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

September 2012

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

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ACRONYMS

DHIS	District Health Information System
FMOH	Federal Ministry of Health
HMIS	Health Management Information System
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
USAID	United States Agency for International Development
V2	Version 2

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EXECUTIVE SUMMARY

The goal of this assessment was to evaluate the Routine Health Information System (RHIS) in Imo state. Objectives were to identify the strengths, weaknesses, threats, and opportunities of the Health Management Information System (HMIS) unit 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) previously selected the DHIS v1 as its software of choice for routine data management but owing to an upgrade of the software, is considering adoption and migration of the country to the DHIS v2 platform. Implementation of DHIS v2 is intended to improve the flow of data from the LGAs to the State Ministry of Health (SMOH) and subsequently the FMOH.

The assessment was conducted through a questionnaire-based survey and key informant interviews of staff of the Imo 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 unit at these two levels of health management.

The study found that 25 of the state's 27 LGAs (92.6 percent) reported their data. While this proportion is large, only 410 of the 1,334 health facilities (30.7 percent) enrolled in the HMIS had submitted their data routinely. The state HMIS office does not have a fixed deadline for receiving reports from LGAs, so assessing timeliness was not possible.

Each LGA health department would be expected to receive reports from between eight and 22 health facilities. Nwangele LGA had the lowest response rate at 50 percent (with seven of 14 enrolled facilities reporting), and Onuimo had the highest response rate at 100 percent (with all eight enrolled facilities reporting). The low number of health facilities in Onuimo led to unanswered queries on the completeness of the health facility register.

The state HMIS office had four computers, but only two were functional. Working computers were not available in any LGA though some unused computers were observed to still be in their supply boxes at the Okigwe LGA. DHIS v1 was not installed at the state HMIS office (or at any LGA office). There was no access to the Internet at the state or any LGA offices, so there was no electronic communication between the LGA HMIS offices and the state HMIS office.

Staff of the state and LGA HMIS units held generally favorable beliefs about decision making in the department of health, but their feelings about collecting data recommend greater investment in their learning why data collection is important.

Our assessment of the state's entire HMIS system found that the system is under-functioning and will need the support of the leadership of the SMOH and LGA health departments to help refocus the system for an efficient disease surveillance outcome. Effort should be made for the appropriate budgetary allocation and human resource support to achieve the unit's goals.

DHIS v2 implementation planned will need several infrastructural investment; computers and Internet connectivity, before it can be deployed in the state.

1. BACKGROUND

Imo state is located in the South-East geopolitical zone of the Federal Republic of Nigeria. The state's capital is Owerri. Figure 1 shows Imo's 27 local government areas (LGAs). Imo is bordered by Abia and Anambra states to the north and by Rivers and Bayelsa states to the south. The state's estimated population is 3.4 million (Federal Republic of Nigeria Official Gazette, 2009).

Indigenes of Imo state are predominantly Christians and belong to the Igbo tribe. However, people of other tribes also reside there. The main occupations in the state are farming, fishing, trading, and the civil service.

FIGURE 1: MAP OF IMO STATE, FEDERAL REPUBLIC OF NIGERIA

Imo state has one tertiary hospital (Federal Medical Center, Owerri) and several government secondary health facilities and private hospitals. Table 1 presents some of the state's basic health indicators.

TABLE 1: BASIC HEALTH INDICATORS

Indicator	Statistics
Infant mortality rate*	84/1000 live births
Under 5 mortality rate*	153/1000 live births
HIV prevalence (%)**	3.0
Women who gave birth in past 5 years and who received antenatal care from a skilled provider (%)*	87

*NPC and ICF Macro (2009)(South-East zone data). **Federal Ministry of Health (2010)

2. INTRODUCTION

This assessment of the Health Management Information System (HMIS) of selected states in Nigeria came about as a result of the concerted efforts of the Federal Ministry of Health (FMOH), the United States Agency for International Development (USAID), and Health Systems 20/20 to improve routine disease surveillance in the country. As a result of continuous discussions, the importance of assessing the readiness of the State Ministries of Health (SMOH) and the health departments of LGAs to adopt the District Health Information System (DHIS) v2 software was highlighted. As such, Health Systems 20/20 was asked to carry out this task aimed at identifying the strengths, weaknesses, opportunities, and threats of the deployment.

The FMOH previously selected the DHIS as its platform of choice for the management of routine health data in 2006 (Family Health International, 2008). At the time of selection, the version 1 (v1) of the software, which was developed on a Microsoft Access background database was being deployed. DHIS v1 was however found to have some limitations that made it difficult to enter data across multiple sites and, as such, it was difficult to compare data across geographical locations. At each point in time, each LGA where the DHIS was deployed could have a different instance of the database operating. Because the databases did not directly speak to one another, huge running costs were assumed to ensure that the databases were continuously synchronized.

Recognizing this significant limitation, developers of the DHIS developed the DHIS v2 on a web-enabled Java-driven platform to address the multi-location different database issue. This higher version facilitated the deployment of a single database across the country that can be accessed remotely via the Internet thereby eliminating the difficult challenge of comparing data across borders. This single management level also reduces information technology (IT) management cost as this can be minimized to just one level.

Though the DHIS v2 brings the potential benefits of handling the IT management cost, it is still necessary to ensure that the processes for data collection at the states and the local government areas that are expected to furnish data into the DHIS system are optimal. As such, simply assessing the readiness for the deployment of the DHIS v2 software solitarily will not individually help to improve the data quality that the FMOH receives. Thus, Health Systems 20/20 sought to do a comprehensive assessment of the HMIS at the states and the LGAs with a view to assessing holistically the challenges at these points and offering solutions that would ultimately help improve the functioning of the national health information system.

The Performance of Routine Information System Management (PRISM) Assessment tool developed by MEASURE Evaluation and previously used and validated in several countries was adopted as the survey tool of choice for the assessment. It was adapted to the Nigerian context for this purpose.

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 the unclear questions explaining their meaning and distributed it to the data collectors.

Data collection tool: After adapting the PRISM Framework and 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 tool 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 level 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 Routine Health Information System (RHIS) Management Assessment Form assessed the availability of guidelines and processes for health data management.
  - The Office Equipment Checklist assessed the availability of essential office equipment and other resources necessary for the optimal functioning of DHIS v2.

- **Organizational and Behavioral Assessment Component**

This component targeted every staff person of the HMIS unit 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 Imo's 27 LGAs. They were then stratified by rural and urban variation. Five LGAs were then randomly selected (three from the urban list and two from the rural list): Nwangele, Nkwere, Onuimo, Okigwe, and Oru. On day one of the data collection, the HMIS officer and key staff in the HMIS unit were interviewed. On days two through four, one urban and one rural LGA was assessed (one day had no rural LGA). On day five, the commissioner for health; the director of planning, research and statistics; and other principal SMOH officers were debriefed on the assessment. In all, 14 respondents were interviewed.

Timing of the assessment: Data collection began on June 25 2012 and ended on June 29, 2012 covering the five-day period briefly described in the previous paragraph.

4. FINDINGS

4.1 STATE ASSESSMENT

4.1.1 QUALITY OF DATA

Of Imo's 27 LGAs, 25 (92.6 percent) report to the SMOH though some are irregular (Figure 2). While this reporting level may seem high, only 410 (30.7 percent) of the 1,334 health facilities that were expected to report (to their LGA) did so (Figure 3). These facilities were spread across the 25 LGAs. The state HMIS office did not have a set deadline for receipt of LGA reports, so we could not measure the timeliness of LGA reporting by those that did report. The state HMIS unit kept copies of statistics submitted to the FMOH.

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

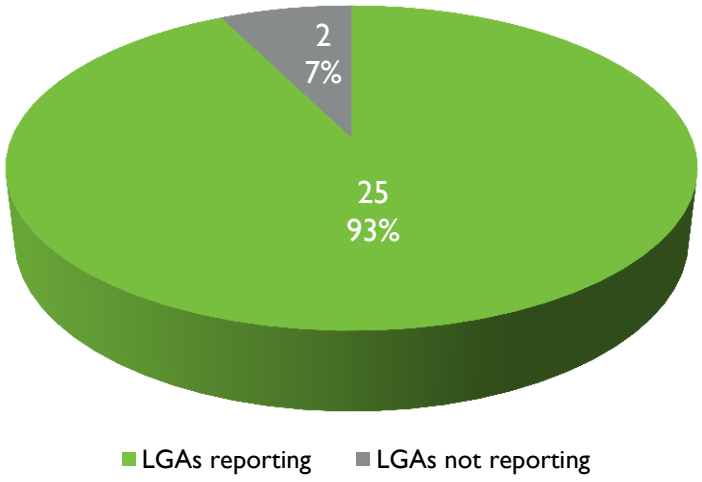
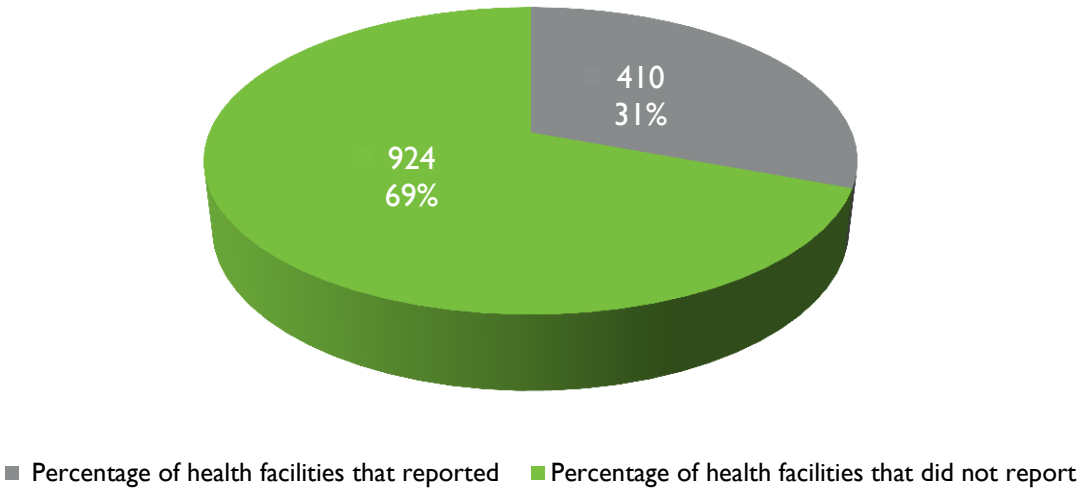


FIGURE 3: DISTRIBUTION OF HEALTH FACILITIES REPORTING/ NOT REPORTING INTO THE HMIS



DHIS v1 was not installed on any state computer, and no other electronic database was in use for data management. Thus, the state's ability to generate reports automatically or do any geographic comparison was limited. Records are properly stored in lockable cabinets at the SMOH. The respondent stated that the monthly report form is complex and difficult to follow.

4.1.2 USE OF INFORMATION

The state HMIS office compiles the RHIS data it receives from the LGAs, but it does not produce any report or give feedback to those LGAs. No charts or tables were on display at the state HMIS office to show the state's health indicators. Likewise, there is no map showing the state catchment area. Such maps are useful tools for planning an outbreak investigation.

4.1.3 OFFICE EQUIPMENT CHECKLIST

Four computers were available at the state HMIS office, two of them functional. The office's only printer was out of order. No backup units or CDs were available. The office had no official landline/mobile phone or Internet connection. Electricity was occasionally interrupted, but backup generators were present.

4.1.4 ROUTINE HEALTH INFORMATION SYSTEM MANAGEMENT

No RHIS mission statement was displayed at the state HMIS office, and there was no management structure for making RHIS-related decisions. In addition, the office lacked a distribution list of people who should receive specific information.

The office had neither documentation of the previous period's performance nor an RHIS situation analysis report less than three years old. However, it did have a valid five-year plan with targets and due dates. No documentation to support previous supervisory visits to the LGAs was available, so it was impossible to ascertain whether any data that had been reported to the FMOH had been verified.

4.2 LGA ASSESSMENT

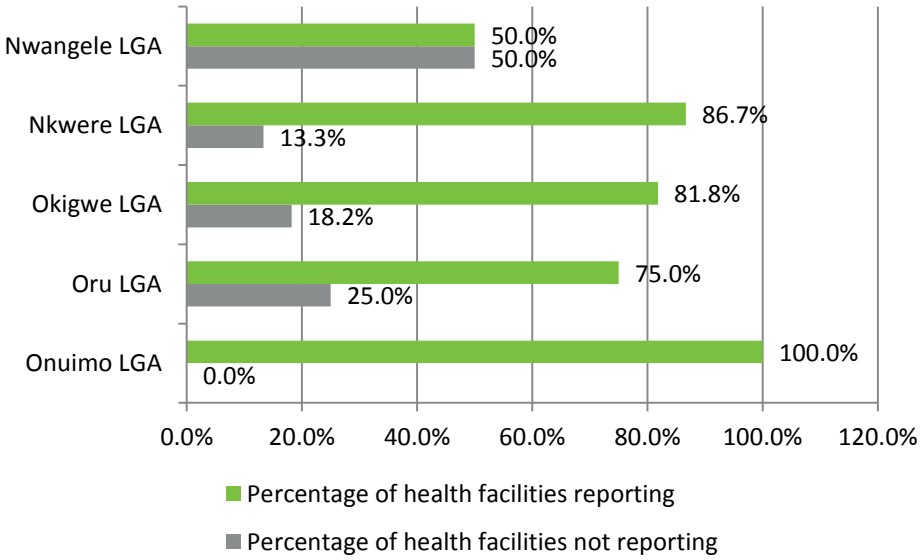
4.2.1 QUALITY OF DATA

The percentage of health facilities reporting to their LGA ranged from 50 to 100 percent. However, and as noted, the statewide number of health facilities that were expected to report that actually did so was quite small. (The other assessed states had far higher numbers of facilities reporting.) Onuimo LGA expected only eight health facility reports. Okigwe LGA had the most health facilities with 22. Table 2 reports data on the number of facilities that were expected to report and the number that did so; Figure 4 shows the distribution of health facilities that did and did not report.

TABLE 2: HEALTH FACILITIES EXPECTED TO REPORT TO THEIR LGA AND NUMBER THAT DID, BY LGA

LGA	Number of Facilities Expected to Report	Number of Health Facilities that did Report
Onuimo	8	8
Onu	20	15
Okigwe	22	18
Nkwere	15	13
Nwangele	14	7

FIGURE 4: PERCENTAGE DISTRIBUTION OF HEALTH FACILITIES THAT DID OR DID NOT REPORT, BY LGA



All LGAs had deadlines for the receipt of reports from health facilities, but the deadlines varied from one LGA to another. Only two LGAs kept records of when the reports were received, so assessing the timeliness of reporting was impossible in the LGAs that did not keep records. Three LGAs (not Nwangele and Okigwe) kept a record of the names of the people who were to receive the monthly report. DHIS is not installed at any LGA office, and there was no alternative electronic database for storing and analyzing their data. Three LGAs manually tabulate and calculate their indicators. No LGA M&E officer had ever seen or used the DHIS software. Three of the five LGAs said that the monthly report form is complex and difficult to follow.

4.2.2 USE OF INFORMATION

All five LGAs compiled RHIS data submitted by health facilities. Three issued reports with RHIS information from these facilities. Some of these reports were quarterly situation reports on primary health care activities, quarterly data summary reports, and monthly report statistics. Only two LGA offices (Okigwe and Onuimo) displayed data, and it is commendable that the displays were updated, covering the previous reporting period. The data displayed included maternal health indicators, child health indicators, and statistics on facility utilization and disease distribution (Onuimo did not display information on facility utilization). Only two offices had maps of their catchment areas. There were quarterly and yearly reports in some LGAs that provided recommendations for the improvement of the system. Four LGAs had routine meetings – at various intervals depending on the LGA and their agreed frequency – for reviewing managerial and administrative matters. These meetings had been held regularly during the previous 12 months. Three LGAs had meeting notes that showed that some form of routine information had been used in making decisions. Topics included data quality issues and reporting to the state HMIS unit. Evidence-based decisions were also made using the data generated on patient utilization, disease distribution, service coverage, and medicine stock-outs.

4.2.3 OFFICE EQUIPMENT CHECKLIST

No LGA had a working computer, though four had computer carcasses that had not worked for a while. Since the computers were nonfunctional, LGAs did not have backup units.

Power supply was erratic in all five LGA offices. Only one had a functioning backup power generator. Three had printers (useless without computers). Internet access was non-existent with no computer.

One surprise in some LGAs was seeing computers in their shipping cartons. We think HMIS staffs were not computer literate and could not set them up or use them. The pictures show some of what we saw.

FIGURE 5: A PRINTER IS STORED IN ITS ORIGINAL BOX IN THE OKIGWE LGA OFFICE

FIGURE 6: COMPUTER HARDWARE IS STACKED IN THE OKIGWE LGA OFFICE

4.2.4 RHIS MANAGEMENT ASSESSMENT TOOL

Only Okigwe LGA office had its RHIS mission statement displayed, and it was the only LGA visited that had a management structure for making RHIS-related decisions. No LGA office had an organizational chart showing RHIS-related functions. Only Okigwe, Onuimo, and Nwangele had distribution lists and documentation of RHIS past monthly/quarterly report distributions.

Only Onuimo had a RHIS situation analysis report less than three years old and a five-year HIS plan. No LGA office had a copy of RHIS standards, although one had an RHIS training manual. The RHIS supervisory checklist for health facility supervisory visits was available in Onuimo, Oru, and Okigwe. Of them, only one had a report on supervision showing its use.

4.3 ORGANIZATIONAL AND BEHAVIORAL ASSESSMENT

The organizational and behavioral factors that affect RHIS performance was assessed using the appropriate PRISM tool. It assesses staff's knowledge, their skills in handling data and solving problems, and their confidence and motivation. The assessment also looked at the organization's ability to promote a culture that values the quality and use of information. The results of the assessments at both the state and the LGAs are presented in Table 3.

The table shows that our 15 respondents (staff members of the state- and LGA-level HMIS units) indicated a belief that health department decisions were made rationally. However, some respondents did sense some political interference in decision making.

Respondents' superiors were reported to be largely competent in managing data. For example, all respondents judged superiors to "seek feedback from concerned persons," and 80 percent said superiors "emphasized data quality in monthly reports." Superiors were said to be weakest (among the statements used) in "us[ing] HMIS data for setting targets and monitoring," with less than 50 percent reported to have been doing so. A third reported that superiors "check data quality at the facility and higher level regularly."

These respondents gave health department staff high marks for their levels of professionalism relative to punctuality, documentation, commitment, and performance target setting. The scores fell off, somewhat, in respondents' opinions of how supported health department staff are in doing their jobs. Respondents were unanimous in agreeing/disagreeing with three statements: they all disagreed with "[health department staff] "are rewarded for good work." (The other unanimous statements are noted below.) Only one respondent thought health department staff were "empowered to make decisions," but most agreed with statements indicating these staff could "display data for monitoring their set target" and "develop appropriate criteria for selecting interventions for a given problem." Four-fifths agreed with the statement "[health department staff] use HMIS data for community education and mobilization."

In terms of their attitudes toward collecting data, all respondents felt that "collecting information is appreciated by co-workers and superiors" and "collecting information which is not used for decision making discourages me." Most reported feeling bored by collecting data and that doing so "is forced on me." Only one agreed with the statement "collecting information is meaningful for me."

TABLE 3: RESPONDENTS' ORGANIZATIONAL AND BEHAVIORAL KNOWLEDGE, SKILLS, CONFIDENCE, AND MOTIVATION

In health department, decisions are based on:	Disagree (%)	Neutral (%)	Agree (%)	Total (%)
Personal liking	11 (73.3)	0	4 (26.7)	15 (100)
Superiors' directives	1 (6.7)	2 (13.3)	12 (80)	15 (100)
Evidence/facts	3 (20)	1 (6.7)	11 (73.3)	15 (100)
Political interference	6 (40)	3 (20)	6 (40)	15 (100)
Comparing data with strategic health objectives	2 (13.3)	0	13 (86.77)	15 (100)
Health needs	1 (6.7)	2 (13.3)	12 (80)	15 (100)
Considering costs	3 (20)	2 (13. 3)	10 (66.7)	15 (100)

In health department, superiors:	Disagree (%)	Neutral (%)	Agree (%)	Total (%)
Seek feedback from concerned persons	0	0	15 (100)	15 (100)
Emphasize data quality in monthly reports	2 (13.3)	1 (6.7)	12 (80)	15 (100)
Discuss conflicts openly to resolve them	2 (13.3)	2 (13.3)	11 (73.3)	15 (100)
Seek feedback from concerned community	4 (26.7)	0	11 (73.3)	15 (100)
Use HMIS data for setting targets and monitoring	5 (33.3)	3 (20)	7 (46.7)	15 (100)
Check data quality at the facility and higher level regularly	4 (26.6)	1 (6.7)	10 (66.6)	15 (100)
Provide regular feedback to their staff through regular report based on evidence	6 (40)	1 (6.7)	8 (73.3)	15 (100)
Report on data accuracy regularly	4 (26.7)	0	11 (73.3)	15 (100)
In health department, staff:	**Disagree (%)**	**Neutral (%)**	**Agree (%)**	**Total (%)**
Are punctual	3 (20)	1 (6.7)	11 (73.3)	15 (100)
Document their activities and keep records	4 (26.7)	0	11 (73.3)	15 (100)
Feel committed in improving health status of the target population	1 (6.7)	2 (13.3)	12 (80)	15 (100)
Set appropriate and doable target of their performance	4 (26.7)	2 (13.3)	9 (60)	15 (100)
Feel guilty for not accomplishing the set target/performance	8 (53.3)	3 (20)	4 (26.6)	15 (100)
Are rewarded for good work	15 (100%)	0	0	15 (100)
Use HMIS data for day-to-day management of the facility and LGA/ State	7(46.7)	0	8 (53.3)	15 (100)
Display data for monitoring their set target	4 (26.7)	0	11 (73.3)	15 (100)
Can gather data to find the root cause(s) of the problem	6 (40)	4 (26.7)	5 (33.3)	15 (100)
Can develop appropriate criteria for selecting interventions for a given problem	4 (26.6)	0	11 (73.3)	15 (100)
Can develop appropriate outcomes for a particular intervention	3 (20)	2 (13.3)	10 (66.6)	15 (100)
Can evaluate whether the targets or outcomes have been achieved	6 (40)	3 (20)	6 (40)	15 (100)
Are empowered to make decisions	10 (66.6)	4 (26.7)	1 (6.7)	15 (100)
Are able to say no to superiors and colleagues for demands/ decisions not supported by evidence	1 (6.7)	2 (13.3)	12 (80)	15 (100)
Are made accountable for poor performance	0	1 (6.7)	14 (93.3)	15 (100)
Use HMIS data for community education and mobilization	3 (20)	0	12 (80)	15 (100)
Admit mistakes for taking corrective actions	11 (73.3)	0	4 (26.6)	15 (100)

Personal

Personal	Disagree (%)	Neutral (%)	Agreed (%)	Total 15(%)
Collecting information which is not used for decision making discourages me	0	0	15 (100)	15 (100)
Collecting information makes me feel bored	1 (6.7)	0	14 (19.3)	15 (100)
Collecting information is meaningful for me	14 (93.3)	0	1 (6.7)	15 (100)
Collecting information gives me the feeling that data are needed for monitoring facility performance	1 (6.7)	0	14 (93.3)	15 (100)
Collecting information gives me the feeling that it is forced on me	14 (93.3)	0	1 (6.7)	15 (100)
Collecting information is appreciated by co-workers and superiors	0	0	15 (100)	15 (100)

5. CHALLENGES

The challenges identified by the assessment can be described as follows:

- Some of the M&E officers have inadequate work spaces, limiting their ability to perform well. In Okigwe LGA, for instance, the HMIS office had a dilapidated roof and wet floor during the assessment.
- Most of the HMIS officers were also health care providers. They lacked the academic qualifications necessary to function in HMIS capacities.
- Functioning computer hardware was hardly available in any LGA health office, although one had new computer hardware still in its shipping cartons.
- Several LGAs visited had daily power interruptions, so their ability to use computers without a backup power system would be limited.
- Poor financing of M&E activities was a universal complaint among LGA staff.
- DHIS was not available either at the SMOH or any of the LGAs assessed.

6. CONCLUSION AND RECOMMENDATION

The assessment revealed that there was no computerized information system in use in either the state HMIS office or any visited LGA office. No HMIS officer had seen the DHIS in use. The state HMIS system depended absolutely on a paper-based health information system, and it was evident that this system was plagued with many challenges.

The technical skills of the HMIS personnel were also low, as most of them doubled as health care providers. Consequently, the amount of effort committed to the HMIS work or to learn new ways to improve their performance was reduced.

Thus, it is pertinent to strategically tackle the problems that have been identified in this report as a first step of solving them.

- Computers need to be procured for many LGA offices. Those that have already been procured for health information management should be put to use. Proper planning should be done to identify department needs before investing in more computer hardware/ software. Planning should include appropriate training.
- Targeted training programs should build the capacity of state and LGA HMIS officers in computer use before DHIS v2 is deployed.
- The state should recruit highly skilled personnel with public health degrees into the HMIS positions. Having health care providers double as HMIS officers limits productivity in at least one of these positions.
- Alternate sources of power and Internet access should be made available at the LGAs.
- Political office holders should be advised of the need to improve funding for disease surveillance at both the state and LGA levels.
- Performance-based financing of the health system needs to be considered.
- Standard processes for health data management should be outlined by each LGA office.

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