Stages of Health Information System Improvement Strengthening the Health Information System for Improved Performance

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Strong health information systems (HIS) can collect, analyze, and use high-quality, timely data to strengthen health service delivery.[1] A functioning HIS gets the right information into the right hands at the right time, enabling policymakers, managers, and individual service providers to make informed choices about everything from patient care to national budgets. Despite a growing emphasis on strengthening HIS and measuring how information systems contribute to improved health outcomes, understanding is limited on what interventions will work to improve HIS in various stages of development.

What Exists

Models of what a mature HIS should look like exist,[2] but these models only partially address the components and elements of an HIS, as defined by various organizations: The Health Metrics Network of the World Health Organization (WHO),[3] the six core health systems functions articulated by the United States Agency for International Development (USAID),[4] the eHealth strategy of the WHO International Telecommunications Union,[5] and the Health Information System Strengthening Model (HISSM),[6] developed by MEASURE Evaluation, which is funded by USAID.

These models, however, do not address the specific challenges that low- and middle-income countries experience in collecting and using health information. Shortcomings in existing HIS assessment tools are due to a limited focus on one or two aspects of an HIS—such as data quality, data use, or information communications technology infrastructure. Also, these tools and models do not offer guidance on how to improve HIS, do not provide a holistic focus, and offer no perspective or approach that defines a progression to improvement.

What Is Needed

This brief describes a suite of tools under development by MEASURE Evaluation to provide systematic guidance on how to assess the existing status of an HIS and identify specific improvements that take an HIS through a defined progression toward optimum functioning. The goal of this suite of tools is to answer the question: "What are the stages of HIS development?"

MEASURE Evaluation's HISSM begins with a holistic illustration of an HIS and is a framework that can be used to map investments in HIS strengthening. Building on this foundation in the HISSM and following a review of scientific and gray literature, as well as consultation with experts in health information systems, MEASURE Evaluation developed a draft HIS stages of improvement scale. To the thinking exhibited in the model, the scale adds a grid of measurable attributes in six functions of an HIS and how they may progress through five stages toward higher functioning.

The five stages of the scale build on existing assessment tools, such as the Health Metrics Network national HIS assessment tool, and four MEASURE Evaluation tools—the Performance of Routine Information System Management (PRISM) assessment tool, the Data Quality Assurance tool, and the Routine Health Information System (RHIS) Rapid Assessment tool, along with the Health Information System Interoperability Maturity Toolkit for Low-Resource Settings (version 0.5), just published. The HIS stages of improvement scale is based also on current thinking about maturity model design, which, ideally, identifies a gap between actual and intended functioning that then can be closed by succeeding improvement activities—while also considering people's capabilities to perform the suggested activities.[7]

Where Are We Now?

The draft scale outlines six components and 26 associated subcomponents (see the table on the next page) that assists in a status review of each component and subcomponent, spelling out concrete attributes of improvement across five stages toward high function. The scale can be used by countries to develop a roadmap for HIS improvement aligned with an HIS strategic plan or a health systems plan.

HIS STAGES OF IMPROVEMENT: COMPONENTS AND SUBCOMPONENTS

Components	Subcomponents
HIS leadership and governance	eHealth/HIS strategy
	Policy, legal, and regulatory framework
	HIS leadership and governance (HLG) group
	Information needs/ indicator sets
HIS management	Monitoring and evaluation of HIS
	Financial management
	Resource mobilization
	Human resources policy
	Continuous professional development
Information communication technology infrastructure	Operations and maintenance
	Communications network
	Hardware
Systems and data interoperability	Enterprise architecture
	Master facility list
	Data management
	HIS application
	Standards
	Data transmission
	Business continuity
Data quality	Data quality assurance
Data use	Data use strategy
	Data access
	Data use competencies
	User engagement
	Data synthesis and communication
	Impact of data use

MEASURE Evaluation will publish three documents to support the application of the scale in low- to middle-income countries: the measurement scale itself, an assessment tool, and a users' guide. The users' guide will describe how to conduct an assessment, identify HIS stages and gaps, prioritize needs, prepare a roadmap, and access relevant tools to address identified gaps and HIS strengthening priorities.

Assessments should be conducted with respondents who have expertise in various components of HIS and should include perspectives from various levels of the health system. Assessments can be participatory, such as in a workshop, and be facilitated either by an outside expert in partnership with facilitators from the organization or by an organization's own staff. The responses to assessment questions will generate a score for the current stage of each component in the HIS. The project plans to collaborate with organizations and individuals with similar interests and goals to refine the scale, including a proposed pilot test in one or more low-resource countries to validate and refine it and then disseminate it for wider use.

Acknowledgments

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