

GOVERNMENT OF SIERRA LEONE



MINISTRY OF HEALTH AND SANITATION



Standard Operating Procedures for the Health Management Information System

Data Management Procedures Manual I

April 2020



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U.S. President's Malaria Initiative



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Cover photo: Regional training of district health management team members on data analysis by the Directorate of Policy, Planning and Information, supported by MEASURE Evaluation. Photo by Stanley Muoghalu.

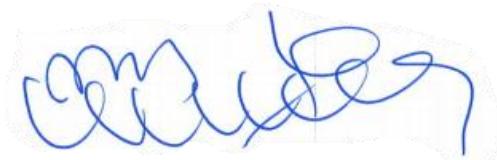
FOREWORD

The Ministry of Health and Sanitation (MOHS) recognizes the health management information system as an integral component for formulating policies and planning, coordinating, monitoring, and evaluating health interventions. Over the years, the health sector has experienced challenges relating to data management issues due to the lack of standard operating procedures for the health management information system manual. Notably, the recommendations from the assessment of the monitoring and evaluation capacity of Sierra Leone's National Malaria Control Programme at the national and district levels pointed out the need to revise and update the Data Management Procedures Manual.

In a bid to address these challenges, the MOHS, in collaboration with its partners, developed the Standard Operating Procedures for the Health Management Information System Manual through the Directorate of Policy Planning and Information.

The purpose of the manual is to provide a systematic method of conducting data management practices, with the view to guiding the peripheral health units, hospitals, district health management teams, programs, partners, and other data users in monitoring and evaluation (M&E) processes of the health information system in Sierra Leone. The application of the Standard Operating Procedures for the Health Management Information System Manual requires effective coordination and oversight at all levels.

In this regards, we wish to extend our sincere thanks and appreciation to USAID and PMI for providing financial support, and its implementing partner, MEASURE Evaluation, for providing technical assistance in the development of the Standard Operating Procedures for the Health Management Information System Manual. In addition, we appreciate UNICEF for their initial support in facilitating this document. Also, we thank the MOHS staff, who worked tirelessly to produce this document.



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ABBREVIATIONS

ACT	artemisinin-based combination therapy
CHC	community health center
CHW	community health worker
DDMS	Directorate of Drugs and Medical Supplies
DEO	data entry officer
DHIS2	District Health Information Software, version 2
DHMT	district health management team
DIO	district information officer
DMO	district medical officer
DPPI	Directorate of Policy, Planning and Information
DQA	data quality assessment
EPI	Expanded Program on Immunization
HIS	health information system
HMIS	health management information system
ICD	International Classification of Disease
ICT	information, communication, and technology
IDSR	integrated disease surveillance and response
LMIS	logistics management information system
M&E	monitoring and evaluation
MECAT	Monitoring and Evaluation Capacity Assessment Toolkit
MOHS	Ministry of Health and Sanitation
NMCP	National Malaria Control Programme
RDT	rapid diagnostic test
RR&IV	Report Request and Issue Voucher
USAID	United States Agency for International Development

INTRODUCTION

A health management information system (HMIS) is a routine, integrated system for the collection, collation, analysis, presentation, dissemination, and use of relevant health-related information. It covers other health information system (HIS) sub-systems, such as the human resources information system, administrative records, integrated disease surveillance and response (IDSR), the logistics management information system (LMIS), registration of births and deaths, population-based information systems, and research-generated health information. It is designed for use at the community and health facility levels, and by district health management teams (DHMTs), local councils, civil society organizations, partners, and the MOHS for planning, allocating resources, and managing and evaluating the healthcare delivery system.

Definition of the Standard Operating Procedures for HMIS: Data Management Procedures Manual

The Data Management Procedures Manual, within the context of the HIS, is a written description of the management practices required for effective coordination, monitoring, and supervision of the HIS, as well as the procedures required to address issues relating to data collection, quality, and accessibility. The Data Management Procedures Manual should therefore accurately reflect good information management practices, be sufficiently practical, and be usable in the HIS sub-system. Good HIS management practices relate to general aspects of HIS management functions, including the following: data collection, compilation, analysis, storage, and processing; records storage; handling of urgent data requests and needs; and management of the devices, tools, and appliances used to manage the data.

Rationale

Data demand and information use continues to be of high priority for the MOHS and its partners, especially the use of routine data for decision making. However, based on feedback from the quarterly supportive supervision meetings, the data quality review meeting, and the M&E review meeting, the MOHS noted that the HMIS faced several challenges (DPPI, MOHS 2018; DPPI, MOHS, 2019). These challenges were as follows: poor and incomplete recording of health data; use of multiple non-standardized forms at service delivery points; lack of guidance on how to access health data from the producers; lack of guidance on how to share data produced (e.g., generated through research and program implementation); and unclear roles and responsibilities in the collection, management, and dissemination of health data.

In addition, in 2019, MEASURE Evaluation—a project funded by USAID and the PMI—conducted an assessment on the capacity of Sierra Leone’s National Malaria Control Programme (NMCP) for M&E at national and district levels (MEASURE Evaluation, 2019). The assessment focused on the NMCP as the organizational unit at the national level and selected DHMT members performing malaria-related functions at the district level. The assessment consisted of a desk review of existing documentation and primary data collection through group assessment and individual assessment tools described in the Monitoring and Evaluation Capacity Assessment Toolkit (MECAT) (MEASURE Evaluation PIMA, 2017).

MECAT assesses capacity across 12 components of an M&E system¹ and captures the capacity of individual staff to conduct M&E, as well as the technical and financial autonomy of the organization or

¹ These components are: (1) organizational; (2) human capacity for M&E; (3) partnerships and governance; (4) organization’s M&E plan; (5) annual costed M&E work plan; (6) advocacy,

unit in implementing M&E functions. The findings showed that at the national level, the NMCP has well-established structures and tools for M&E that are of relatively good quality. The assessed components achieved high scores, with the exception of human capacity for M&E and data demand and use, which both scored 5 out of the possible 10 points. Although the NMCP has good capacity for routine M&E, external technical assistance was essential to meet research and evaluation needs. Lower scores were observed under financial autonomy for most of the capacity areas. Components assessed at the district level received lower scores. At the district level, systems, structures, processes, and tools are not well established, with the exception of supervision and auditing and the annual M&E work plan, which is integrated in the annual health work plan. The assessment also revealed weak technical and financial capacities internally in the DHMTs, portraying high reliance on external support.

Against this background and in line with the recommendation from the MECAT findings, the MOHS and its partners developed the Standard Operating Procedures for HMIS: Data Management Procedures Manual.

Goal

The goal of the Standard Operating Procedures for HMIS: Data Management Procedures Manual is to provide a standardized system of data management practices for the MOHS and its partners, with the view of reaching maximum data accuracy, correctness, completeness, integrity, and reproducibility in the HMIS in Sierra Leone. The application of the Data Management Procedures Manual requires effective coordination and oversight at all levels.

Objective

The general objective of the Data Management Procedures Manual is to ensure that the information generated from the routine HIS meets the characteristics of a good quality data. This means that complete data sets of sufficient quality are available at all levels by the agreed-on dates after the end of each monthly reporting period. The data should be analyzed using standardized indicators, and all data users should be provided with appropriate and regular reports. These include feedback reports from the national to the district level and from the district level to the health facility level.

Therefore, specific objectives are to:

- Establish a well-coordinated HMIS in the Sierra Leone health sector
- Maintain a reliable data quality system for the MOHS and its partners
- Provide timely and accurate data that are required at all levels for decision making (service delivery area, DHMTs, national level, and partners)
- Provide a record-keeping system that will help monitor and evaluate the HMIS
- Build the culture of data use at all levels to improve the quality of data and health service delivery

communication, and cultural behavior; (7) routine monitoring; (8) surveys and surveillance; (9) national and subnational databases; (10) supervision and auditing; (11) evaluation and research; and (12) data demand and use.

HIS AND SUBSYSTEMS

Overview of the HIS and Its Subsystems in Sierra Leone

The HIS in Sierra Leone is the principal responsibility of two directorates in the MOHS: the Directorate of Policy, Planning and Information (DPPI) and the Directorate of Health Security and Emergency. The DPPI is responsible for collecting general data on the operations of the MOHS and also routine health services-based data on human resources, use of services, referrals, maternal health and family planning, hospital beds and bed occupancy, routine disease data, and undertaking of healthcare research. The Directorate of Health Security and Emergency is responsible for collecting data on epidemic-prone diseases, for immediate action using the IDSR system. Other directorates and programs are responsible for the management of specific subsystems of the HIS. The Directorate of Drugs and Medical Supplies (DDMS) is responsible for managing the LMIS, and the Directorate of Human Resources is responsible for managing the human resources information system. The Births and Deaths Programme is responsible for managing data on vital statistics, and the Directorate of Financial Resources is responsible for the system for managing financial data. The Information, Communication, and Technology (ICT) unit is responsible for providing guidance and setting up the ICT infrastructure for the various subsystems. Outside the MOHS, National Civil Registrations and Vital Statistics is responsible for recording births and deaths, among other functions.

In Sierra Leone, the HIS consists of the following subsystems:

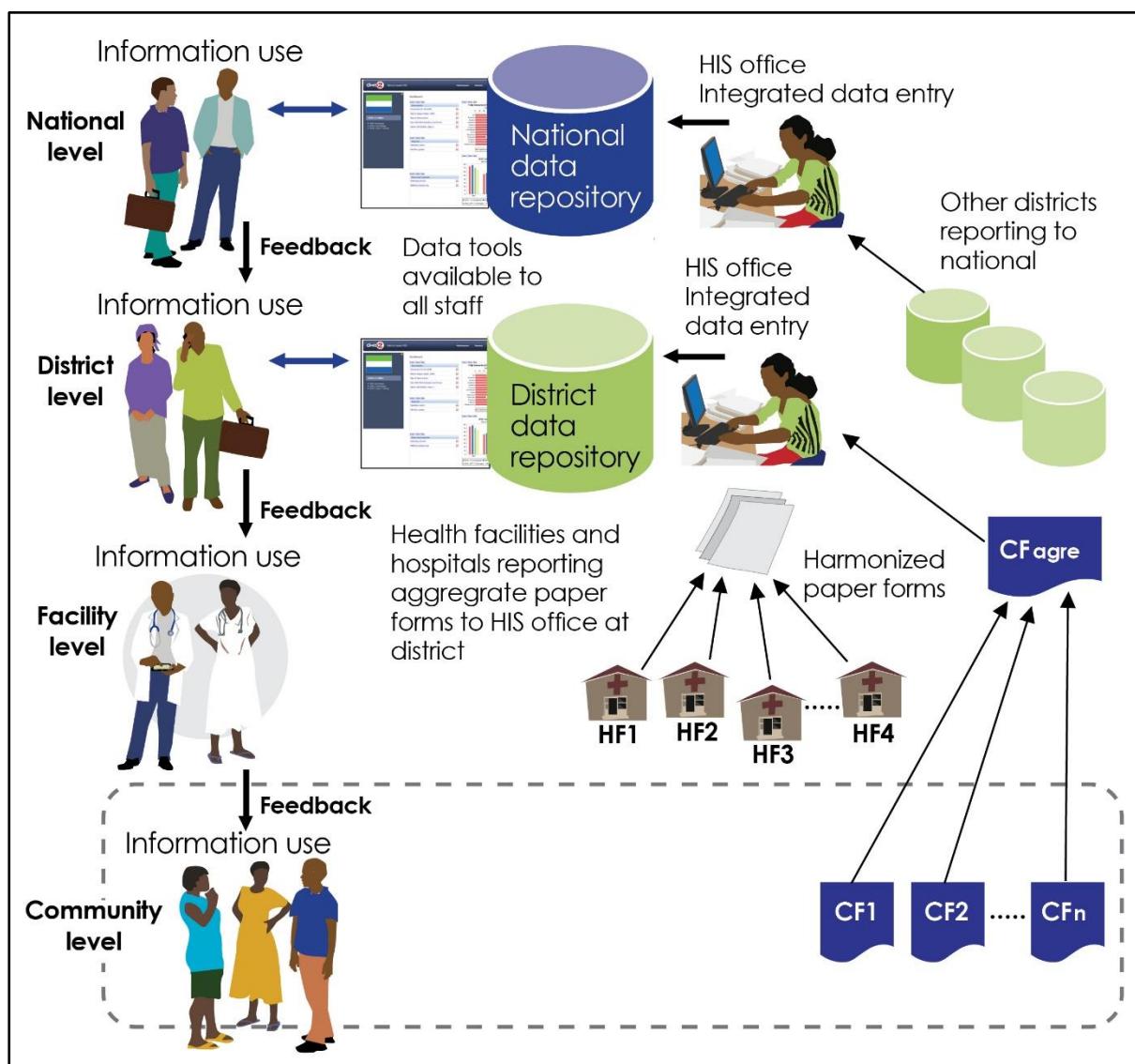
- Integrated disease surveillance and response
- Data generated through household surveys
- Data collection based on patient and service records and reporting from community health workers (CHWs), health workers, and health facilities
- Program-specific M&E (e.g., for tuberculosis, HIV/AIDS, malaria, reproductive health/family planning, nutrition, and Expanded Program on Immunization [EPI])
- LMIS
- Administration and resource management (including budget, personnel, and supplies)

The function of the HIS is to bring together data from all these different subsystems, to share and disseminate them to the many different audiences for health information, and to ensure that health information is used rationally, effectively, and efficiently to improve health action.

Health Data and Information Flow

The HMIS in Sierra Leone is organized into four levels: community, health facility, district, and national. To improve access to healthcare, the health sector is opened up to a wider range of providers, both public and private, at all levels. Health interventions are packaged and delivered in communities, health facilities, districts, and tertiary and teaching hospitals. Figure 1 illustrates the flow of health data and information from the community and health facilities to districts and from districts to the national level. It also illustrates the feedback mechanism from the national level to the district level to health facilities, down to the community. Each level of service delivery has activities and management functions.

Figure1. Pictorial representation of the health data and information flow



Data Management Responsibilities at the National Level

At the national level, the DPPI receives electronic copies of district health data through the District Health Information Software, version 2 (DHIS2) 15 days after the end of the month. The districts' monthly health data are processed to provide health information products, such as quarterly bulletins. These bulletins are disseminated to programs and partners. In the DPPI, data management is the responsibility of two units: the HMIS unit and the M&E unit. The HMIS unit oversees the routine data collection systems, and the M&E unit ensures that supervision and data quality reviews are carried out.

The data management responsibilities at this level include the following:

- The principal M&E specialist is responsible for receipt of all district health data. He or she is responsible for providing feedback (electronically or by phone) to the DHMT, acknowledging receipt of the data.
- The principal M&E specialist is responsible for ensuring that data received from districts are verified for completeness, correctness, and consistency before analysis and reporting are done. In

the area of programs, the program manager is responsible for ensuring that data received from districts are verified for completeness, correctness, and consistency before analysis and reporting are done.

- It is advisable that a national data validation team reviews and compares the aggregated data received from districts before submission to the principal M&E specialist or program manager.
- The principal M&E specialist and program managers are responsible for final review, endorsement of analyzed data, and reports before submission to programs and partners.

Data Management Responsibilities at the District Level

The DHMT receives hard copies of monthly health data from health facilities no later than the fifth day after the end of the month. This submission deadline aims to improve timeliness. The data management responsibilities at this level are described in the following sections.

District M&E Officer

The district M&E officer is responsible for the following:

- Coordinating and supervising all data management practices in the district
- Ensuring data quality, including completeness, correctness, consistency, and timely transmission of district data and reports to the national level
- Ensuring that final review and endorsement of district data for completeness, accuracy, and timeliness before submission to the national level are done on regularly basis
- Ensuring data safety and proper storage and accessibility at the DHMT level, health facility level, and community level
- Receiving forms endorsed by the in-charge of the health facility
- Verifying the data from health facilities before sending them to the data entry officer for entry. Dates of receipt, verification, and entry, as well as signatures or initials of the recipient, verifier, and entry clerk should be indicated on each reporting form.
- Performing post-data verification and validation before dissemination to partners and other health actors
- Working with other DHMT members, such as the district malaria focal person, district nutritionist, district operations officer, district pharmacist, etc., to ensure credible and reliable data elements for programmatic data analysis and dissemination
- Under the coordination of the district medical officer (DMO), coordinating data harmonization and verification exercises with DMHT members

Data Entry Officer and District Information Officer

- The data entry officer (DEO) is responsible for receiving verified monthly summary forms from the district M&E officer, and the district information officer (DIO) is responsible for receiving verified monthly Report Request and Issue Voucher (RR&IV) summary forms from the district pharmacist for entry within the data submission period stated by health facilities.
- The DEO/DIO is also responsible for tracking and safekeeping of all reports, both manual and electronic, on a monthly basis.
- The DEO/DIO performs pre-data verification and validation before and after entry into DHIS2/LMIS.

- The DEO is supervised by the district M&E officer, and the DIO is supervised by the district pharmacist.

Data Management Responsibilities at the Health Facility Level

Hospital Level

- For the hospitals, the M&E officer receives hard copies of monthly health data from the ward in-charge and other units in the hospitals no later than the second day after the end of the month.
- The hospital M&E officer is responsible for entry of hospital data into DHIS2 before the fifth day of every month.
- The hospital M&E officer, working closely with the ward in-charges, is responsible for ensuring that all data collection tools are up to date.
- The hospital M&E officer is responsible for applying standards and best practices for data collection and reporting as defined in the Standard Operating Procedures for the HMIS: Data Management Procedures Manual.
- The hospital M&E officer is responsible for alerting the district M&E officer promptly on any data collection issues (e.g., stockout of data collection tools, Internet connectivity issues, unusual data).

Peripheral Health Unit Level (Community Health Center, Community Health Post, Maternal and Child Health Post)

Routine data collected from patient care are first put into standard health facility registers (e.g., general register, under-five register, EPI register, mother and neonate register, insecticide-treated net register, RR&IV register). Data are then collated from these health facility registers provided through the standardized health facility summary forms. To improve timeliness, the compiled monthly reports are submitted to DHMTs using the standardized HMIS forms no later than five days after the end of the month. The following data management practices are carried out:

- The in-charge of the health facility is responsible for collection and compilation of complete and accurate data, and timely submission of monthly reports to the district M&E officer.
- The in-charge of the health facility is responsible for review and endorsement of the collated facility data for completeness, correctness, and consistency before submission to the district M&E officer.
- The in-charge of the health facility is responsible for safekeeping of all data tools and copies of reports sent to the DHMT.
- The in-charge of the health facility is responsible for organizing quarterly health facility data verification, documenting findings, and submitting reports to the district M&E officer.
- The in-charge of the health facility is responsible for overall management and approval of data collected in the health facility.
- The in-charge of the health facility is responsible for assigning appropriate staff for data collection and collation tasks.
- The in-charge of the health facility is responsible for ensuring that staff attend all relevant trainings.

Note: There is plan on the way to decentralize data entry at the community health center (CHC) at the chiefdom level. After the plan is in effect, the community health officer will oversee the data entry and data verification of peripheral health units under the respective chiefdom.

Data Management Responsibilities at the Community Level

Routine data collection and reporting on health activities are carried out at the community level. The data management responsibilities at this level include the following:

- The CHW is responsible for making sure that all cases seen and treated are recorded in the register provided.
- The CHW is responsible for taking the register to the CHW peer supervisor and the supervising health facility staff on the second day of each month.
- The CHW peer supervisor, working closely with the supervising health facility staff, is responsible for collating health data from the CHW registers into the CHW monthly summary forms.

STANDARD OPERATING PROCEDURES FOR DATA COLLECTION, ACCESS, ANALYSIS, AND MANAGEMENT

Steps Involved in Collecting HMIS Data

Health data should be collected using the standard HMIS tools developed and produced by the MOHS. However, not all health data can be collected through the routine HMIS. In these cases, other data sources (e.g., Demographic Health Survey, HIV-Sero Survey) can be used to supplement the routine HMIS. It is important that results from these surveys and studies be shared with the DPPI and the MOHS to enrich the databases and indicators.

Health projects carrying out activities using the existing health units should report through these health units using the HMIS tools, so that the MOHS is able to capture the information from their services and activities.

No other person, project, or partner is allowed to update, add, or edit the HMIS tools without approval from the chief medical officer through the DPPI.

No other person, project, or partner is allowed to introduce parallel data collection and reporting tools without approval from the chief medical officer through the DPPI.

At the community and health facility levels, the following steps are involved in HMIS data collection:

1. Health data are captured from the clients at the health facility (outpatient or inpatient) or during outreach visits and recorded on the medical forms.
2. Data recorded on the medical forms are immediately entered into the appropriate health facility registers.

Steps 1 and 2 are done by the health workers who are providing the health services. The facility in-charge should ensure that the right HMIS tools are available and used by the health workers collecting health data in Steps 1 and 2.

3. The facility in-charge or designated health facility staff should obtain the different registers and respective tally sheets to tally the recorded health data and generate daily summaries.

Make sure that no field in the register is left blank.

Include total number of clients served for each service delivery area during outreach for every given month to the relevant service report for the month (*e.g., Total ANC attendance = Facility ANC attendance + Outreach ANC attendance, Total OPD attendance = Facility OPD attendance + Outreach OPD attendance*).

4. For any unclear information, the staff completing the tool should consult the health worker before the end of the day to verify the information recorded in the registers.

Check whether the client is an old or new.

- If it is a new client, assign a client number and issue folder and proceed with registration.
- If it is an old client, locate the folder number, retrieve the folder, and proceed with registration.

Use appropriate standard registers to register the client.

Record details of the client using indelible ink/pen with sufficient detail; ensure details are readable.

Record in legible handwriting.

Record all fields in the register.

Steps Involved in Reporting and Transmitting HMIS Data

All health data should be reported using the standard HMIS tools developed and produced by the MOHS. This should be done in the stipulated timeframe to ensure timely decision making. Please refer to the transmission deadlines for reporting HMIS data that follow.

At the community and health facility levels, the following steps are involved in HMIS reporting:

1. Using the daily tally sheet, compile the weekly and monthly health summary reports.
2. The facility in-charge or the ward in-charge (in case of hospital) should cross-check the weekly or monthly HMIS reports for errors before submission to the next level (DHMT). (*See Steps Involved in Validating HMIS Data.*)
3. The summary tables should be retained and regularly updated in the health facility databases.

Reporting deadlines for data transmission at all levels:

Transmission of reporting forms to the next levels are done within the following timeframes:

- Community to health facility: second day of each month
- Hospital wards/units to M&E units: second day of each month
- Health facility to district: fifth day of each month
- District to national: 15th day of each month
- National to programs and partners: 25th day of the ensuing month

Note: In 2020, the MOHS plans to decentralize electronic data entry into DHIS2 at the chiefdom level using the CHCs. After the rollout is completed, the monthly health summary reports should be submitted to the supervising CHC at the chiefdom level.

Steps Involved in Validating HMIS Data

Before transmitting HMIS data to the next level, each preceding level should cross-check the weekly or monthly health summary forms for errors. Specifically, the data validation should follow these steps:

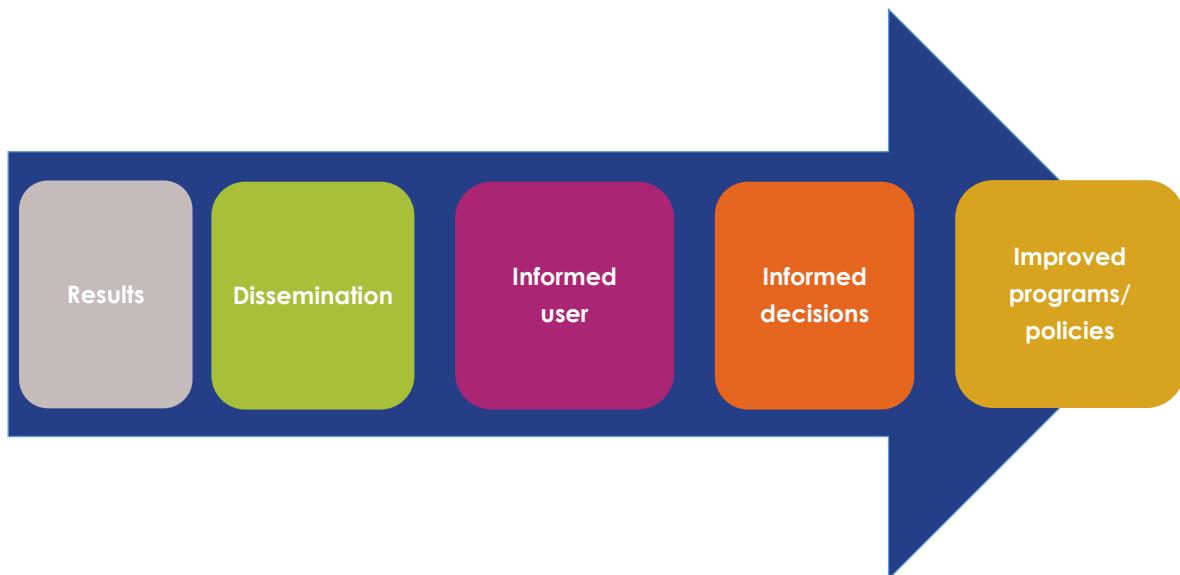
1. Form a data validation team at each level.
At the health facility, the facility in-charge is the chairperson of this team.
2. Establish a culture of routine data validation.
3. Meet monthly to validate data before transmission.
4. Cross-check total figures on the reporting forms.
5. Check for accuracy and completeness of reports.
6. Cross-check data consistency across reports.
7. Look for unusually low or high values for events and diseases.
8. Compare with previous months and the same period the year before.
9. Do necessary corrections before transmission.
10. Sign off on the reports after they are validated by the facility in-charge.

11. Document the process and inform the next level about any changes.

Providing Feedback to Stakeholders

All health data collected should be analyzed at all levels to generate outputs that will be provided as feedback to improve health service delivery. As shown in Figure 2, effective dissemination should create informed users (the center block in the dissemination framework), who can then make informed decisions that ultimately lead to improved health. The goal of dissemination is to provide accurate and up-to-date information for evidence-based decision making. Evidence-based decisions lead to better programs and, ideally, better health outcomes (MEASURE Demographic and Health Surveys Program, 2010). This should be done regularly on a monthly or quarterly basis but can also be done more frequently, depending on the level of the health system.

Figure 2. Dissemination framework



Source: MEASURE Demographic and Health Surveys Program, 2010

The steps involved in providing feedback to stakeholders are as follows:

1. Clean the data before and during data analysis.
2. Analyze the cleaned data to generate the national and program-specific health indicators.
3. Using a dissemination planning matrix² for each level, share the findings from the analysis with the stakeholders.

Table 1 shows an example of a national-level dissemination planning matrix, and Table 2 shows an example of a district-level dissemination planning matrix.

² A dissemination planning matrix can help you think about how you will do your dissemination. Dissemination should not be an afterthought. When data collection is planned, it is important to start thinking about how the information will be disseminated to maximize its use.

Table 1. National-level dissemination planning matrix

Health information products and tools	Target audience	Frequency	Responsibility
Health sector performance report	MOHS and partners	Biannually	Director, DPPI
National health quarterly bulletin	MOHS and partners	Quarterly	Director, DPPI
Reports—supervision and evaluation	MOHS and partners	Quarterly, annually	M&E specialist, DPPI
Supervision reports	MOHS and partners	Quarterly	M&E specialist, DPPI
PowerPoint presentation	Meeting with partners	Monthly	M&E specialist, DPPI
Briefs, interview	General population	On demand	M&E specialist, DPPI
Beneficiary report—satisfaction with services from community scorecards	General population	Yearly	M&E specialist, DPPI
Poster or article	Scientific community	On demand	Technical officer
Oral presentation with interactive discussion	Community members	On demand	Technical officer
Feedback meeting reports with stakeholders	Meeting with stakeholders	After meetings	M&E specialist, DPPI

Table 2. District-level dissemination planning matrix

Health information products and tools	Target audience	Frequency	Responsibility
District health monthly bulletin	MOHS and partners	Monthly	DMO
PowerPoint presentation	District health partners' meeting	Monthly	District M&E officer
Supervision reports	MOHS and partners	Monthly	District M&E officer/DHMT program-specific focal person
Briefs, interview	General population	On demand	District M&E officer/district program-specific focal person
Oral presentation with interactive discussion	Community members	On demand	Technical officer
Feedback meeting reports with stakeholders	Meeting with stakeholders	After meetings	DMO
District health performance report	Review meeting	Biannually	DMO
Poster or article	Scientific community	On demand	Technical officer

These matrices contain sections on health information products and tools, target audiences, frequency, and responsibility. You can adapt them to fit your own needs for dissemination.

STANDARD OPERATING PROCEDURES FOR STORAGE, ACCESS, AND RETENTION OF HMIS DATA

This guidance has been developed to promote improved record management practices in health facilities and at the district and national levels.

Storing and Retaining HMIS Data

Storage of HMIS data is one of the components of best data management practices. To achieve this, the following steps need to be put in place:

- All levels are to ensure that health-related records are retained and stored securely in an appropriate manner so that they are available for use as required.
- Every health facility/DHMT/national level should have a secure place for storing all HMIS data, preferably metal cabinets.
- The facility in-charge or designated staff at the district or national level should be responsible for storing all filled HMIS data in the records store.
- All levels are to ensure confidentiality of health-related records.
- All levels are to assist in identifying records that should be preserved permanently as part of the health facility archives.
- All levels must prevent the premature destruction of records that need to be retained for a specified period to satisfy legal, financial, and other requirements of public administration.
- All levels must provide guidelines for the destruction of those records not required permanently after specified periods.
- To avoid loss of or missing data and information, health data should be stored by year and department to ease retrieval. Perpetual and inactive records must be accurate and appropriately stored.
- Whenever there is the possibility of a legal action (or lawsuit), the records and information that are likely to be affected must not be amended or disposed of until the threat of legal action has been removed.
- All staff with access to health-related records must respect the confidentiality issues.
- The most current health files (within five years) should be kept in the safe location (preferably the records office or M&E office); other files (older than five years) should be archived.
- All health facilities are required to have and maintain a records center for keeping inactive records until their cutoff date.
- Every health facility must have folders or files, shelves, filling cabinets, box files, or lockable cupboards to ensure the security of active records.

Accessing HMIS Data

Accessing Health Facility HMIS Data

These steps should be followed to access health facility HMIS data:

1. Any person seeking health data from the health facility begins by expressing his or her request in writing to the relevant DMO and copied to the district health sister and M&E officer. The letter (hardcopy or scanned softcopy) should contain the following information:

- The name of the person or institution requesting the data
- The reason why the data are being requested (e.g., research, production of report, monitoring)
- The data variables required and the period of coverage for the data, indicating:
 - Specific area, such as maternal deaths, number of live births, number of DPT3
 - Disaggregated by year or month (January, February, March, etc.), or by sex, or by age
 - Geographical coverage (can be the entire country or can be a list of districts)

Note: This applies only to health facility aggregated data because individual data are confidential. For individual data, the individual or institution requesting data MUST present a letter from the Sierra Leone Ethics and Research Review Committee approving the use of the data.

2. After being granted permission from the DMO (through an authority letter granting permission to access the data), the person requesting the information should present the authority letter to the in-charge of the health facility. The person or institution must complete and sign the confidentiality agreement prior to receiving the data.
3. The person responsible for providing the data records the details of the requestor in a register or form, and then the data requested is processed on a need-to-know basis.
4. After the data have been processed, the data requested are given to the person or institution.

Note: Data accessed through the HMIS MUST be acknowledged, and the period for which the data were accessed and the date accessed should be quoted.

Accessing Hospital HMIS Data

These steps should be followed to access hospital HMIS data:

1. Any person seeking health data from the hospital begins by expressing his or her request, in writing, to the medical superintendent and copied to the hospital manager and hospital matron. The letter (hardcopy or scanned softcopy) should contain the following information:
 - The name of the person or institution requesting the data
 - The reason why the data are being requested (e.g., research, production of report, monitoring)
 - The data variables required and the period of coverage for the data, indicating:
 - Specific area, such as maternal deaths, number of live births, number of DPT3
 - Disaggregated by year or month (January, February, March, etc.), or by sex, or by age
 - Geographical coverage (can be the entire country or can be a list of districts)

This applies to only health facility aggregated data because individual data are confidential. For individual data, the individual or institution requesting data MUST present a letter from the Sierra Leone Ethics and Research Review Committee approving the use of the data.

2. After being granted permission from the medical superintendent (through an authority letter granting permission to access data), the person requesting the information should present the authority letter to the ward/hospital secretary at the records office. The person or institution must complete and sign a confidentiality letter prior to receiving the data.

3. The person responsible for providing the data records the details of the requestor in a register or form, and then the data requested are processed on a need-to-know basis.
4. After the data have been processed, the data requested are given to the person or institution.

Note: Data accessed through the HMIS MUST be acknowledged, and the period for which the data were accessed and the date accessed should be quoted.

Accessing District HMIS Data

These steps should be followed to access district HMIS data:

1. The person seeking health data from the district begins by expressing his or request, in writing, to the DMO and copied to the district health sister and M&E officer. The letter (hardcopy or scanned softcopy) should contain the following information:
 - The name of the person or institution requesting the data
 - The reason why the data are being requested (e.g., research, production of report, monitoring and supervision)
 - The data variables required and the period of coverage for the data, indicating:
 - Specific area, such as maternal deaths, number of live births, number of Penta 3
 - Disaggregated by year or month (January, February, March, etc.), or by sex, or by age
 - Geographical coverage (can be the entire country or can be a list of communities, sections/wards, chiefdoms, districts, and regions)

Note: This applies to data disaggregated at all levels.

2. After being granted permission from the DMO (through an authority letter granting permission to access data), the person requesting the information should present the authority letter to the M&E officer. The person or institution must complete and sign a confidentiality letter prior to receiving the data.
3. The person responsible for providing the data records the details of the requestor in a register or form, and then the data requested are processed on a need-to-know basis.
4. After the data have been processed, the data requested are given to the person or institution.

Data accessed through the HMIS MUST be acknowledged and the period for which the data were accessed and the date accessed should be quoted.

Accessing National HMIS Data

These steps should be followed to access national HMIS data:

1. The person seeking data from the MOHS begins by expressing his or her request, in writing, to the chief medical officer and copied to the permanent secretary through the DPPI. The letter (hardcopy or scanned softcopy) should contain the following information:
 - The name of the person or institution requesting the data
 - The reason why the data are being requested (e.g., research, production of report, monitoring)
 - The data variables required and the period of coverage for the data, indicating:
 - Specific area, such as maternal deaths, number of live births, number of DPT3

- Disaggregated by year or month (January, February, March, etc.) or by sex, or by age
 - Geographical coverage (can be the entire country or can be a list of communities, sections/wards, chiefdoms, districts, and regions)
- 2. After being granted permission by the chief medical officer and the DPPI (through an authority letter granting permission to access the data), the person requesting the information should present the authority letter to the principal M&E specialist, who then forwards it to the HMIS officer to provide the required data. The person or institution must complete and sign a confidentiality letter prior to receiving the data.
- 3. The person responsible for providing the data records the details of the requestor in a register or form, and then the data request is processed.
- 4. After data have been processed, the data requested are sent to the principal M&E specialist, who then sends the data to the requestor through e-mail.

STANDARD OPERATING PROCEDURES ON THE USE OF ICT FOR THE HIS PLATFORM

The choice of software to be used for data management will be determined by the DPPI, MOHS, in consultation with other recognized ICT organizations, health programs, nongovernmental organizations, and health development partners. Relevant operating systems, applications, programs, and modules that are to be used for the management of health information will be tried out by the MOHS in selected locations. This will be done to ensure that operating systems, applications, programs, and modules for use at the various levels of healthcare (health facility, district, and national levels) can withstand the size of the database. The final selected software will be determined based on the technical soundness of the software, usability, interoperability, and preferability in the public domain.

Equipment Maintenance

- Coordination for maintenance of equipment used for data management will be the responsibility of the MOHS ICT unit.
- User departments, programs, divisions, and section should have their data management equipment maintained at least once every six months.
- Actual maintenance will be carried out either by staff of the MOHS ICT unit or a firm identified by the MOHS.

Technical Support for ICT, Including Data Security for Transmission and Storage Sites, Provision of System Back-Up, and Data Recovery Procedures

User departments in need of technical services, including antivirus security updates, should follow these steps:

1. The user department writes a request to the DPPI director, expressing the nature of the technical support being sought.
2. The DPPI director assigns a person to contact the user department and provide the needed technical support, such as antivirus security updates, firewall installation, or data back-up or recovery for computers that have crashed.
3. In the case of total equipment failure, the DPPI director will communicate with the relevant user so that steps can be taken to replace the equipment.
4. Thereafter, the user department should log onto the Internet at least twice a week to update the antivirus security.

The ICT unit will also provide support in the establishment of local area networks/wide area networks, Internet and intranet connectivity, and data encryption and decryption methodologies. The ICT technical staff will continuously provide direction on relevant systems security to ensure zero-level fault tolerance.

STANDARD OPERATING PROCEDURES FOR THE LMIS

In 2019, as part of the MOHS data integration effort led by the DPPI and the DDMS, the RR&IV data from Sierra Leone's LMIS were integrated into DHIS2, with the aim to improve the use of health commodities data for decision making. The guidance in this section should be used in addition to the DHIS2 User Guide for RR&IV Data 2019 in Sierra Leone.

The DDMS is responsible for the LMIS. This system provides information on the following:

- Data on the logistics by type and amounts that come into the country
- Data on the logistics by type and amounts that go to health facilities through the ordering system
- Data on the level of stocking by the health facility (stock at hand)
- Data on what is available at the central medical stores
- The management information system for medicines and related medical supplies is integrated into the HMIS. Forms such as stock cards, records of issue, and medicine order forms are used in health units to monitor movement, use, and availability of these logistics. This system is crucial for informing programs, implementing partners, and development partners about the status of procured items at the national level, together with stocks status at district and health facility levels.
- Consumption data, which are extracted from the stock cards and registers at the health facility level
- Stock on hand, average monthly consumption, and losses and adjustment are obtained from the stock cards and registers at the health facility level, and from the logistics order form.

STANDARD OPERATING PROCEDURES FOR DATA QUALITY ISSUES

This guidance is to complement program-specific protocols on data quality issues. It focuses on the common data quality issues and procedures to be addressed at all levels. These common data quality issues are as follows:

- Inaccurate data collection and reporting
- Incomplete reporting
- Late reporting
- Issues of missing data source

Data Quality Issues at the Community Level

Inaccurate Data Collection and Reporting

Issue:

- Inaccurate data reported; for example, the number of treated cases recorded in the CHW register is not consistent with the health facility summary report for community interventions.

Procedures to address inaccurate data collection and reporting:

- The DHMT should ensure the availability of the CHW supervision checklist at the health facility level.
- Health facility staff should use the supervision checklist to verify data quality issues.
- Health facility staff should do on-the-spot training of CHWs to improve performance.
- Health facility staff should file the findings and actions taken.
- Health facility staff should inform the DHMT about the findings and actions taken on data quality issues.

Incomplete Reporting

Issue:

- Health facility not receiving complete monthly reports from CHW

Procedures to address incomplete reporting:

- The DHMT should ensure that the deadline for CHW reporting is communicated to CHWs by health facility staff.
- Health facility staff should develop a CHW monthly report tracking table.
- Health facility staff should use the tracking table to monitor the numbers of CHWs reporting.
- Health facility staff should follow up on incomplete reporting at the community level.

Late Reporting

Issue:

- Health facility not receiving monthly reports from all the CHWs on time

Procedures to address late reporting:

- Health facility staff should do follow-up visits with the CHWs who are not reporting.
- Health facility staff should collect all late reports from CHWs.
- Health facility staff should use CHWs' late reports for subsequent monthly reporting.
- Health facility staff should document in the supervision reports all late reports from CHWs.
- Health facility staff should inform the DHMT/national level about late reports collected from CHWs during supervision by the DHMT/national level or during in-charge meetings.

Missing Source Documents

Issue:

- Missing CHW source documents at the community level

Procedures to address missing source documents:

- Health facility staff should find out why data source documents are missing.
- Health facility staff should inform the DHMT about the missing data source documents.
- The DHMT/national level should replace the missing data source documents.

Data Quality Issues at the Health Facility Level

Inaccurate Data Collection and Reporting

Issues:

- Treating suspected cases of malaria with artemisinin-based combination therapies (ACTs) without been confirmed
- Failure to record in clinic registers the use of rapid diagnostic test (RDT) for diagnosis of malaria
- Inconsistency between recounted data and reported data for confirmed and treated cases of malaria
- Treating negative cases of malaria with ACTs

Procedures to address inaccurate data collection and reporting:

- The DHMT should conduct data quality assessment (DQA) at health facilities and document findings.
- The DHMT should update HMIS summary data with verified data from the health facility.
- The DHMT should send the national level a copy of health facility verified data by e-mail.
- The DHMT should train health facility staff on DQA.
- The DHMT should organize exchange visits for health facility staff to do DQA at other health facilities.

Incomplete Reporting

Issue:

- Health facility fails to submit complete monthly reports to the DHMT.

Procedures to address incomplete reporting:

- The DHMT should develop a tracking table for monitoring monthly reports from health facilities.
- The DHMT should do monthly tracking of monthly reports from health facilities.
- The DHMT should do follow-up visits to health facilities not reporting or submitting incomplete reporting.
- The DHMT should retrieve outstanding reports and update the district summary data/DHIS2.
- The DHMT should send the national level a copy of the retrieved data by e-mail.
- The retrieved data should be stamped and signed by the DMO or representative.

Late Reporting

Issue:

- Health facility fails to submit monthly reports to the DHMT on time.

Procedures to address late reporting:

- The DHMT should have designated staff to handle the receipt of health facility monthly reports.
- Designated DHMT staff should use the health facility report tracking table to identify health facilities that are not reporting on time.
- Designated DHMT staff or zonal supervisors should cross-check with health facility staff whether reports were sent to the DHMT.
- If reports are not sent to the DHMT, DHMT staff should do follow-up visits to the health facilities and retrieve the outstanding reports.
- The DHMT should indicate date of receipt/retrieval of late reports.
- The DHMT should file a copy of all late reports.
- The DHMT should send the national level a copy of the retrieved reports by e-mail.

Missing Source Documents

Issue:

- Missing registers, summary forms at the health facility

Procedures to address missing source documents

- The DHMT should develop an inventory of health facility source documents.
- The DHMT should update the inventory of health facility source documents twice yearly.
- The DHMT should provide a copy of the inventory of source documents to the health facility.
- The health facility should inform the DHMT in writing about any missing source documents.
- The DHMT should determine and document reasons for missing documents.
- The DHMT/national level should replace the missing source documents.

Data Quality Issues at the District Level

Inaccurate Data Compilation

Issues:

- Health facility data compiled at the district level not consistent with health facility data
- Health facility data compiled at the district level not legible for data entry at the national level

Procedures to address inaccurate data compilation:

- The district M&E officer and district pharmacist (in the case of RR&IV data) should check health facility data for completeness and accuracy before compiling the report.

Incomplete Reporting

Issue:

- DHMT not reporting the complete number of health facilities in the district

Procedures to address incomplete reporting:

- The DHMT should develop a tracking table for monitoring monthly reports from the health facility.
- The DHMT should do monthly tracking of monthly reports from the health facility.
- The DHMT should do follow-up visits to health facilities with incomplete or no reporting.
- The DHMT should retrieve outstanding reports and update the district summary data/DHIS2.
- The DHMT should send the national level a copy of the retrieved data by e-mail or as hard copy.
- The retrieved data should be stamped and signed by the DMO or representative.

Missing Source Documents

Issue:

- Missing source documents (health facility data forms, RR&IV, district summary forms, supervision reports)

Procedures to address missing source documents:

- The DHMT should use the health facility report tracking table to identify missing documents per health facility per month per chiefdom.
- The DHMT should report to the national level about missing source documents.
- The MOHS/DPPI should assist the DHMT in providing the needed source documents.

Data Quality Issues at the National Level

Missing Source Documents

Issue:

- Missing source documents (district summary forms, supervision reports, MOHS reports)

Procedures to address missing source documents:

- Management should facilitate the provision of adequate storage facilities for source documents.
- Management should designate staff to ensure the safety of source documents.
- Designated staff should provide quarterly updates on source documents.

Inaccurate Data Compilation

Issues:

- Differences among data element that are expected to have the same value
- Outliers in data submitted over time

Procedures to address inaccurate data compilation:

- The M&E unit should ensure that all health facility data reported from districts are cross-checked for completeness and accuracy before data entry.
- Cross-checked data forms should be marked “CHECKED” and signed. Health facilities with suspicious data should be documented and communicated to program staff.
- The MOHS should ensure that health facilities with suspicious data are communicated to the DMO/M&E staff of the district in question for clarifications.
- The MOHS should ensure that all necessary clarifications on suspicious data are resolved with the DHMT before data entry is done for the health facilities affected.
- The MOHS should file a copy of the initial data forms with suspicious data and the final form with clarified data.
- MOHS supervision/data verification should give preference to health facilities with suspicious data.

Incomplete Reporting

Issue:

- DHMT fails to enter all monthly reports for all facilities in the district

Procedure to address incomplete reporting:

- The MOHS should do monthly analysis of districts reporting timeliness and completeness.
- The finding from this analysis should be shared with the DHMTs
- The MOHS should inform DHMTs through e-mail or phone about any health facility not reporting.
- The MOHS should work with DHMTs to enter outstanding health facility reports.

STANDARD OPERATING PROCEDURES FOR SECURITY AND ACCESS

Security and Access

The policy on HMIS security and access provisions will apply to all systems in which protected information is stored. These systems include the HMIS, IDSR, human resources information system, LMIS, population-based information systems, and research-generated health information.

End User Account and Password Access

The HMIS manager/officer and HMIS system administrator will provide an account username and initial password to each authorized end user. Temporary and default passwords will be changed on first use. End user accounts are assigned based on a particular position or role. End user accounts are not to be exchanged, shared, or transferred between personnel at any time.

Note: The sharing of end user accounts is a breach of these policies and procedures and a violation of the end user agreement. Under no circumstances shall the HMIS manager/officer demand that an end user disclose his or her password. Programs, directorates, health partners, health institutions, DHMTs, and other health stakeholders shall inform the HMIS manager/officer of any changes in personnel that require disabling of an end user account or other requests to revoke or transfer accounts.

Passwords

Temporary or default passwords will be changed on first use. End user account passwords must be changed every 45 days, and the system will automatically prompt each end user to change his or her password. Passwords should never be written on any item left in a user's office, desk, or other workspace, and passwords should never be in view of any other person.

End users must not be able to log onto more than one workstation or location at a time. Passwords must meet reasonable industry standards. By following the guidelines below, end users will meet heads-up display and ServicePoint security standards:

- Passwords must be 8 to 16 characters in length.
- Passwords must contain at least one number and one letter.
- Passwords cannot use or include the username, the HMIS name, the HMIS vendor's name (ServicePoint, etc.), or consist entirely of any word found in the common dictionary or any of the above spelled backwards.
- A computer or Internet browser should never store a login or password.

End User Inactivity

End users who have not logged into the system in the previous 45 days will be flagged as inactive. Inactive end users may have their HMIS accounts locked or removed to maintain the security, confidentiality, and integrity of the system. The HMIS officer is responsible for reporting inactive HMIS end user accounts to the HMIS manager within three working days of the account becoming inactive. End user accounts that are not active for 90 days will be deactivated by the HMIS system administrator, who is responsible for contacting the HMIS officer to provide an update on the status of the account or

provide confirmation that the account is no longer needed. Account inactivity in excess of 150 days will result in the account being deactivated and forfeiture of the access right.

Note: The HMIS system administrator will inquire with the HMIS officer about inactive end user accounts prior to any decision to disable the accounts.

Connectivity and Computer Systems

End users will connect to the HMIS independently through the Internet and are responsible for using their workstation Internet connectivity and computer systems or providing their own Internet connectivity and computer systems.

Remote System Access

HMIS end users must abide by the following policies and procedures and ensure the security and confidentiality of client data, regardless of the computer used to login to the system:

- Remote laptops and desktops must meet the same security requirements as those of office HMIS workstations.
- Remote access to ServicePoint should be limited to only those situations in which it is imperative that the end users access the system outside the normal office setting.
- All HMIS end users are prohibited from using a computer or workstation that is available to the public. In addition, accessing ServicePoint from a public location through an Internet connection that is not secured is prohibited. Examples of non-secure Internet connections are Internet cafes, libraries, airport Wi-Fi, etc.

Workstation Security

At a minimum, the primary workstation used by each end user to login to the HMIS should be configured to meet the following best practices:

- The workstation must have a password-protected logon.
- The screensaver must be password protected (locked) after five or more minutes of inactivity.
- The operating system must be updated with manufacturer's latest patches at least daily or weekly.
- Workstations in public areas must be secured when they are not in use and the end user is not present.
- The end user must logoff the HMIS when leaving the workstation.

Antivirus Protection Software and Firewalls

At a minimum, commercial antivirus protection software must be maintained to protect the HMIS, and virus definitions must be updated regularly. In addition, all workstations must be protected by a workstation firewall or server firewall.

Local Electronic Data Storage, Transfer, and Disposal

HMIS administrators are responsible for maintaining the security and confidentiality of any client-level data extracted from the database and stored locally, including all data used in internal reporting. At a minimum, the following best practices must be followed for all HMIS data:

- All data downloaded to a data storage medium must be maintained and stored in a secure location.
- The data storage medium must be password protected.
- Data downloaded to a data storage medium must be disposed of by reformatting, rather than being erased or deleted.
- The data storage medium must be reformatted a second time before the medium is reused or disposed of.
- Data downloaded for statistical analysis must exclude personal information whenever possible, and personal information is not to be electronically transmitted unless it is properly protected.

Hard Copy Security

Any printed version containing personal information that is generated for or by ServicePoint must be secured and should not be left unattended.

Security Violations

End users found to be in violation of security and access protocols will be sanctioned accordingly, as follows:

- All end users must report potential violations of any security protocols and noncompliance to their HMIS officer within 24 hours of discovering the incident.
- The HMIS officer must report the potential violation to the principal M&E specialist within eight hours of discovering that an incident has occurred.
- The HMIS officer will investigate potential violations.
- If the HMIS officer is aware that an end user is using (or has used) the country HMIS for any purposes outside of the approved use and disclosure, the HMIS officer will immediately terminate the end user's access to that particular system. The participating agency will determine whether any further disciplinary action is required.

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