

IMPROVING HMIS PERFORMANCE

Measurement and Interventions



RBHS supported the MOHSW to strengthen both the production of quality data and the use of HMIS information for decision making. By project's end, data accuracy, data completeness, and use of information had all improved. Here, a county health worker enters data into a facility ledger.

Background

The Liberian National Health and Social Welfare Policy and Plan, 2011-2021, has given high priority to the development of a decentralized health management information system (HMIS) as an integral part of the national health system. RBHS has provided comprehensive support to HMIS in strengthening both the production of quality data and the use of HMIS information for decision making. The RBHS strategy for health information system strengthening involved: 1) improving the system components required for HMIS functionality; 2) improving individual staff capacity at all levels; and 3) creating an organizational environment conducive

to the use of information for decision making. RBHS has also contributed to the urgent need for HMIS resources, including policy and strategy documents, data recording and reporting instruments, and computer equipment.

Methodology

Starting in 2011, RBHS initiated a massive effort of capacity building (CB) in close collaboration with the Ministry of Health and Social Welfare (MOHSW). The conceptual framework for capacity building aimed to build the capacity of the MOHSW across the six building blocks of health

systems strengthening developed by the WHO¹: 1) delivering essential health services; 2) the health workforce; 3) health information systems (HIS); 4) access to essential medicines; 5) health systems financing, and; 6) governance and leadership. Particularly for HIS, the expected outcome of the capacity building was to improve **HMIS performance**, defined as: 1) the production of quality data; and 2) use of the information generated for improved decision-making. To measure HMIS performance, RBHS used the PRISM tools that are based on the Performance of Routine Information System Management (PRISM) framework². This framework promotes strengthening of the HMIS performance through better data quality and improved information use. It looks into not only technical issues related to data generation, but also organizational and behavioral factors that hinder the effective use of information. An initial assessment undertaken

in May 2012 led to the establishment of a baseline to develop an HMIS strengthening action plan. A second assessment was undertaken in May 2014.

Interventions

Between 2009 and 2014, RBHS implemented a series of capacity building interventions based on three strategies to: 1) strengthen the HMIS system; 2) improve the HMIS capacity of staff at all levels; and 3) build organizational capacity for information use. In this technical brief we give a short description of the various interventions. For more details, we refer the reader to an in-depth monograph on RBHS efforts to improve the routine health information system (RHIS) performance in Liberia (to be issued in August 2014).



Data analysis increased at health facilities in RBHS-supported counties.

¹ "World Health Organization. Monitoring the building blocks of health systems: a handbook of indicators and their measurement strategies," <http://www.who.int/healthinfo/systems/monitoring/en/index.html>.

² Aqil A, Lippeveld T, Hozumi D. (2009). "PRISM framework: a paradigm shift for designing, strengthening and evaluating routine health information systems," *Health Policy and Planning* 24:217-228.

1. Strengthen the HMIS system

RBHS has provided technical assistance in a comprehensive way to all the HMIS components as outlined below:

- Indicators
 - Assisted in 2009 and again in 2014 with the review of the list of essential indicators through a comprehensive stakeholder involvement of data producers and users and based on the national health priorities.
 - Assisted with the design of community-based indicators.
 - Assisted with the design of human resource indicators.
- Data collection
 - Facility-based HMIS: assisted with the revision of all data recording and reporting instruments based on the list of indicators.
 - Community-based HMIS (C-HMIS): assisted with design of data collection instruments.
 - Human Resources Information System (HRIS): assisted with design of data collection instruments.
- Data management
 - Replaced DHIS³ 1.4 with DHIS2 application for HMIS data management and customized it for use in Liberia.
 - Assisted with the design of a C-HMIS data entry and management module.
 - Assisted with the introduction and customization of the iHRIS application for human resources data management.
 - Assisted with the development of a data warehouse: linking DHIS2 and iHRIS⁴ using interoperability standards.



Between 2012 and 2014, data accuracy in RBHS-supported county health facilities increased from 46% to 83%.

³ "District Health Information System, an open-source application to manage HMIS data," www.dhis2.org.

⁴ Integrated human resource information system.

- Data quality assurance
 - Assisted with the setting up of data verification and quality assurance mechanisms based on desk reviews of data before entry and regular comparison of data recorded with data reported.
- Use of information for decision making (DM)
 - Assisted with increasing the functionality of DHIS2 for data analysis and visualization: creation of program specific and county dashboards.
 - Assisted with creation of incentivized indicators for performance-based financing (PBF).
- HMIS resources
 - Assisted the MOHSW with the development of an HMIS policy and strategy.
 - Provided selected computer equipment including an HMIS back-up server.
 - Printed initial stocks of HMIS supplies.
- Data analysis methods for central MOHSW, county, and district staff:
 - Working with raw data.
 - Target setting and progress monitoring of key indicators.
 - Root cause analysis.
 - Triangulation between lot-quality assurance sampling (LQAS) and HMIS data.
- Use of information for decision making for central, county, and district staff:
 - Problem identification.
 - Problem-solving techniques.
- Master training in C-HMIS for central MOHSW and county staff.
- Data entry and management of human resource data using the iHRIS application for central and county staff.
- Interoperability of information systems for central MOHSW and selected county staff through a DHIS2 – iHRIS Interoperability Academy.

2. Improve the individual staff capacity on HMIS

RBHS assisted with the organization of various HMIS in-service training activities for staff at the central MOHSW, County Health and Social Welfare Teams (CHSWT), and district-level staff in those counties. The project assisted with the following trainings:

- Data collection of the revised HMIS for master trainers at county and district levels.
- Use of DHIS2 application for county monitoring and evaluation (M&E) staff.

3. Build organizational capacity for information use

RBHS provided technical support in creating an “information culture” within the central MOHSW and the three counties in which it worked, meaning that it helped to create an environment in which information is valued for decision-making. Some examples include:

- Linking the use of HMIS information with operational planning at all levels;
- Institutionalizing data review/coordination meetings at the central MOHSW and county levels;
- Linking the use of HMIS information with PBF in selected counties.

Results

In April 2012, the MOHSW in collaboration with RBHS undertook a baseline assessment of the current HMIS performance. The assessment was conducted in the counties of Bong, Nimba, Lofa, and Grand Bassa. All four county health offices and a random sample of 76 health facilities (19 health facilities per county) were surveyed, and about 360 health managers and staff from these institutions were interviewed using the PRISM framework and tools.

Data quality varied from facility to facility, depending on the implementing partners with which they were associated. Data accuracy ranged from 38% in August 2011 to 46% in February 2012. While 91% of the health facilities submitted monthly reports to the county health offices, 75% of these reports were submitted by the reporting period deadline. In general, HMIS information use was relatively low at both the county and facility levels. Less than 20% of health facilities received feedback on their monthly reports. Evidence of use of HMIS findings in the decision-making process was observed in only 38% of the facilities.

A strategic and operational plan for strengthening the HMIS in Liberia was designed and implemented based on these findings. Various interventions to strengthen the systemic components as well as the HMIS individual and organizational capacity (see list in the previous section) have been implemented from 2012 to 2014.

The PRISM assessment was repeated in May 2014. Provisional results show a substantial improvement in HMIS performance (see Table 1). Data accuracy in health facilities increased from 46% in 2012 to 83% in 2014. At county level, it increased from 78% in 2012 to 88% in 2014. Data completeness in the facilities increased from 52% to 79%. Use of information was estimated at 58%, a substantial increase compared to the 38% of 2012. Also HMIS processes such as data analysis and feedback given to health facilities increased substantially.

RBHS SUPPORT TO HMIS KEY ACHIEVEMENTS

SYSTEM CB

- Development of HMIS policy and strategy.
- Facilitated two HMIS reviews.
- Facilitated transition from DHIS1.4 to DHIS2.

INDIVIDUAL CB

- Conducted training in DHIS2 data entry and management.
- Conducted training in use of information.

ORGANIZATIONAL CB

- Facilitated linking of HMIS to health services planning and management.

Table 1: Comparison of PRISM Assessments 2012 – 2014

HMIS INDICATORS – LEVEL:	Facilities		County	
	2012	2014	2012	2014
PERFORMANCE OF THE HMIS				
Quality of data				
Overall accuracy	46%	83%	78%	88%
Data completeness in facilities monthly reports	52%	79%		
Completeness of monthly reports at county level			91%	98%
Timeliness of reports of health facilities at county level			74%	88%
Use of information	38%	58%		75%
PROCESS				
Feedback to health facilities	20%	49%		50%
Data analysis				
Performing at least two types of data analysis	15%	51%		100%
Presentation of data	45%	68%		54%



Ultimately, how effectively health facilities use information directly impacts quality of care.

Way Forward

While these results are encouraging, more time and effort are needed to build HMIS capacity so that the majority of health facilities and county offices can use information to improve access to quality health services. In order to ensure gradual institutionalization of the HMIS interventions within the MOHSW and the CHSWTs, we have classified the various HMIS interventions into three categories: 1) mature interventions;

2) developing interventions; and 3) initiated interventions (see Table 2 below).

While it is expected that, at the end of RBHS, mature interventions will be managed independently by the MOHSW without further technical support, developing and initiated interventions will need further support and resources.

Table 2: Status of RBHS-supported HMIS interventions, July 2014

TRANSITION STATUS OF HMIS INTERVENTIONS		
Mature Interventions	Developing Interventions	Initiated Interventions
<ul style="list-style-type: none"> • DHIS2 data entry and management • PRISM assessment using LQAS • Use of information based on problem solving techniques 	<ul style="list-style-type: none"> • iHRIS data entry and management • HMIS review: training of staff • Quarterly health review meetings at county level • Scaling up of routine DQA 	<ul style="list-style-type: none"> • Scaling up of C-HMIS • Interoperability between DHIS2 and iHRIS • Use of information at health facility level • Sustainable management of HMIS printed supplies

Mature: has an institutional home in the MOHSW (HMIS or M&E unit); clear procedures; knowledgeable staff at multiple levels of the system, may need more attention to quality, county implementation, roll out to additional counties.

Developing: has an institutional home and/or point person in the MOHSW; needs additional technical assistance in the form of coaching, quality assurance, ongoing scaling up.

Initiated: started at a relatively small scale, with limited technical or geographic coverage; institutional home and/or point person in MOHSW is not yet formalized; likely to need substantial technical support, resources to move through developing and maturing stages.



Between 2012 and 2014, data completeness in RBHS-supported county health facilities increased from 52% to 79%.

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