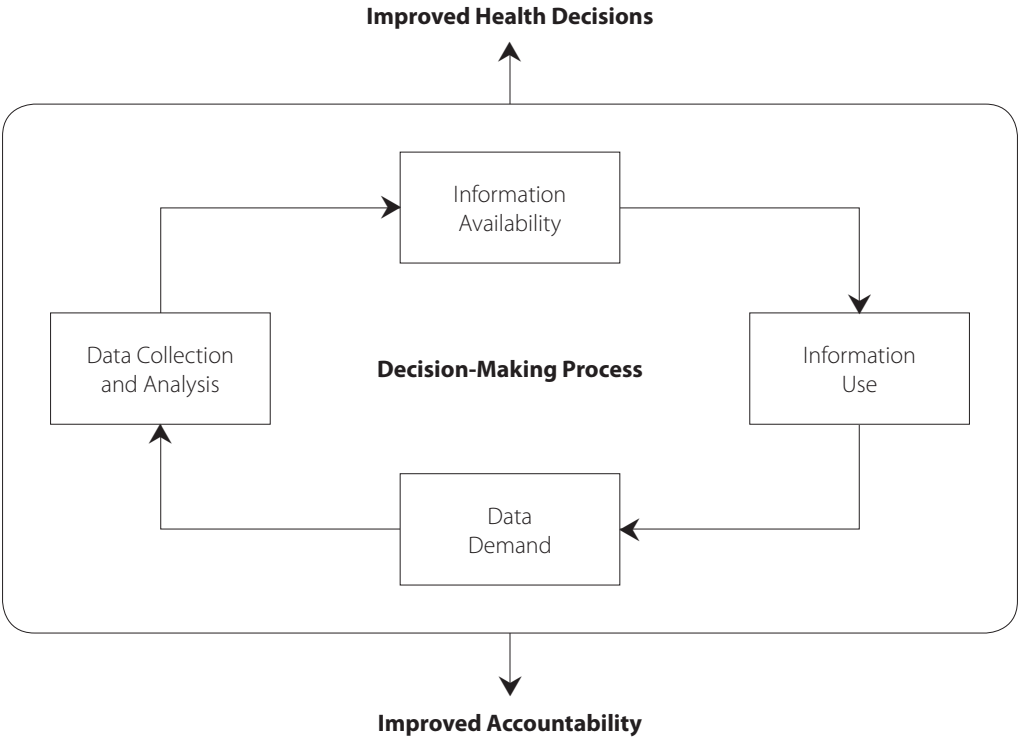
MEASURE Evaluation provides technical leadership through collaboration at local, national and global levels to build the sustainable capacity of individuals and organizations to identify data needs, collect and analyze technically sound data, and use that data for health decision making.

MEASURE Evaluation is funded by the United States Agency for International Development (USAID) through Cooperative Agreement GHA-A-00-08-00003-00. The views expressed in this publication do not necessarily reflect the views of USAID or the United States government.

Background

Significant human and financial resources have been invested worldwide in the collection of data on populations, facilities and communities. Unfortunately, this information is often not used by key stakeholders to effectively inform policy and programmatic decision making. The failure to consider all the empirical evidence before making decisions hinders the health system’s ability to respond to priority needs throughout its many levels.

Traditional approaches to monitoring and evaluation (M&E) usually focus on the coverage and quality of M&E data and tend to overlook information use for decision making, either by implicitly assuming that once data are collected and analyzed they will be used or by addressing only mid-course corrections that arise when desired outcomes are not achieved. The failure to address information-based decision making in M&E is exacerbated because the people who collect and analyze the data are typically not the people who make decisions. To draw attention to the issue, MEASURE Evaluation developed a Data Demand and Use conceptual framework which posits a cycle linking demand for relevant data, data collection and analysis, information availability, data and information use, and back to increased demand for and commitment to improve the quality of health-relevant data (Foreit et al., 2006).



Increased information use in policy and program decisions-making stimulates greater demand for data which, in turn, leads to more information use, leading to more demand, and so on.

While data collection can always be improved, there are many missed opportunities for using existing information to improve decision making. Many times these missed opportunities can be traced to limited

demand, stemming from pervasive lack of “data ownership” (decision makers are not aware of existing data sources and/or do not fully understand their underlying technical issues), low value placed on data by decision makers (perceptions that the data are of poor quality and/or lack of understanding how the information could be useful), or failure to present the data in user-friendly, accessible formats.

Health data lack value if they are not used to inform decisions, and efforts to improve data quality will be wasted if they do not include interventions to increase local demand for data and facilitate data use. Therefore, activities to foster data demand and use are critical to improving health system effectiveness. However, before effective interventions to improve data demand and use can be developed, constraints to data use must first be identified.

The analytical framework of health information system performance, PRISM (Performance of Routine Information System Management), identifies three main determinants of health information use: the **technical** aspects of data processes and tools, the **behavior of individuals** who produce and/or use data, and the **system/organizational context** that supports data collection, availability and use (LaFond & Field, 2003; Aqil et al., 2009). These three components can be used to identify opportunities for and constraints to effective data use, and strategies to improve data use can then be built along the same three parameters. PRISM includes four tools for assessment, design, and monitoring and evaluation of routine health information systems (RHIS).

In addition, MEASURE Evaluation developed the *Assessment of Data Use Constraints* tool to rapidly identify existing barriers and constraints to data use as well as best practices in data use. These tools have been successfully used in several countries to provide a broad view of technical, individual and organizational constraints at the national and sub-national levels in the public and private sectors, prioritize the identified barriers and design approaches to overcome them.

A consistent theme arising from the applications of the PRISM and *Assessment of Data Use Constraints* tools was that more information is needed about constraints to data use at the facility level. A greater understanding of the roles that health facility staff play in the flow of routine information and constraints to use of their own data is needed. In response to this need, MEASURE Evaluation adapted the *Assessment of Constraints to Data Use* tool for the facility level.

This publication synthesizes findings of assessments of constraints to data use conducted by MEASURE Evaluation and highlights recommendations for designing interventions to stimulate demand for and improve the use of data for decision making.

Findings from Country Assessments

In this section, we highlight a number of data use assessments, from a variety of settings, which illustrate how technical, individual, and organizational factors limit use of data.

Uganda (Aqil, 2008)

Dates	2004, 2007 (follow-up)
Tool	PRISM
Sample	Routine health information systems (RHIS) in 120 health centers
Purpose	Assess how data was being used by health facilities and district health departments, what factors impeded information use, and to provide recommendations for behavioral, technical, and managerial interventions to strengthen health information systems.
Findings	Gaps in the health information system were identified. Staff's capacity to analyze, interpret and use data was limited. Data accuracy and timeliness affected data quality and thus use. The processes of checking data accuracy and providing feedback on the submitted monthly reports were not implemented, making it difficult for staff to understand importance of collected data not only for improving their own performance but also for the department or higher level or as a whole. Organizational factors, such as promoting a culture of information and quality supervision, were weak. There was little evidence of systematic communication about performance targets, use of data for decision making and advocacy, and sharing of success stories.

Kenya and Nigeria (MEASURE Evaluation, 2007)

Date	2005
Tool	<i>Assessment of Data Use Constraints</i> questionnaire
Sample	Twenty key informants purposively selected in each country, including public- and private-sector policy makers and program managers from the national and district levels
Purpose	To obtain a more thorough understanding of decision makers' use of health-related data in evidence-based decision making and their perceptions of the constraints and barriers to using data.
Findings	Policymakers and program managers make a wide range of decisions for which they use data, including policy development, project design and scale-up, and resource allocation. Nevertheless, barriers perceived to limit uptake and use of data for decision making included poor data quality, weak human resource capacity and lack of organizational support to analyze, disseminate, interpret, and utilize data. Efforts to share information across organizations and delays in releasing information limited the usefulness of the data.

Tanzania (Harrison and Bakari, 2008)

Date	2008
Tool	<i>Assessment of Data Use Constraints</i> tool
Sample	10 district- and national-level health professionals working in the public and private sectors of the Tanzanian health system
Purpose	To identify barriers and constraints that determine use of data and information in the Tanzanian health system, and to develop recommendations for how to address the barriers.
Findings	Respondents reported that they used data to make decisions regarding clinical services, the need for staff training, and the development of organizational policies. Respondents experienced missed opportunities to using data for decision making because staff lacked skills to produce high-quality, reliable data. Respondents lacked access to external data sources which they perceived would be helpful to make comparisons and validate their organization's data. The majority of respondents cited high workload, lack of incentives, inadequate technical skills, and insufficient knowledge about existing data sources.

India (Harrison and Moreland, 2009)

Date	2008
Tool	Questionnaire combining the PRISM and <i>Assessment of Data Use Constraints</i> tools
Sample	242 respondents working at different levels in the government health sector
Purpose	Understand how data are used for decision making, to highlight impediments to data utilization, and to make a set of actionable recommendations about how the health sector could improve use of data for decision making.
Findings	<p>The most common types of decisions reported by respondents at the national, state and district levels included those related to program management, planning and budgets while staff working in health clinics made decisions about medical and drug supply and emerging epidemics. Health Management Information System (HMIS) data, district-level surveys and state/district departmental reports were the most often cited data used for decision making. A lack of analytic and data use skills was the most commonly reported constraint with a substantial number of respondents expressing a need for further training on data quality assurance, analysis and use. Interestingly, few respondents agreed that poor data quality was a serious impediment although duplication of data and inconsistencies in the data collection process were perceived barriers to data use.</p> <p>In addition, a lack of performance-based culture and a lack of incentives were frequently mentioned barriers to data use. When the relationship between self-reported data use and other variables was compared, competency with analytic tasks, agreement on performance indicators used during meetings (particularly with superiors) and contact with civil society appeared to positively influence data use.</p>

Uganda (MEASURE Evaluation and the African Palliative Care Association)

Date	2009
Tool	Facility-level <i>Assessment of Data Use Constraints</i> tool
Sample	Staff at HIV palliative care facilities. A total of 31 interviews were conducted with senior managers, clinicians, laboratory and pharmacy staff, counselors and health information officers at five facilities.
Purpose	Pilot test the MEASURE Evaluation facility-level Assessment of Constraints to Data Use tool.
Findings	<p>In general, staff at most of the facilities reported using HMIS data for medical supply and drug management, staffing decisions, and service improvement. Survey data was also used by some staff for strategic planning purposes. HMIS data quality, however, was often compromised by being incomplete and inaccurate; therefore staff did not always rely on it for decision making. Lack of computers and frequent power failures reduced staff's ability to access data and delayed the reporting process. Completing multiple forms to satisfy different donor's reporting requirements also contributed to a reporting backlog.</p> <p>The majority of staff reported a need for training on data analysis and use for decision making while staff working at facilities with poor quality data expressed a need for training on data collection. There was a common perception that the importance of using data is not valued which affects how well it is recorded, processed and reported. About half of respondents perceived that a culture of data use was not promoted in their facility and that decision making was not based on data. All-staff, departmental and senior management meetings were reportedly held on a regular (usually monthly) basis to review progress against programmatic targets and to improve service delivery. Staff reported receiving feedback from the Ministry of Health through the district health office and program managers.</p>

Uganda (Health Care Improvement Project, Jinja District Health Office, and Harrison, 2010)

Date	2009
Tools	Facility-level <i>Assessment of Data Use Constraints</i> tool
Sample	16 interviews were conducted with staff at four health facilities
Purpose	Pilot test of revised facility-level tool, with separate instruments for data producers (health information officers, data analysts) and data users (clinicians, managers, laboratory and pharmacy staff, and counselors) and the use of closed-ended questions.
Findings	<p>Most data users reported using HMIS data for medical supply and drug management, and service improvement with medical superintendants also using data for budgetary and staffing decisions. Poor quality data was cited as the primary technical constraint limiting staff's ability to make effective decisions. Data entry backlogs also affected data use because of delayed reporting. Data users and producers perceived insufficient HMIS skills as the key individual constraint to data use, with data users expressing a need for training to improve their data collection, analysis and use skills.</p> <p>In addition, there was a general perception that staff don't realize the value of using data which negatively affects their motivation to record and produce high quality data. Although medical superintendants sought feedback from staff on the main HMIS report findings during monthly meetings, staff had limited access to the actual data. Data producers did not receive feedback from the district health office nor staff unless there was data discrepancy at which time they informally addressed data quality issues. Lastly, there was a perception that superiors do not routinely share data with other facilities, or even across clinical departments, thereby limiting comparative analyses.</p>

Data Use Constraints Across Settings

This section summarizes common barriers to data use found in the assessments described above.

Poor Data Quality

Poor data quality limits stakeholders' ability to use data for evidence-based decision making and has a negative impact on facilities' strategic planning activities and their efforts to advocate for resources. Inaccurate and incomplete data along with delayed reporting affects demand for data. Stakeholders who have had negative experiences with poor data quality are less likely to seek it for future decision making.

- Complex reporting procedures negatively affected data accuracy, timeliness and completeness. The need to complete multiple reporting forms resulted in data backlogs and decreased the amount of time available and the motivation of staff to analyze and use data.
- The lack of computers required staff to complete reporting forms manually which increased the frequency of errors and contributes to poor data quality.
- The high client load at facilities reduced time available for clinic staff to spend on activities outside of delivering services. This negatively affected time spent on data compilation and reporting, thus producing poor quality data.

Insufficient Skills to Analyze, Interpret and Use Data

Lack of general skills in the basics of M&E not only affects data quality but also the ability to use data in decision making. Specific training on completing data collection forms and data compilation, analysis and presentation are critical yet often underdeveloped skills. Moreover, the ability to interpret health information and apply it to the programmatic and policy context requires a skill set that is often never addressed in pre- or post-service training of health professionals.

- Insufficient M&E skill was universally cited as key barrier to collecting quality data and eventually using data. Competency, perceived or actual, in performing HMIS tasks also affects data quality.
- While all respondents reported the need for capacity building in some area of M&E (data collection, compilation, quality assurance, analysis, interpretation, etc.) the majority specifically cited the need to build capacity in data analysis and interpretation.

Insufficient Institutional Support for Data Collection and Use

For routine health information to be used in decision making, providers, M&E professionals and decision makers need to be supported in the collection, analysis and use of that information. Stakeholders need to understand each other's roles and responsibilities in producing and using data and they need specific guidance in implementing their roles and responsibilities. When organizational systems are in place to support a culture of data-informed decision making, data producers and users are better able to understand the value of data to the health system, data tends to be of higher quality, data is communicated and shared through the health system and, as a result, it is used in decision making.

- Lack of regular systems to support M&E activities (data quality checks, regular supervision of data collection, allocation of sufficient time for M&E activities, regular feedback mechanisms) negatively affected the perceived importance and quality of data collection and data use.
- Lack of organizational incentives to collect and use data, such as individual recognition, was thought to compromise the quality of data collection and the use of the information.

- There was little evidence of systematic communication on data collected or performance targets. The lack of feedback on trends, success stories and progress meeting performance targets, particularly at the facility level, was cited. The lack of feedback and promotion of data use by decision makers decreased staff motivation to seek, use or share data.

Insufficient Access to Data

For data to be useful in decision making, decision makers need to have access to all relevant data sources. Access to both summary reports and full data sets is critical in program management and improvement and policy formulation. For example, complete data is necessary to supporting trend, output and outcome monitoring; problem identification; target setting; site comparison and hypothesis testing. Without sufficient access to full and multiple data sources, data-informed decision making will be limited.

- Insufficient access to departmental data beyond summary findings from clinic supervisors created challenges for clinic staff to adequately plan for referrals, to better understand service delivery issues and to share best practices.
- Lack of access to external data sources (from district hospitals, and governmental and nongovernmental databases) made it challenging for staff in various settings to compare their performance to other organizations and to formulate appropriate interventions based on the needs of the community.

For health information systems to function effectively and efficiently health professionals need to be trained not only to collect and manage the information but also to analyze, interpret and disseminate it for use in decision making. For data to be used consistently, the entire health system must place a high value on health information and be structured in a way that supports and encourages evidence-based decision making.

Recommendations

As stated above, a compliment of elements is necessary for health information to be used in decision making. Overcoming barriers to data use is a critical component of a highly functioning information system. Appropriate and effective strategies are available to address the constraints to data use cited in this report. Some of the strategies that could be applied include:

Improving Poor Quality Data

- Advocate for resource improvements such as the provision of computers and increases in dedicated M&E staff.
- Implement a computer-based data entry program that includes data checks, compiles data and generates reports. Train staff on use of this program.
- Implement standardized data quality assurance protocols and train staff how to verify the quality of data (www.cpc.unc.edu/measure/tools/monitoring-evaluation-systems/data-quality-assurance-tools).
- Implement a supervision system to support M&E activities.
- Develop a formalized data quality feedback process in which data users communicate with data producers about the barriers they encounter when using poor quality data.
- Facilitate collaboration among donors to harmonize reporting procedures so that fewer forms need to be completed and to increase timeliness of reporting.
- Provide training to improve staff's data collection skills highlighting the importance of data quality and timeliness of reporting for decision making.
- Raise awareness of staff that data collection and compilation are critical component to programmatic improvement.

Improve the Capacity to Analyze, Interpret and Use Data

- Provide training to improve staff's competency with M&E tasks with a specific focus on data analysis and interpretation for program improvement and policy development (www.cpc.unc.edu/measure/publications/ms-06-16a).
- Access on-line M&E courses and materials (www.cpc.unc.edu/measure/training/mentor)
- Access regional and in-country M&E training events (www.cpc.unc.edu/measure/training)

Improving Institutional Support for M&E and Data Use

- Sensitize staff working at all levels, including organizational leaders, on data demand and use concepts emphasizing the potential programmatic benefits of using data for decision making (conceptual framework: www.cpc.unc.edu/measure/publications/ms-06-16a; case study series: www.cpc.unc.edu/measure/publications/sr-08-44).
- Ensure that job descriptions outline M&E roles and responsibilities, M&E operational guidance exists and supervision systems support the M&E process.
- Develop a formal feedback mechanism that incorporates systems and methods for providing feedback in different ways. This may be in the form of a routine, quantitative report represented graphically or in the form of regular meetings during which organizational leaders review data with staff and collectively develop recommendations for programmatic improvement.
- Institutionalize data quality assurance by establishing a regular schedule of data quality checks and

promoting a culture in which organizational leaders prioritize the collection of high quality data to manage and improve the health system.

- Introduce incentives to improve staff's job performance and use of data. Incentives may include regular fora for M&E Officers to share concerns, challenges and solutions to M&E problems; certificates and other low-cost awards to M&E Officers for data quality, reporting, and use; and training opportunities.

Improving Access to Data

- Make source data available to other departments and organizations. If computer and internet infrastructure is not robust enough to support immediate data access, clarify and share protocols for requesting copies of data sets or requesting specific analyses to be run.
- Share success stories across departments and organizations on the use of data through regular official communication, feedback reporting and newsletters.
- Ensure data is in formats that data users can understand (i.e., summary reports, graphical representation, etc.)
- Compile and share a list of quality and accessible data sources to potential data users.

The ultimate goal of evidence-based decision making is to improve the quality of healthcare by increasing the health system's ability to respond to the needs of the individuals they serve. Limited resources and the need for accountability further support a strategic response to improving health systems. While the strategies in this document can be used in many contexts, each solution needs to be tailored to address the constraint and its underlying causes in each specific social and cultural setting. It is envisioned that stakeholders will use and apply the approaches and tools outlined in this document to increase the demand for and use of data in their efforts improve health systems.

References

- Aqil A, Lippeveld T and Hozumi D. (2009). PRISM framework: a paradigm shift for designing, strengthening and evaluating routine health information systems. *Health Policy and Planning*. 24: 217–228.
- Aqil A. (2008). *PRISM Case studies: Strengthening and Evaluating RHIS* [SR-08-43]. Chapel Hill, NC: MEASURE Evaluation.
- Foreit K, Moreland S and LaFond A. (2006). *Data demand and information use in the health sector: A conceptual framework* [MS-06-16a]. Chapel Hill, NC: MEASURE Evaluation.
- Harrison T and Bakari B. (2008). *Assessment of data use constraints in Tanzania: Decision makers' perceptions*. Chapel Hill, NC: MEASURE Evaluation. [unpublished]
- Harrison T. (2010). *A facility-level assessment of data use constraints in Uganda*. Chapel Hill, NC: MEASURE Evaluation.
- LaFond A and Field R. (2003). *The Prism: Introducing an analytical framework for understanding performance of routine health information system in developing*. RHINO 2nd International Workshop, South Africa: MEASURE Evaluation.
- MEASURE Evaluation. (2007). *Decision maker perceptions in Kenya and Nigeria: An assessment of data use constraints*. [TR-07-44]. Chapel Hill, NC: MEASURE Evaluation.
- MEASURE Evaluation. (2008). *Routine Data Quality Assessment Tool: Guidelines for Implementation*. Available at www.cpc.unc.edu/measure/tools/monitoring-evaluation-systems/data-quality-assurance-tools.