



ASSESSMENT OF THE ROUTINE HEALTH MANAGEMENT INFORMATION SYSTEM IN DELTA STATE, FEDERAL REPUBLIC OF NIGERIA

September 2012

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ACRONYMS

DHIS	District Health Information System
FMOH	Federal Ministry of Health
HMIS	Health Management Information System
IT	Information Technology
LGA	Local Government Area
M&E	Monitoring and Evaluation
PRISM	Performance of Routine Information System Management
RHIS	Routine Health Information System
SMOH	State Ministry of Health
UPS	Uninterrupted Power Supply
VI/2	Version 1/2

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We also acknowledge MEASURE Evaluation, the developers of the PRISM Framework and tools used in the assessment.

EXECUTIVE SUMMARY

The goal of the assessment reported here was to evaluate the Routine Health Information System (RHIS) in Delta state, Nigeria. Objectives were to identify the strengths, weaknesses, threats, and opportunities of the Health Management Information System (HMIS) units in the state and its local government areas (LGAs) with a view to identifying risks that pose a threat to the implementation of the District Health Information System (DHIS) version two (v2) software in the state. The Federal Ministry of Health (FMOH) had previously selected DHIS version 1 (v1) as its software for routine health data management but is considering adopting and migrating the RHIS to the upgraded version, DHIS v2. Implementing DHIS v2 would be intended to improve the flow of data from the LGAs to the State Ministry of Health (SMOH) and subsequently the FMOH.

The assessment used a questionnaire-based survey and key informant interviews of staff of the Delta SMOH HMIS unit and the health departments of five selected LGAs. Trained data collectors administered questionnaires that assessed the technical, organizational, and behavioral determinants of the HMIS units at these two levels of health management. Measures of these determinants indicate how the system is performing and how these staff respond to data-related duties.

Of the 25 LGAs in the state, only 17 (68 percent) routinely reported their data to the SMOH. The proportion of health facilities reporting through these LGAs is even lower: only 536 (47 percent) of the 1141 health facilities expected to report routinely did so.

The state HMIS office has three functional computers, but none had DHIS v1 or Internet connectivity. Also, the state office had no schedule for supervisory visits to the LGAs or reports to show that such visits were made.

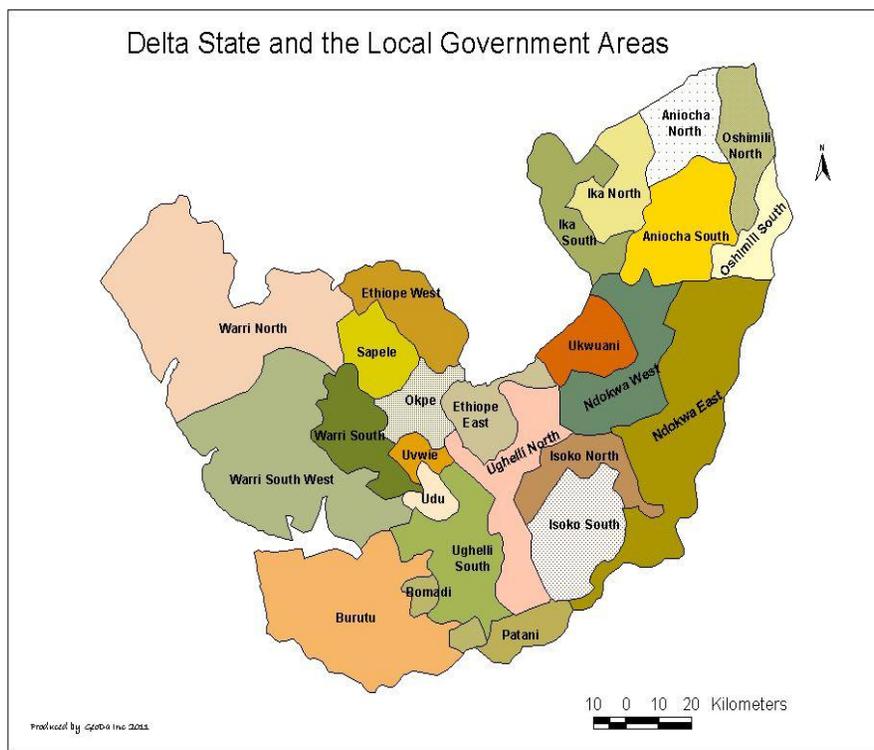
The rate of reporting by health facilities expected to report to LGAs ranged from zero percent in Ika North-East to 95 percent in Aniocha LGA. Of the five LGAs assessed, only Udu had a functional computer. The other LGAs' computer hardware were either not functional or outrightly unavailable (and Internet connectivity was not possible without functional computers). In addition, no LGA had a schedule for supervisory visits to the facilities or reports to indicate that such visits were made.

We conclude that in order for DHIS v2 to make the impact that the FMOH intends, various preliminary efforts must be made to improve the level of reporting at the LGAs and likewise to improve the facility- and LGA-level processes that feed data into the system. Connections should be strengthened between the SMOH and the LGAs and between the LGAs and the facilities. Supervisory visits must be embedded in the system, with routine verification of the data reported upward by health facilities (to LGAs) and by LGAs (to the state). Effort must be made to identify the reason(s) for the failure of eight LGAs to report. Reasons for the damage to computers donated by the World Bank-assisted Health Systems Development II project must also be investigated.

I. BACKGROUND

Delta state is located in the South-South geopolitical zone of the Federal Republic of Nigeria. Created from the former Bendel state in 1991, its capital is Asaba. The state has 25 local government areas (LGAs) and covers a land mass of about 17, 000 square kilometers. Figure 1 is a map of Delta state showing the LGAs. Its estimated population by the 2006 national census was 4.9 million, with a growth rate of 3.2 percent (Federal Republic of Nigeria, 2009).

FIGURE 1: MAP OF DELTA STATE AND ITS LGAS



Delta's major tribes are Urhobo, Isoko Igbo, Ezon, and Itsekiri. Predominant economic activities in the state are centered on oil companies, though many of the natives are fishermen and fisherwomen.

Delta has one of the higher state HIV prevalence rates, 6.5 percent (FMOH, 2010); the rate is higher than the national average (4.1 percent). Basic health indicators are in Table 1.

TABLE I: BASIC HEALTH INDICATORS

Indicator	Statistics
Infant mortality rate*	84/1000 live births
Under 5 mortality rate*	138/1000 live births
HIV prevalence**	6.5%
Women who gave birth in past 5 years and who received antenatal care from a skilled provider*	70%

*NPC and ICF Macro (2009) (South-South zone data). **FMOH (2010).

2. INTRODUCTION

The assessment of the Health Management Information System (HMIS) of selected states in Nigeria came about as a result of efforts of the Federal Ministry of Health (FMOH), the United States Agency for International Development, and Health Systems 20/20 to improve routine disease surveillance in the country. Discussions revealed the importance of assessing the readiness of the state ministries of health (SMOHs) and LGA health departments to adopt the District Health Information System (DHIS) version 2 (v2) software. Health Systems 20/20 was asked to identify the strengths, weaknesses, opportunities, and threats of DHIS v2's deployment.

The FMOH had selected DHIS version 1 (v1) as its platform for managing routine health data in 2006 (FHI, 2008). At that time, DHIS v1, which was based on a Microsoft Access background database, was being deployed. That version was, however, found to have limitations that made it difficult to enter data across multiple sites, so it was difficult to compare data across geographical locations. At any point in time, each LGA where DHIS was deployed could have a different instance of the database operating. Because the databases did not directly “speak” to each other, huge running costs were assumed to ensure that the databases were continuously synchronized.

Recognizing this limitation as significant, DHIS developers built the second version on a web-enabled platform to address the multi-location difficulty. This version facilitates the deployment of a single, countrywide database that can be accessed remotely via the Internet, thereby eliminating the data comparison difficulty. This single management level also reduces information technology (IT) management costs.

Though DHIS v2 has the potential to reduce IT management cost, it is still necessary to ensure that the processes for data collection at the states and LGAs are optimal. That is, ensuring the readiness for DHIS v2 deployment alone will not ensure that the quality of the data the FMOH receives is improved. Thus, Health Systems 20/20 performed a comprehensive assessment of the HMIS at the state and LGA levels to holistically assess the challenges at state and LGA collection points and offer solutions that would result in better functioning of the national health information system and ultimately better data.

The Performance for Routine Information System Management (PRISM) Assessment tool, which had been developed by MEASURE Evaluation and previously used and validated in several countries, was adapted to the Nigerian context and used as the assessment tool.

3. METHODOLOGY

Training data collectors: Before deploying data collectors, a one-day workshop was held to train them on the survey tools. Unclear questions were clarified and occasionally reworded. We developed a list of unclear questions with explanations of their meanings and distributed it to the data collectors.

Data collection tool: After adapting the PRISM tools we grouped them into two parts: a performance assessment component and an organizational and behavioral assessment component. As detailed next, the former targeted technical leads in state and LGA HMIS offices, and the latter targeted every worker in the SMOH HMIS/monitoring and evaluation (M&E) unit and the LGA health departments. We excluded the tool's facility-level pages as the assessment's scope did not include facilities.

- Performance Assessment Component

This part of the tools targeted technical leads in the SMOH HMIS/ M&E unit and LGA health departments. It had four subcomponents:

- The Quality of Data Assessment Form assessed the quality of the data reported from the lower to the higher level (e.g., from an LGA to the state and from a health facility to an LGA).
- The Use of Information Assessment Form assessed a unit's ability to use information.
- The Office Equipment Checklist assessed the availability of essential office equipment and other resources necessary for the optimal functioning of DHIS v2.
- The Routine Health Information System (RHIS) Management Assessment Form assessed the availability of guidelines and processes for health data management.

- Organizational and Behavioral Assessment Component

This component targeted every staff person of the HMIS/M&E units at the state and LGA levels, including the leads. It assessed the respondent's perspective of the organization's behavior with regard to how decisions were made and the general operations of the HMIS unit.

Sampling/ selection of sites/ respondents and questionnaire administration: We drew a sampling frame comprising Delta's 25 LGAs. We then stratified them as rural or urban. Five LGAs were then conveniently selected (three from the urban list [Sapele, Iko North-East, and Ughelli North] and two from the rural list [Aniocha North and Udu]).

On day one of the data collection, the HMIS officer and key staff in the state HMIS unit were interviewed. On days two through four, one urban and one rural LGA were assessed (one day had no rural LGA). On day five, the permanent secretary for the SMOH; the assistant director of planning, research and statistics; and other principal SMOH officers were debriefed on the assessment. In all, 12 respondents were interviewed.

Timing of the assessment: Data collection began July 2, 2012, and ended on July 6, covering the five days of activities described in the previous paragraph.

4. FINDINGS

We present our findings first from the state level and then from the LGA level. Within those two sections are four sub-sections presented in the order of the tools in the methodology section (the same order as the three forms and checklist described above).

4.1 STATE ASSESSMENT

4.1.1 QUALITY OF DATA

The HMIS office kept copies of monthly reports received from facilities. Of the state's 25 LGAs, 17 (68 percent) routinely reported their data into the HMIS (Figure 2). These 17 LGAs routinely provided reports for 536 (47 percent) of the 1141 health facilities enlisted in the system (Figure 3). No deadline for receiving data existed, and records were not kept of when the reports were received; consequently, assessing the timeliness of the data was impossible. The SMOH did not have DHIS v1, but used an electronic platform for data archiving. At the time of our interview, this software could not be assessed due to a power outage, so it was unclear whether the software automatically provided reports of pertinent indicators.

FIGURE 2: DISTRIBUTION OF LGAS REPORTING/ NOT REPORTING INTO THE HMIS

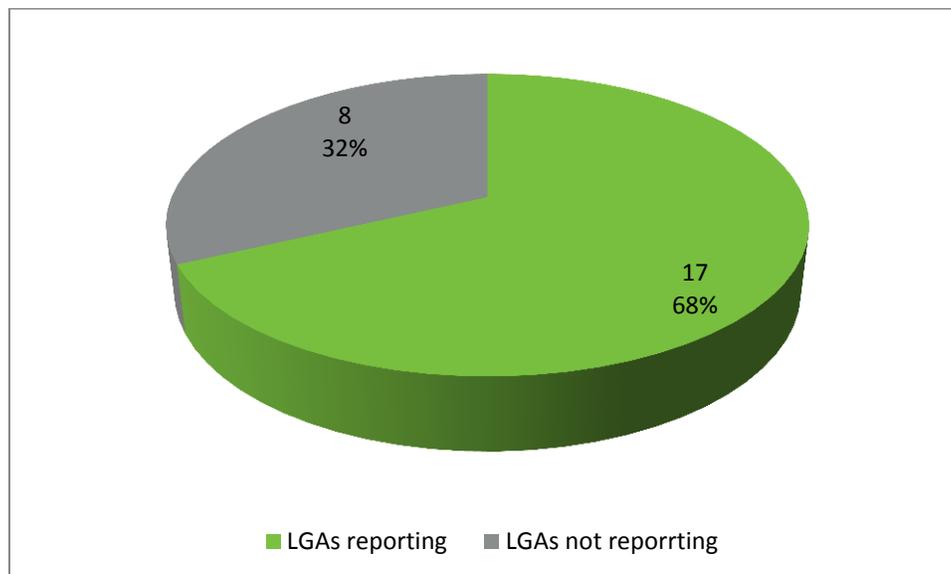
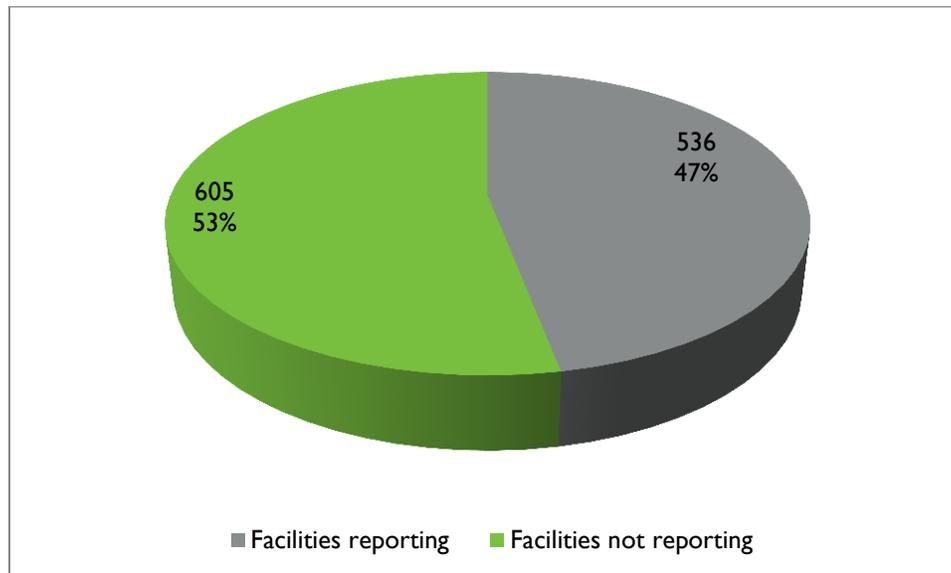


FIGURE 3: DISTRIBUTION OF HEALTH FACILITIES REPORTING/NOT REPORTING INTO THE HMIS



4.1.2 USE OF INFORMATION

The HMIS office semiannually compiled the RHIS data it received from the LGAs to produce HMIS reports. The HMIS office had charts and graphs of indicators related to maternal and child health, facility utilization, and disease surveillance. It also had a map of its catchment area along with accompanying demographic information.

4.1.3 OFFICE EQUIPMENT CHECKLIST

Three of the five computers at the HMIS office were functional, with data backup units. The office had a USB modem, but the office lacked an active subscription for the modem at the time of the assessment. Electricity was interrupted daily, and there were no uninterrupted power supply (UPS) units or backup generators to ensure power in such situations. The office had a functional mobile telephone and (functional) calculator.

4.1.4 ROUTINE HEALTH INFORMATION SYSTEM MANAGEMENT

The HMIS office did not display an RHIS mission statement, but it did have a management structure for making RHIS decisions. No updated organizational chart, distribution list for RHIS reports, or situation analysis report less than three years old was available at the office. A five-year plan and a copy of RHIS standards were available. The office had no schedule for supervisory visits or supervisory visit reports showing that such visits were made.

4.2 LGA ASSESSMENT

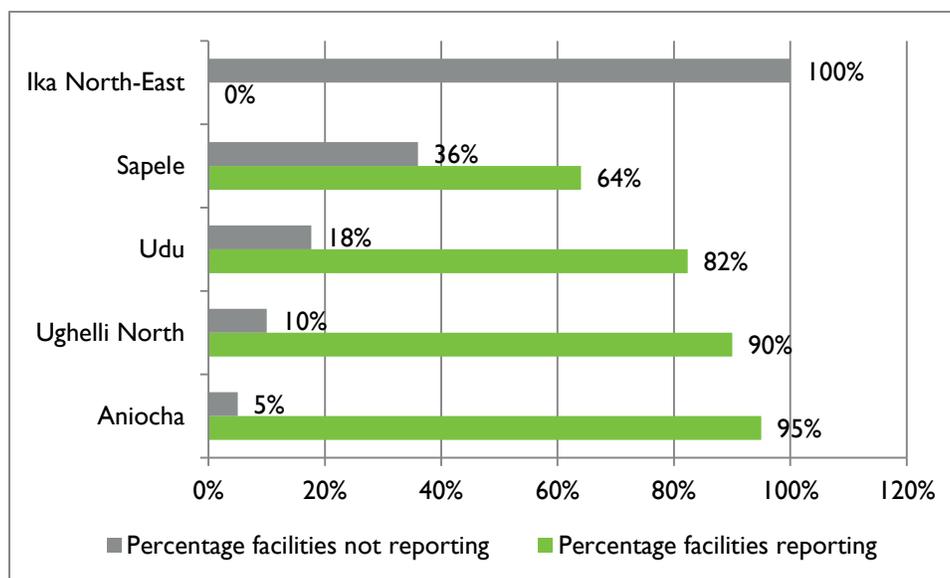
4.2.1 QUALITY OF DATA

Four LGAs kept records of reports received from health facilities, and the same four maintained deadlines for receiving such reports. Ika North-East did neither, as none of its health facilities routinely reported data. DHIS is not installed at any LGA office and no alternate electronic platform was in use anywhere. The number of facilities expected to report to their LGA varied widely among LGAs (Table 2). The rate of reporting by these facilities to their LGA offices also varied, from 0 percent in Ika North-East to 95 percent in Aniocha (Fig 4).

TABLE 2: NUMBER OF HEALTH FACILITIES REPORTING AND NOT REPORTING, BY LGA

LGA	Facilities reporting	Facilities not reporting
Aniocha	19	1
Ughelli North	36	4
Udu	14	3
Sapele	16	9
Ika North-East	0	19

FIGURE 4: PERCENTAGE OF HEALTH FACILITIES REPORTING AND NOT REPORTING, BY LGA



4.2.2 USE OF INFORMATION

The four LGAs that received data from health facilities compiled the data regularly. Of them, only Aniocha used the data collected to issue reports on health indicators. Udu and Sapele provided feedback to the health facilities that submitted data. All four LGAs that could, (not Ika North-East) displayed data relating to one or more of the following: maternal health, child health, facility utilization, and disease

surveillance. Sapele, Ughelli North, and Aniocha had maps showing their catchment area, but only the last two displayed demographic information by target group.

4.2.3 OFFICE EQUIPMENT CHECKLIST

Only the Udu HMIS office had a functional computer (all others had computer carcasses) and a printer. The computer had no data backup unit. These computers were said to have been donated by the World Bank-supported Health Systems Development II project. UPS units were available in Aniocha and Ughelli North, but they were nonfunctional. No LGA had Internet access or a continuous supply of electricity: most had interruptions daily.

4.2.4 RHIS MANAGEMENT ASSESSMENT

Only Aniocha LGA had a mission statement displayed at the HMIS office, and only Udu had a structure for managing RHIS information. Sapele and Aniocha had organizational charts that showed the HMIS roles. No LGA had a distribution list of those who were to receive specific information. Sapele had a situation analysis report that was under three years old and was the only LGA with a supervisory visit schedule. However, no supervisory reports were available to show that these visits were made.

4.3 ORGANIZATIONAL AND BEHAVIORAL ASSESSMENT

The results of the Organizational and Behavioral Assessment will assist in developing interventions for improving both information systems and the use of information (Table 3).

The assessment found that all 12 surveyed employees disagreed with the statement that decisions were based on personal liking and agreed they were based on evidence and facts. Many also agreed that decisions were made by comparing data with strategic health objectives.

Superiors were noted to emphasize data quality in their monthly reports but less so in using data for setting targets. Many respondents (83 percent) indicated that superiors felt guilty for not accomplishing set targets, and 67 percent disagreed with the statement that they were rewarded for good work.

Only half agreed to a statement that the staff used HMIS data for the day-to-day management of the health facility and state/ LGA office, but more (67 percent) agreed that health departments displayed data for monitoring their set target. Fifty percent of respondents disagreed with a statement that health department staff were empowered to make decisions, and an equal percentage disagreed that they were able to say no to superiors.

All respondents disagreed that collecting information made them feel bored, and they uniformly agreed that collecting information was meaningful for them and that collecting information gave them the feeling that data were needed for monitoring facility performance.

TABLE 3: RESPONSES TO THE ORGANIZATIONAL AND BEHAVIORAL ASSESSMENT (N=12)

In health department, decisions are based on:	Disagree (%)	Neutral (%)	Agree (%)	Total (%)
Personal liking	12 (100%)	0 (0%)	0 (0%)	12 (100%)
Superiors' directives	3 (25%)	0 (0%)	9 (75%)	12 (100%)
Evidence/facts	0 (0%)	0 (0%)	12 (100%)	12 (100%)
Political interference	9 (75%)	0 (0%)	3 (25%)	12 (100%)
Comparing data with strategic health objectives	0 (0%)	1 (8%)	11 (92%)	12 (100%)
Health needs	0 (0%)	1 (8%)	11 (92%)	12 (100%)
Considering costs	1 (8%)	2 (17%)	9 (75%)	12 (100%)
In health department, superiors	Disagree (%)	Neutral (%)	Agree (%)	Total (%)
Seek feedback from concerned persons	0 (0%)	0 (0%)	12 (100%)	12 (100%)
Emphasize data quality in monthly reports	0 (0%)	0 (0%)	12 (100%)	12 (100%)
Discuss conflicts openly to resolve them	1 (8%)	2 (17%)	9 (75%)	12 (100%)
Seek feedback from concerned community	10 (83%)	2 (17%)	0 (0%)	12 (100%)
Use HMIS data for setting targets and monitoring	3 (25%)	1 (8%)	8 (67%)	12 (100%)
Check data quality at the facility and higher level regularly	1 (8%)	2 (17%)	9 (75%)	12 (100%)
Provide regular feedback to their staff through regular report based on evidence	2 (17%)	2 (17%)	8 (67%)	12 (100%)
Report on data accuracy regularly	1 (8%)	3 (25%)	8 (67%)	12 (100%)
In health department, staff	Disagree (%)	Neutral (%)	Agree (%)	Total (%)
Are punctual	0 (0%)	0 (0%)	12 (100%)	12 (100%)
Document their activities and keep records	0 (0%)	0 (0%)	12 (100%)	12 (100%)
Feel committed in improving health status of the target population	0 (0%)	2 (17%)	10 (83%)	12 (100%)
Set appropriate and doable target of their performance	0 (0%)	1 (8%)	11 (92%)	12 (100%)
Feel guilty for not accomplishing the set target/ performance	0 (0%)	2 (17%)	10 (83%)	12 (100%)
Are rewarded for good work	8 (67%)	1 (8%)	3 (25%)	12 (100%)
Use HMIS data for day to day management of the facility and LGA/ state	5 (42%)	1 (8%)	6 (50%)	12 (100%)
Display data for monitoring their set target	4 (33%)	0 (0%)	8 (67%)	12 (100%)
Can gather data to find the root cause(s) of the problem	0 (0%)	1 (8%)	11 (92%)	12 (100%)
Can develop appropriate criteria for selecting interventions for a given problem	2 (17%)	2 (17%)	8 (67%)	12 (100%)
Can develop appropriate outcomes for a particular intervention	2 (17%)	1 (8%)	9 (75%)	12 (100%)
Can evaluate whether the targets or outcomes have been achieved	2 (17%)	1 (8%)	9 (75%)	12 (100%)
Are empowered to make decisions	6 (50%)	0 (0%)	6 (50%)	12 (100%)
Able to say no to superiors and colleagues for demands/ decisions not supported by evidence	6 (50%)	0 (0%)	6 (50%)	12 (100%)
Are made accountable for poor performance	0 (0%)	0 (0%)	12 (100%)	12 (100%)
Use HMIS data for community education and mobilization	7 (58%)	0 (0%)	5 (42%)	12 (100%)
Admit mistakes for taking corrective actions	0 (0%)	1 (8%)	11 (92%)	12 (100%)

Personal	Disagree (%)	Neutral (%)	Agree (%)	Total (%)
Collecting information which is not used for decision making discourages me	2 (17%)	0 (0%)	10 (83%)	12 (100%)
Collecting information makes me feel bored	12 (100%)	0 (0%)	0 (0%)	12 (100%)
Collecting information is meaningful for me	0 (0%)	0 (0%)	12 (100%)	12 (100%)
Collecting information gives me the feeling that data is needed for monitoring facility performance	0 (0%)	0 (0%)	12 (100%)	12 (100%)
Collecting information gives me the feeling that it is forced on me	12 (100%)	0 (0%)	0 (0%)	12 (100%)
Collecting information is appreciated by co-workers and superiors	0 (0%)	0 (0%)	12 (100%)	12 (100%)

5. CHALLENGES

The major challenges identified by the assessment that pose a risk to DHIS v2 implementation are:

- Computers are not available in LGAs.
- Internet connectivity is lacking at the SMOH and LGAs.
- Power supply is interrupted daily with no alternate sources.
- Financial support is poor.
- LGA leaders provide a low level of support.
- Several LGAs and facilities do not report their data.
- No data verification is being done.
- Communication is poor between the SMOH and the LGAs M&E units.

6. CONCLUSION AND RECOMMENDATION

Since they would serve as points for data entry into the system, computers and Internet connectivity are necessary for the DHIS v2 envisioned by the FMOH. Four (80 percent) of the five LGAs assessed did not have functional computers, which would prevent these LGAs from entering data and from complying with DHIS v2 effectiveness. The LGAs that lacked computers also lacked Internet connectivity. Likewise, other hardware – like printers and data backup units – were not available. The state HMIS office had functional computers but no Internet access. These observations show that infrastructural improvements need to be made before the deployment of DHIS v2 can improve data quality and transmission in the Nigerian national health information system.

Only 47 percent of the enlisted health facilities contributed data that reached the state office. This proportion needs to be improved to make the investment in DHIS v2 useful. Thus, interventions should be implemented at the LGAs and facilities that will help improve reporting. Such interventions could include conducting active disease surveillance rather than the current passive disease surveillance for a number of months and repeatedly engaging facilities in the processes of collecting and using data.

Power was noted to be interrupted on a daily basis, so alternative power sources should be planned to guarantee uninterrupted service when computer systems are needed.

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