Building a Strong and Interoperable Health Information System for Ghana

Background

In April 2018, the Ghana Health Service (GHS), with technical support from MEASURE Evaluation—funded by the United States Agency for International Development (USAID)—conducted a readiness assessment of the interoperability of the country's health information system (HIS). This assessment used the HIS Interoperability Maturity Toolkit, developed in 2017 by MEASURE Evaluation and the Health Data Collaborative's digital health and interoperability working group, with input from key digital health stakeholders in Ghana and Kenya.

"Interoperability" denotes the ability of two or more HIS, or HIS components, to exchange information based on data exchange standards and use the information. Interoperability enables different HIS to work together in and across organizational boundaries to advance the health status of people and communities and ensure that they receive effective healthcare delivery (Healthcare Information and Management Systems Society, 2013). Ghana aspires to build a strong national HIS. The interoperability readiness assessment is a necessary step to determine the current status of the domains of an HIS, and uncover weak areas in need of strengthening.

We used the maturity model approach to conduct the assessment and analyze its results. A maturity model is a set of structured levels that depict the organizational behaviors, practices, and processes that reliably and sustainably produce required outcomes (Hammond, Bailey, Boucher, Spohr, & Whitekar, 2010).

GHS Enterprise Architecture's SWOT Analysis

The 2009 Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis of factors that drive the enterprise architecture for the GHS showed that a functional data exchange environment in Ghana is in the formative stage. The country plans to automate important business practices related to health services. The SWOT analysis also revealed that Ghana's network infrastructure limits the ability of the GHS to collaborate with other departments and ministries, and raised concerns regarding data security, privacy, and use. Overall, an interoperable national HIS for Ghana remains a work in progress. These results show that Ghana is working to build a national health information system, but the country has important infrastructural and technological barriers to overcome.

Assessment for HIS Interoperability

The GHS and its partners worked with the MEASURE Evaluation team to implement the HIS interoperability readiness assessment and results analysis and draft the HIS interoperability roadmap, between April 12 and 19 2018. The assessment process comprised the two steps described below.

1. Formation of an assessment oversight team to plan for the assessment. The GHS worked with MEASURE Evaluation to select the assessment team. The specific mandate for the five-member team (and two MEASURE Evaluation facilitators) was to determine the scope and overall direction of the assessment, select the people who would be invited to participate in the assessment, and facilitate implementation of the assessment. In preparation, the MEASURE Evaluation team oriented the assessment oversight team to the assessment tools and processes. Table 1 shows the composition of the team.

Table 1. Assessment team

Name	Ministry Agency/ Department
Dr. Koku Awoonor-Williams	GHS–Policy, Planning, Monitoring and Evaluation Division
Mr. Yaw Mpiani-Brobbey	GHS–Office of the Director General
Mr. Sam Quarshie	GHS–Office of the Director General
Mr. Dominic Atweam	GHS–Policy, Planning, Monitoring and Evaluation Division
Dr. Anthony Ofosu	GHS–Policy, Planning, Monitoring and Evaluation Division
Mr. Sam Wambugu	MEASURE Evaluation (facilitator)
Ms. Christina Villella	MEASURE Evaluation (facilitator)

2. Assessment workshop. The assessment was a one-day workshop with 16 participants. The assessment team included representatives from the Policy, Planning, Monitoring and Evaluation Division of the GHS; the National AIDS Control Program; Ghana Statistical Service; the National Communication Authority; USAID's Systems for Health project, and a representative from the private sector. The MEASURE Evaluation team began the assessment by orientating all the participants on the goals, scope, and process of the assessment. All participants completed the same questionnaire individually. Then, the oversight assessment team facilitated a session to build consensus based on the assessment results. The goal of the consensus approach was to produce a set of answers

for each question that all the participants agreed upon. The assessment results would then help determine the maturity levels of the domains and their respective subdomains.

Results

The consensus building process yielded the final results that were translated into scores, and the scores were mapped into the maturity model to produce a visual presentation of the results. Each of the subdomains of the HIS interoperability maturity model has five levels of maturity: nascent, emerging, established, institutionalized, and optimized. The assessment revealed that most subdomains are at the nascent and emerging levels. At the nascent level, HIS activities happen by chance or as the result of isolated or ad hoc efforts. The emerging level characterizes a system with defined HIS processes and structures. Such processes are not, however, systematically documented and lack ongoing monitoring or measurement mechanisms. Table 2 below summarizes the subdomains and their respective levels based on the results of the assessment.

HIS Interoperability Roadmap

Using the assessment results, the assessment oversight team started to draft the HIS interoperability roadmap. The activities in the roadmap were categorized into three clusters, namely short-term (1 year), medium-term (2–3 years), and long-term (4–5 years). Whereas the oversight team

has made progress drafting the roadmap, its completion will require much more time, some financial support, and internal discussions. A strong leadership and governance team, with representation from all stakeholders, must be formed to oversee the implementation of the roadmap.

Next Steps

Looking at the road ahead, the following are the immediate next steps.

- Convene a multisectoral HIS steering committee, sensitize the committee to the interoperability roadmap, and seek its commitment to oversee the development and implementation of the HIS interoperability roadmap.

- Create a technical working group for HIS interoperability. This group would be charged with the day-to-day implementation of the HIS interoperability roadmap under the stewardship of the HIS steering committee.

- Complete the HIS interoperability roadmap. MEASURE Evaluation helped the oversight team begin drafting the roadmap, but its completion will require several meetings and consultations.

- Development of a costed workplan is imperative to implementation of the roadmap. The costed work plan would be an important planning document and an essential tool in lobbying for resources.

Table 2. Subdomains and levels

Level	Subdomains
Nascent: HIS activities happen by chance or represent isolated and ad hoc efforts	• Governance structure for HIS • HIS interoperability monitoring and evaluation • Business continuity • Financial management • Human resources policy • Technical standards • Hardware
Emerging: The country has defined HIS processes and structures. However, such processes are not systematically documented and lack ongoing monitoring or measurement mechanisms	• Interoperability guiding documents • Compliance with data exchange standards • Data ethics • Financial resource mobilization • Human resources capacity • Human resource capacity development • National HIS enterprise architecture • HIS subsystems • Operations and maintenance • Communication network
Established: The country has documented and functional HIS processes and structures. Metrics for performance monitoring, quality improvement, and evaluation are systematically used.	• Data management