



THE UNITED REPUBLIC OF TANZANIA

**MINISTRY OF HEALTH, COMMUNITY DEVELOPMENT, GENDER,
ELDERLY AND CHILDREN**

HEALTH INFORMATION SYSTEM GUIDELINES (HISG)

MAY 2019



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Foreword

These Health Information System (HIS) Guidelines are the first to be developed by the Tanzanian Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC). They were developed through an inclusive, participatory and consultative approach intended to ensure ownership, commitment and leadership by the key stakeholders. The document responds to the aspirations of the Health Sector Strategic Plan III (HSSP, July 2009–June 2015) as well as recommendations from various assessments, reviews of the existing Tanzania policy frameworks, a needs-assessment conducted with relevant ministries and partners, and a review of international best practices.

An earlier assessment done in 2008 to inform the development of the HSSP III identified a weak regulatory framework for the health information system. This was subsequently confirmed by a needs assessment to inform the development of the HIS Guidelines conducted in 2016. One of the biggest challenges facing the health information system in Tanzania is the lack of coordination within the health sector. Different pieces are managed by different authorities both inside and outside the MoHCDGEC. As a result, the health information system in Tanzania has not been able to perform up to government and stakeholders' expectations.

The goal of the National HIS Guidelines is to strengthen coordination of the HIS in Tanzania. A strong HIS is necessary for effective management of health care services, government accountability, transparency, and governance. They also provide the information needed to measure the impact of health policies in the country.

Specific objectives of these guidelines are to provide clear guidance on and standards for: routine data collection and data quality; analysis and use of health data for decision-making; data confidentiality and security, and data ownership, sharing and dissemination. Other objectives are to address the fragmentation of the HIS by developing interoperability and integration standards; reduce the health information burden on health care workers through automation and streamlined systems; ensure interoperability between the health management

information system and all other health sector information systems; increase accessibility and use of all available data for decision-making, and finally, to define roles and responsibilities for actors at all levels of the HIS.

This document will be the guiding reference for managing the flow of health data through an integrated HIS in Tanzania. It will also facilitate and shed light on the responsibilities of different institutions and stakeholders. I invite you all to read and use this document.



Prof. Muhammad Bakari Kambi

THE CHIEF MEDICAL OFFICER - MoHCDGEC

Acknowledgements

These Health Information System Guidelines (HISG) were informed by multiple initiatives for strengthening the HIS in Tanzania. This document places much of its focus on ensuring high-quality data is collected, analysed and disseminated to stakeholders. It also emphasizes the importance of coordinating information systems effectively and demonstrating best practices in data sharing, data ownership, data use and confidentiality.

Preparation of the policy guidelines was done collaboratively, involving different stakeholders at each stage. Enormous contributions were received during the needs assessment conducted with staff from the Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC), the President's Office of Regional Administration and Local Government (PO-RALG), the National Bureau of Statistics (NBS), and other stakeholders. Significant contributions to these guidelines from staff at all of the aforementioned agencies and from ICT experts, the Chief Auditor General's office (eGov), other organizations, and individual stakeholders are also greatly appreciated.

The MoHCDGEC wishes to extend its sincere gratitude to Bloomberg Philanthropies' Data for Health Initiative, implemented by Vital Strategies, for providing the financial and technical support that led to the successful preparation of this document.

We would especially like to acknowledge the team of consultants who provided technical support during the development of the Health Information System Guidelines. The team was comprised of the following individuals: Mr. Josibert J. Rubona independent consultant, Dr Irene Masanja of Management Sciences for Health. Dr. Jennie Jaribu, Ifakara Health Institute, Dr Laura Cobb, Dr Magdalena Paczkowski, Vital Strategies and Ms. Hirshini von Kalm, independent consultant. We thank the team for coordinating the entire process up to the final document.

Last, but not least, great appreciation should go to the dedicated Task Force Team, composed of Mr Yohana Wilfred, Ms Joyce Chitalika, Ms Happiness L. Katuma, the late Ms Anchilla Vangisada, Ms Khadija Kigoto, Ms Trust Nyondo,

and Mr Gisbert Msigwa, all from the Directorate of Policy and Planning; MoHCDGEC. The production of the HIS Guidelines has been possible due to the leadership and commitment of Mr Claud John Kumalija and Mr Tumainiel Macha.

A handwritten signature in dark ink, appearing to read 'mbanga', followed by a long horizontal line extending to the right.

Edward N. Mbanga

DIRECTOR POLICY AND PLANNING - MoHCDGEC

Abbreviations

APHFTA	Association of Private Health Facilities in Tanzania
DHIS 2	District Health Information System Software, Version 2
CCHP	Comprehensive Council Health Plan
CHMT	Council Health Management Team
CSSC	Christian Health Services Commission
DQA	Data Quality Assessment
eIDSR	Electronic Integrated Disease Surveillance and Response
FBO	Faith-Based Organization
GoT-HOMIS	Government of Tanzania Hospital Management Information System
HIS	Health Information System
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
HMIS	Health Management Information System
HRHIS	Human Resources Health Information System
ICT	Information and Communication Technology
IDSR	Integrated Disease Surveillance and Response
iHFeMS	Integrated Health Facilities Electronic Management System
M&E	Monitoring and Evaluation
MESI	Monitoring and Evaluation Strengthening Initiative
MoHCDGEC	Ministry of Health, Community Development, Gender, Elderly and Children
MKUKUTA	Mkakati wa Kukuza Uchumi na Kupunguza Umaskini, Tanzania
MTUHA	Mfumo wa Taarifa za Uendeshaji wa Huduma za Afya

NBS	National Bureau of Statistics
NIDA	National Identification Authority
RHMT	Regional Health Management Team
RRH	Regional Referral Hospital
RITA	Registration, Insolvency, and Trusteeship Agency
STEPS	STEPwise Approach to Surveillance
TACAIDS	Tanzania Commission for AIDS
PO-RALG	President's Office of Regional Administration and Local Government
WHO	World Health Organization

Glossary of terms

Coverage	The extent to which an intervention is 1) being implemented in the right places (geographic coverage) and 2) is reaching its intended target (population coverage).
Demographic surveillance	The process of defining risk and corresponding dynamics in rates of birth, death, and migration in a population over time; surveillance systems are often set up around specific intervention studies and later converted into standing demographic surveillance sites that can form a platform for further studies
District Health Information System (DHIS)	Open-source software platform for reporting, analysis and dissemination of data for all health programmes, developed by the Health Information Systems Programme (HISP) in Oslo, Norway
District Health Information System Version 2 (DHIS 2)	Second version of the District Health Information System
Health facility	Refers to places that provide health care, such as clinics, dispensaries, health centres and hospitals—both public, Faith-Based Organizations (FBO) and private
Health facility closure and sign-off	Following iHFeMS guidelines, a health facility will have to undergo a “closure and sign-off” procedure to be considered “fully electronic” and graduate from the paper-based reporting system
Health Information System (HIS)	According to WHO, health information systems have four main functions: data generation, compilation, analysis and synthesis, and communication and use. The health information system collects and analyses data from the health and other relevant sectors in order to convert it into information for health-related decision-making
Health Management Information System (HMIS)	A general term that applies to all systems, it refers to a routine paper-based or electronic system that collects information from health facilities and communities

Health workers at community level	This term refers to skilled health care providers at the community level. Also known as Community Health Workers (CHW) as described in the National Community-based Health Program documents
Hospital Management Information System (HoMIS)	A comprehensive, integrated information system designed to manage all the aspects of a hospital's operation, such as medical, administrative, financial, and legal issues and the corresponding processing of services
Incidence	A measure of the frequency with which new cases of illness, injury or other health conditions occur in a specified population during a specified time period
Indicator	A quantitative or qualitative variable that provides a valid and reliable way to measure achievement, assess performance, or reflect changes connected to an intervention
Integrated Disease Surveillance and Response (IDSR)	A strategy originally developed by WHO-AFRO to integrate and streamline common laboratory and surveillance activities across diseases, as surveillance activities for different diseases involve similar functions (detection, reporting, analysis and interpretation, feedback, and action) and often use the same structures, processes and personnel
MTUHA	Mfumo wa Taarifa za Uendeshaji wa Huduma za Afya, an official approved Swahili abbreviation of Health Management Information System (HMIS) in Tanzania
Prevalence	The total number or proportion of people living with a specific disease or condition at a given time
Private health facilities	This term is used in this document to refer to all health facilities that operate as "private-for-profit" or as "Faith-Based Organizations"
Sentinel surveillance	Monitoring of rate of occurrence of specific diseases or conditions to assess the stability or change in health levels of a population; also, the study of disease rates in a specific cohort such as in a geographic area or population subgroup to estimate trends in a larger population

1. Introduction

1.1 Introduction

Strong health information systems (HIS) are a necessary component of a health system. According to WHO, a health information system has four key functions: “data generation, compilation, analysis and synthesis, and communication and use”. Ultimately a HIS collects health-related data from the health sector—in Tanzania this includes the Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC), President’s Office of Regional Administration and Local Government (PO-RALG), the Ministry of Finance and Planning, the National Bureau of Statistics (NBS), and the Registration Insolvency and Trusteeship Agency (RITA), among others—and converts it into information that can be used for health policy and decision-making.¹

The importance of the HIS has been recognized by the Government of Tanzania through the MoHCDGEC. The 2007 National Health Policy² and the Health Sector Strategic Plan (HSSP) IV emphasized the importance of collection and use of data for policy and decision-making.³ In Tanzania the term “monitoring and evaluation” is often applied to a systematic approach to collecting, storing, analysing, and using information to support management of health delivery systems and to monitor the performance of the government’s local and international commitments.

The HIS in Tanzania consists of many data systems, most of which can be divided into health institution-based data and population-based data.

1.2 Need for HIS Guidelines

One of the biggest challenges facing the HIS in Tanzania is the lack of coordination within the health sector. Separate vertical systems and different pieces of the health information system still operate both inside and outside the MoHCDGEC. For example, disease-specific surveys are conducted in collaboration with development partners (Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS) Indicator survey, Demographic and Health Survey, Malaria Indicator Survey, Step-wise Approach to Surveillance (STEPS) survey); population health surveys, including household

budget surveys, as well as the census, are managed by the NBS in collaboration with the MoHCDGEC and the Tanzania Commission for AIDS (TACAIDS); the vital registration system (birth and death registration) is administered through the Ministry of Constitution and Legal Affairs within RITA, and the resulting vital statistics are managed by the NBS. Other information systems such as human resources, logistics, and laboratory are also managed by their respective sections or directorates.

To begin addressing this challenge, the MoHCDGEC brought much of this health information data into MTUHA through the Monitoring and Evaluation Strengthening Initiative (MESI). As Tanzania moves towards a health sector that collects electronic individual-level information, rather than one focused mostly on aggregated health data, there is also a need for guidelines to facilitate this shift. The National eHealth Strategy and the Tanzania Digital Health Investment Road Map (2017–2023) both indicate that Tanzania’s health information system will be focused on gathering client-level data, while also continuing to use aggregated data to inform policy and operations decisions. The MoHCDGEC is implementing a facility electronic management system that will contain individual-level patient information.

Further, while the MoHCDGEC provides policy guidance for the health system, primary health facilities are managed by local government authorities overseen by PO-RALG. Recently PO-RALG, working with the MoHCDGEC, has developed and begun to roll out a hospital-based electronic system that can collect individual patient data. While the MoHCDGEC and PO-RALG have the Integrated Health Facility Electronic Management Systems (iHFeMS) guidelines⁴ and standards to implement eHealth initiatives in public and private facilities, calls for a national guiding document in line with these HIS policy guidelines have been consistent—as is evident in HSSP III and IV. The increasing use of electronic health records and other information and communication technology (ICT) systems for collecting, managing and analysing data have highlighted the need for clear standards to manage electronic data systems and provide guidance for data-sharing and confidentiality. This has been reinforced by the passage of the Statistics Act in 2015, which gives the NBS sole authority to publish official statistics.⁵

In general there has been an absence of clear guidance on many aspects of the health information system. The health sector is working to address these issues. Efforts are underway to develop a comprehensive health information exchange that all the data feed into and where different data sources can be easily accessed by those who need them. These HIS guidelines are based on:

- i. Recommendations from multiple assessments of the Tanzanian health information system
- ii. A review of the existing Tanzania policy frameworks
- iii. A needs assessment conducted by the MoHCDGEC and partners
- iv. A review of international best practices

The needs assessment conducted in November 2016 generated a recommendation to develop the health information system guidelines and provided additional guidance on what to include in the guidelines. Some of the recommendations to be considered in the developed guidelines are categorized as:

Data collection and quality:

- Introduce an electronic data collection system at the facility level
- Revise data collection and reporting tools so they are uniform and readily available
- Harmonise related surveys so that concepts and definitions are similar across surveys

Data analysis and use:

- Promote data analysis and data use
- Incorporate data analysis tools into the electronic data collection system

Data security and confidentiality:

- Provide guidance on archiving and data security for paper-based forms
- Protect data by providing passwords to staff according to their roles in the health information system
- Clearly stipulate legal consequences for breaches of confidentiality

Data sharing:

- Ensure that health data can be easily accessed by all relevant stakeholders

- Specify that all health data collected from all health facilities are ultimately owned by the government

1.3 Objectives of the HIS Guidelines

The goal of the national Health Information System (HIS) guidelines is to improve the health of all Tanzanians through the strengthening of the health information system. Strong health information systems are necessary for effective management of health care services, government accountability, transparency, and good governance. These guidelines will focus primarily on the Health Management Information System (HMIS), known in Swahili as Mfumo wa Taarifa za Uendeshaji wa Huduma za Afya (MTUHA), and they will also cover community health, census, vital statistics, survey data, and the interoperability of administrative and service data systems. These guidelines will be reviewed as deemed necessary.

Specific objectives of these guidelines include:

1. Provide clear guidelines and standards for:
 - Routine data collection and data quality
 - Analysis and use of health data for decision-making
 - Confidentiality and data security
 - Data ownership, sharing and dissemination
 - Access to health care data
2. Resolve fragmentation of the health information system by integrating and coordinating health institution-based data systems
3. Ensure interoperability of all other health sector information systems
4. Increase accessibility and use of all available data for decision making
5. Clearly define roles and responsibilities for actors at all levels

1.4 Background on the Tanzania Health Information System

Health Information System development began in the early 1990s, when MTUHA was developed as a supporting tool for health sector reforms in Tanzania. MTUHA was fully rolled out to all regions in 1997 as a paper-based data-collection system with the aim of integrating and harmonising other subsystems. Unfortunately, challenges including limited human and financial resources meant that MTUHA was not responsive to the information needs of the MoHCDGEC and other health stakeholders. As a result, vertical programmes such as HIV/AIDS, tuberculosis,

and immunization invested in strengthening their own health management information systems, thereby catalysing multiple, duplicative data collection and reporting subsystems.

At a global level, WHO's Health Metrics Network provided a framework for harmonisation of health information systems in low- and middle-income countries that aimed to enhance the entire health information system rather than focus only upon specific diseases. In 2008, WHO conducted an assessment of the Tanzania Health Information System and found major gaps in funding, leadership, qualified staff at the facility level, skills in data analysis and interpretation, and a lack of computerized systems.⁶

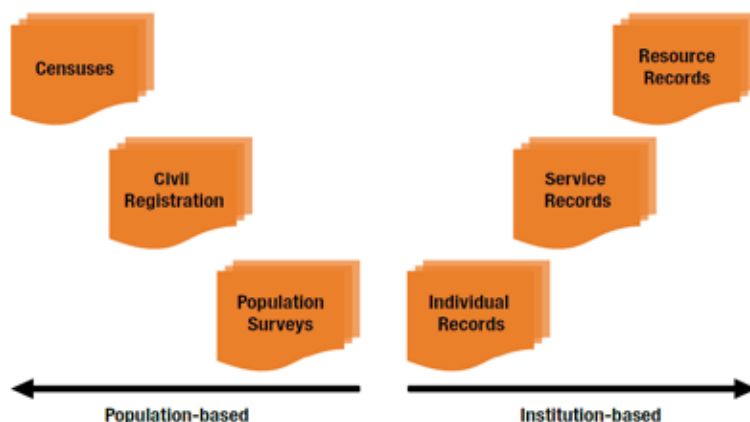
The assessment, coupled with recommendations from reviews, led to increased commitment by the MoHCDGEC. This was reflected in the establishment of the MESI (2009–2015) which brought together monitoring and evaluation (M&E) stakeholders around a five-year operational plan to modernise and strengthen all aspects of M&E within the health sector.⁷ Major achievements include comprehensive revisions of data collection tools, upgrading MTUHA reporting into a computerized system through the use of the DHIS2, and consolidation of some vertical programme data into MTUHA.

1.5 Health Information System Data Sources in Tanzania

The health information system is a comprehensive and integrated structure that collects, stores, collates, analyses, and disseminates health and health-related data and information for monitoring and evaluating the performance of health interventions. The health information system consists of separate parts that are interrelated, interdependent, and work towards a common goal. In short, health information systems can be summarized as follows:

- A health information system consists of health institution-based data and population-based health data
 - o *Health institution-based data = administrative data + facility-based data + community-based data.* They include patient and facility records (including infrastructure, supplies, human and financial resources), disease surveillance and facility surveys
 - o *Population-based data = censuses + vital statistics + household and budget surveys + demographic surveillance*

Figure 1. Health Information System Data Sources



Source: Health Metrics Network

1.5.1 Health Institution–Based Data

The term “health institution–based data” refers to information created, collected, maintained, transmitted or recorded by an organisation or establishment, founded for the purpose of providing health-related services. The primary sources of routine institution-based data are administrative records such as human resource and financial data, service records that include laboratory and logistics information, and disease records in MTUHA and Integrated Disease Surveillance and Response (IDSR); see Figure 1. While MTUHA collects data from health facilities and community-based data from villages, private hospitals, national, zonal and specialised hospitals use different data collection platforms. As well, some vertical programmes collect data that are richer than that currently collected by MTUHA.

Much work remains to coordinate these disparate data sources. Recent progress in the integration of the health information systems has been due to the introduction of the DHIS web-based system. Aggregated health institution–based data for each facility is entered into DHIS in some health facilities, or at the council level if facilities use a paper-based data collection system. The current health sector strategic plan makes the interoperability of data systems the highest priority of the MoHCDGEC.⁸

1.5.2 Health Population-Based Data

Population-based data implies all information created, collected, transmitted or recoded from all elements, individuals or units meeting the selection criteria in a particular area or place. In addition to the census, currently, the major sources of population-based data are population health surveys, which provide nationally representative information on health status and access to health services. Major surveys include the Demographic and Health Survey, Malaria Indicator Survey, the HIV and the Household and Budget Survey (which is not primarily health-focused). Censuses and household surveys are coordinated by National Bureau of Statistics, which is responsible for the production, coordination, supervision, and dissemination of official statistics, and for the custodianship of official statistics in the country.⁵ The National Bureau of Statistics works closely with the MoHCDGEC on the design and analysis of health surveys.

Traditionally, critical information on the burden of disease in Tanzania has come from demographic surveillance sites (and recently from the Sample Vital Registration with Verbal Autopsy (SAVVY) survey). These sites continuously and completely enumerate all demographic events (births, deaths, cause of deaths, and migrations) in a geographically defined population cluster to determine life expectancy, death rates, and proportional mortality, among other factors. Securing funding for these sites can be challenging, thus they may not be sustainable sources of data.

Finally, vital statistics data on births and deaths promise to be a major source of information on the burden of disease in Tanzania; however, coverage is still too low to be relied on. While the Civil Registration and Vital Statistics system is governed by the Registration Insolvency and Trusteeship Agency, both the National Bureau of Statistics and the MoHCDGEC have key roles in the system and are the main users of the data. The government's vision is to ensure all births and deaths take place in health facilities, making the MoHCDGEC a key partner in ensuring that these events are documented.⁹

A summary of data sources (institutional-based and population-based) in Tanzania is appended (Appendix A).

2. Data Collection and Quality

Background

Health institution-based data for most health facilities and all communities is collected on paper, summarized, and transmitted to the councils. Council Health Management Teams (CHMTs) enter the data into DHIS, oversee the quality of data and provide supportive supervision to the facilities. Regional Health Management Teams (RHMTs) provide oversight and technical support to councils. Regional Referral Hospitals (RRH) receive supervision and technical support from the MoHCDGEC. At the national level, the MoHCDGEC is responsible for setting data collection procedures, including any changes to data collection tools, and for ensuring the quality of data collected through MTUHA.

Clear and simple data collection procedures enhance data quality.¹⁰ The four domains of data quality are:

1. Accuracy: do the data reflect what is really happening, and are they free of error?
2. Completeness: percent of reports received and proportion of data elements reported from each level of the health system
3. Timeliness: reporting according to stated deadlines
4. Consistency: ensure all reporting entities use and fill-out the reporting tools as required and maintain the required standards across reporting tools

These guidelines build on the existing guidance and resources already available. Resources include:

- Data collection resources: Directions for data collection are provided in the MTUHA books
- Data quality resources: 2016 Data Quality Guidelines provide detailed guidance on measures to improve data quality as well as tools for data quality assessments (DQAs) and routine data quality improvement (for council, regional and national levels)
- National Supportive Supervision tool: This provides guidance on how supervision should be conducted at all levels of service delivery

Gaps

The multiple, proliferating and unconnected data systems lead to an increased burden on health facility workers. Most health facilities do not have designated data collection staff, so clinical staff must take extra time to complete numerous forms. The staff is often not adequately trained on the systems, compromising the quality of the data. The paper-based nature of the system also increases the chance of human error when transferring data from paper registers to tally and summary sheets and then finally into DHIS. Efforts to improve data quality, such as DQAs, are also uncoordinated across programmes and can burden staff.

This chapter provides guidance on:

- Community level data collection
- Facility, council, regional and national level medical records
- Laboratory Management Information System
- Integrated Disease Surveillance and Response
- Logistics Management Information System
- Human Resources for Health Information System
- Population Health Surveys
- Civil Registration and Vital Statistics system

2.1 Community-Level Data Collection Guidelines

2.1.1 Collection and Reporting Tools

Health workers at the community level shall communicate data collection/reporting tool needs regularly with the health facility in-charge and local government leadership. Recording registers will be used to record events of public health importance and be communicated IMMEDIATELY. The register and monthly summary data forms will link with online reporting forms in the DHIS database.¹¹

2.1.2 Initial Data Entry:

- a. Health workers at the community level shall be responsible for completely filling out MTUHA Book Number 3.
- b. All other data for other information systems shall also be entered immediately upon collection.

2.1.3 Data Reporting—Refer to Appendix D (Community-based health programme data flow diagram)

- a. Every month, health workers at the community level shall compile the summary report and submit it to the health facility in-charge. The health facility in-charge shall compile all reports from community-level health workers and submit them to the CHMT. For notifiable diseases, conditions and events that require immediate response, the community health worker should report to the nearby health facility of the local government authority **IMMEDIATELY**.
- b. Where technology is available, under the supervision of the facility in-charge, health workers at the community level shall enter the information into a tablet/data collection device that will link to the relevant databases (DHIS, HRHIS).
- c. Health workers at the community level shall also submit a copy of the summary report to the Village Executive Officer and retain a copy for records.

2.1.4 Quality Checks

- a. All data submitted by health workers at the community level shall be checked and verified by the facility in-charge before submission to the CHMT.
- b. Where electronic data entry technology is available at the community level, the facility in-charge shall conduct monthly data quality checks to ensure timeliness, completeness, consistency and accuracy.

2.1.5 Timeliness

Data shall be submitted from the health workers at the community level to the health facility in-charge by the fifth of the month following the reporting month. In addition, data for epidemic-prone diseases and events of public health importance should be reported immediately, and the summary should be submitted by the fifth of the month following the reporting month.

2.1.6 Feedback

Feedback, once received by the health facility in-charge from the CHMT, shall be provided by the health facility in-charge directly to the health worker at the community level, who will also communicate with the community for any necessary preventive and control measures.

2.2 Facility-Level Medical Records

2.2.1 Collection and Reporting Tools

- a. Providers at facilities shall be responsible for recording the details of each patient encounter in only one medical system (i.e. paper-based or electronic medical system that is compliant with iHFeMS standards).
- b. Facilities still using paper-based data collection tools shall include in their budget funds to purchase all tools for collection and reporting forms from the central government printer, as part of devolution of reporting to the health facility.

2.2.2 Initial Data Entry

- a. Providers shall be responsible for completely filling out applicable MTUHA patient registers and tally sheets at the same time a patient is seen (intake/discharge), as directed in the instructions in the registers.
- b. Facilities in the initial process of implementing iHFeMS-compliant electronic systems should retain the paper-based data collection system until the final sign-off procedures are complete, as described in iHFeMS guidelines and standards.
- c. In facilities that are fully electronic (i.e. have received iHFeMS closure and sign-off), providers shall be responsible for completely filling out the electronic system as required.
- d. Facilities shall only collect and report health information electronically if they officially comply with iHFeMS standards and have completed each step of the approval process including software acquisition, readiness assessment, procurement, training, piloting, deployment, closure and sign-off.

2.2.3 Quality Checks

All data quality checks shall be performed as specified in the most recent version of the DQA guidelines. This includes:

- a. Health facility in-charge shall supervise weekly data quality checks to ensure timeliness, completeness, consistency and accuracy.
- b. Errors reported shall be corrected and the change documented.
- c. For fully electronic facilities, built-in data validation and quality check rules in the database shall apply.
- d. Facilities shall have at least two staff members trained on data quality improvement. This number may be higher at larger facilities with larger patient throughout.

2.2.4 Data Reporting

- a. Facility in-charge shall be responsible for filling out summary reports and ensuring completeness and accuracy of information before submitting summary reports to the database.
- b. Facility in-charge shall send aggregated data summary to the council or enter directly into DHIS on a regular basis.
- c. Any reports generated through an iHFeMS system must comply with government requirements (e.g. MTUHA).
- d. Individual information:
 - Upon initial collection of client information, the client's identifying information shall be sent to the National Health Client Registry database.
 - A unique Medical Record Number shall be generated by the electronic medical system for each new patient registration.
 - All identifiers linked to clinical information collected by the health provider and sent to a shared health record shall only be visible to the provider.
 - All clinical information collected by the health provider and reported to a third party shall be de-identified, unless consent is provided by the patient to share information with a third party.

2.2.5 Accountability

- a. Facility in-charge shall cross-check summary data reporting form and approve it. In fully electronic facilities, the facility in-charge or other authorized personnel will be responsible for submitting facility reports to the database.
- b. The facility in-charge shall be held accountable for the deliberate falsification of data. Penalties shall be in accordance with the National Statistics Act of 2015.

2.2.6 Timeliness

- a. Data reporting forms from the previous month shall be due in paper form to the council by the seventh day of each month or entered in DHIS by the 14th day of each month.
- b. In fully electronic facilities, data will be available as it is entered in the system.

2.2.7 Feedback

Heads of facilities shall report to their respective CHMT any issues with data collection systems that impede the collection of high-quality data

in both paper-based and electronic systems. Feedback reports provided by the CHMT shall be implemented by the facility within the suggested timeframe from the CHMT and maintained in the facility for at least one year.

2.3 Council-Level Medical Records

2.3.1 Data Collection and Reporting Tools

CHMTs shall ensure that health facilities have planned and budgeted for data collection tools and/or upgrades, maintenance and repairs to all routine data collection systems (including hardware and software) are included in the Comprehensive Council Health Plans (CCHPs).

2.3.2 Data Receipt and Entry

The M&E Officer/MTUHA focal person shall enter the data provided by public, private and FBO health facilities into DHIS (in the case of paper-based systems); and ensure summary reports are submitted to DHIS, for fully electronic facilities. CHMT staff are responsible for ensuring that all facilities submit their monthly reports on time.

2.3.3 Data Validation

All facility-level data shall be validated by CHMT members responsible for data on a regular basis, as specified in the National Guidelines for Health Data Quality Assessment.¹² All DQA reports must be uploaded into DHIS.

2.3.4 Timeliness

The CHMT shall contact any health facilities that have not submitted their reporting forms after the seventh of the month. Health facility data from the previous month shall be entered into DHIS by the 14th of the month.

2.3.5 Quality Assessments

The CHMT shall conduct a DQA at each health facility in the council at least once a year and at district-level hospitals once each quarter. Priority shall be given to those health facilities with the lowest quality scores on DHIS quality checks.

- a. Paper-based: Data quality assessments for paper-based data collection shall follow the detailed guidance provided by the National Guidelines for Health Data Quality Assessment.

- b. Electronic health records: Standard operating procedures shall be developed for DQAs using electronic health records. However, the DQA guidelines embedded in current electronic systems should be followed.

2.3.6 Feedback to health facilities

Clear feedback on the quality of facility data shall be given from the CHMT to the health facilities, including feedback on data timeliness, completeness and accuracy. Feedback shall be given on a monthly basis to correct incomplete or inaccurate data, as well as annually as part of the DQA. Feedback shall be in written format and must be kept for one year at the facility.

Feedback on data quality shall include the following information:

- Comparisons to other facilities in the council
- Changes in data quality over time
- Recommendations for improvement and action plan

2.3.7 Report to Regional Level

CHMTs shall report to the Regional Health Management Team (RHMT) any issues with data collection systems that impede the collection of high-quality data.

2.3.8 Supportive Supervision

Each health facility shall receive quarterly supportive supervision from the CHMT. This supervision should use existing supervision tools.

2.4 Regional-Level Medical Records

2.4.1 Data Validation

Council-level data shall be validated by RHMT members responsible for data on a regular basis, as specified in the National Guidelines for Health Data Quality Assessment.

2.4.2 Data Quality Assessments

RHMTs shall conduct annual DQAs for councils.

2.4.3 Data Review Meetings

RHMTs shall conduct data quality review meetings, including all CHMTs in the region, at least twice per year to review data quality challenges, best practices, recommendations to improve data quality, and the implications of poor data quality on decision-making. These meetings shall follow guidance provided in the DQA guidelines.

2.4.4 Feedback to Councils

Clear, written feedback on data quality shall be given from the RHMT to the council, including feedback on timeliness, completeness, accuracy and how the facility/council compares to others in the region, how its performance has changed over time, and recommendations for improvement.

2.4.5 Report to National Level

RHMTs shall report data collection systems issues that prevent the collection of high-quality MTUHA data to both the MoHCDGEC and PO-RALG. Feedback shall be given as needed and as part of data review meetings.

2.4.6 Supportive Supervision

RHMTs shall conduct supportive supervision to each CHMT, quarterly, using existing supervision guidelines. All visits must be documented by the RHMT and shared with the council. RHMTs shall enter the visit report, actions taken, and follow-up steps into DHIS.

2.5 National-Level Medical Records—MoHCDGEC

2.5.1 Changes to the Data Collection System

- a. The MoHCDGEC shall be responsible for making changes and/or updates to MTUHA. Major changes in the way that health institution-based data are collected, such as a switch to electronic health records, shall be coordinated by the Directorate of Policy and Planning and the ICT unit at the MoHCDGEC, in collaboration with the health and ICT departments at PO-RALG.
- b. The MoHCDGEC shall work with national, zonal, regional and specialized hospitals to ensure they have appropriate reporting tools that are aligned with the type of services they provide.

2.5.2 Integration of Data Collection Systems

All routine health program data collected at the facility level must be incorporated into the existing data collection infrastructure coordinated by the MoHCDGEC and the health and ICT departments at PO-RALG.

2.5.3 Review of Data Collection System

The MoHCDGEC shall coordinate regular annual reviews and major reviews, every three years or as needed, of facility data collection tools to ensure that they meet the needs of programmes and local government

and don't overburden facility staff. Reviews shall be conducted in conjunction with programmes, the M&E section and PO-RALG.

2.5.4 Data Collection Tools

The MoHCDGEC, in addition to developing the final data collection tools and updating them as needed, shall print the tools and deliver them to the Medical Stores Department.

Health facilities shall order the tools from the Medical Stores Department to ensure that their facilities are adequately stocked.

2.5.5 Data Quality Assessment Guidelines

a. The MoHCDGEC shall be responsible for developing and updating DQA guidelines, particularly adapting current guidelines for electronic health records, and providing uniform DQA tools.

b. All health programmes shall use the current approved national DQA guidelines for quality assessment activities of programme data.

2.5.6 Coordination of Data Quality Improvement Efforts

The MoHCDGEC shall be responsible for coordinating the efforts of implementing partners and other stakeholders to improve the quality of MTUHA data.

2.5.7 Data Validation in DHIS

Specific guidance on data validation shall be provided in the DHIS Data Quality Assurance guide. The Directorate of Policy and Planning of the MoHCDGEC shall regularly run data validation checks in DHIS on a sample of regional data each month. Any data that do not meet the validation rules should be reported to the RHMTs.

2.5.8 Data Quality Assessment

a. The MoHCDGEC, in collaboration with PO-RALG, shall conduct at least one DQA in each region every year. Regional DQAs should cover all councils and visit at least three health facilities in each council: a dispensary, a health centre and a hospital. Health program-data DQAs should be coordinated with the Directorate of Policy and Planning (M&E), program M&E officers and with M&E officers at the region and council levels to ensure that facilities are not duplicated and/or overloaded.

b. The MoHCDGEC shall conduct DQAs for RRHs each quarter.

2.5.9 Data Review Meetings

The MoHCDGEC shall coordinate annual data quality review meetings in each region, jointly with the health department of PO-RALG, to review data quality challenges, best practices and recommendations to address data quality issues. These meetings should follow the guidance provided in the DQA Guidelines.

2.5.10 Feedback

Feedback shall be given from the MoHCDGEC to PORALG, which shall communicate the feedback to the RHMT on the quality of data according to national DQA guidelines along with recommendations for improvement. Feedback shall be given immediately, as needed, and shall be documented in DHIS.

2.5.11 Data Locking

Within 30 days of the end of the year, all data will be locked in DHIS. This applies to data entered through both electronic or paper-based systems. Changes to the data can only be made beyond this point if approved by the MoHCDGEC.

2.6. National-Level Medical Records—PO-RALG

2.6.1 Data Collection and Reporting Tools

PO-RALG, through its health department, in collaboration with the MoHCDGEC, shall ensure that all CCHPs have a line item for MTUHA data collection and reporting tools as well as information technology (IT) and hardware and software infrastructure for DHIS and other health information systems.

2.6.2 Coordination with HIS

- a. PO-RALG, in collaboration with the MoHCDGEC, shall ensure that any new data collection or management system put in place in facilities should be interoperable with MTUHA and not create additional work for facility staff.
- b. PO-RALG shall work with the MoHCDGEC to ensure that the MTUHA meets their needs and is updated as needed.
- c. PORALG shall be responsible for coordinating partners dealing with health data/HIS at the regional level and LGAs.

2.6.3 Data Quality Assessments and Validation

- a. PORALG shall ensure that CHMTs and RHMTs adhere to the DQA

guidelines.

- b. PORALG shall ensure all health programmes at LGAs are using the current approved national DQA guidelines for quality assessment activities of programme data.
- c. PORALG shall be responsible for running data validation for councils and regions.

2.7 Facility and Council-Level Financial Records

- 2.7.1 All budgeting and financial information related to income and expenditures shall be entered into DHIS2.
- 2.7.2 All information recorded at the facility level in MTUHA Book 2 shall be entered into DHIS2.
- 2.7.3 The MoHCDGEC shall work with PORALG and the Ministry of Finance to ensure that the Facility Financial Accounting and Reporting System is interoperable with DHIS2.

2.8 Laboratory Management Information System

- 2.8.1 The MoHCDGEC's laboratory subdivision shall ensure the laboratory Information/data systems are interoperable. Specimen intake and laboratory test results are collected using paper registers at the Level I laboratories. Level II and III labs collect data using multiple electronic data management systems.
- 2.8.2 The Council M&E Officer/MTUHA focal person shall provide timely feedback to each laboratory based on monthly reports.

2.9 Integrated Disease Surveillance and Response

- 2.9.1 Facilities with electronic IDSR capabilities (eIDSR) shall report all IDSR-reportable diseases from MTUHA Book 5, MTUHA Book 14 and MUHA Book 9 to the council, regional and national (MoHCDGEC) level using eIDSR via digital systems on an immediate or weekly basis, according to IDSR standards. At facilities with computers, IDSR data can be entered directly into the eIDSR page in DHIS.
- 2.9.2
 - a. Facilities with no eIDSR capability shall record all IDSR diseases in MTUHA Book 5 and report on an immediate, weekly or monthly basis, depending on the MoHCDGEC classification of the disease

registered.

b. In addition to electronic reporting to the higher levels, IDSR data from MTUHA books will be summarized in the Health Facility Weekly IDSR Booklet 3, which is kept at the health facility for actions and reference.

c. Summary data shall be sent to the council level at the end of each month as per routine MTUHA data-collection protocols.

2.9.3 The Epidemiology Section shall produce weekly surveillance reports. These shall be finalized on Tuesday evenings and shared with MoHCDGEC management. A monthly IDSR bulletin will be developed and circulated.

2.9.4 The Public Health Emergency Operations Centre shall produce daily outbreak situation reports to be circulated to all pertinent stakeholders.

2.10 Logistics Management Information System

2.10.1 The Logistics Management Information System shall be interoperable with DHIS to provide information on selected tracer medicines to the MoHCDGEC.

2.11 Human Resources Health Information System

2.11.1 The human resources health information system shall be interoperable with DHIS to provide information about human resources at each facility (staffing levels, etc.) to complement their health institution-based data.

2.12 Population Health Surveys Data

2.12.1 Survey Design

The MoHCDGEC, in collaboration with the health department of PO-RALG, shall be a key partner in the design of survey instruments and data collection protocols along with the National Bureau of Statistics or other implementing partners.

2.12.2. Survey Implementation

The health sector (MoHCDGEC and PO-RALG) shall provide survey data collectors and supervisors as needed in collaboration with the National Bureau of Statistics or other survey implementing partners.

2.13 Birth and Death from the Civil Registration and Vital Statistics System

2.13.1 Data Collection

- a. Data collection shall be coordinated with the MoHCDGEC, the Registration Insolvency Trusteeship Agency and PO-RALG systems.
- b. RITA data systems should be interoperable with existing systems at health facilities to avoid duplication of effort by health workers.

2.13.2 Data Quality

Health workers shall completely and correctly report births, deaths and cause of death. DQAs for birth and death registration shall be conducted in line with other health facility data. For community-based data, the council HMIS focal person and community health coordinators shall be responsible for conducting quarterly DQAs and uploading reports into DHIS.

2.13.3 Timeliness

Health workers shall report births, deaths and causes of death in the timeframe specified by RITA.

3. Data Analysis, Dissemination and Use

Background

Data analysis is essential for proper day-to-day management and longer-term planning in the health sector.¹³ Data use is the analysis, synthesis, interpretation, and review of data for evidence-based decision-making, planning and policy development.¹ Users of health information include those delivering care and those responsible for managing and planning health programmes both within the country (health, local government and finance ministries) and outside (development partners and technical support agencies).

Development of indicators and corresponding targets is a key ingredient of data use. Information needs for decision-making differ at each level, with the largest number of indicators required for decision-making at the facility and council levels and a smaller set at the national level. At the national level, there are a number of defined health indicator sets, including those attached to the five-year Health Sector Strategic Plan IV, those defined as part of the indicators for basket funds, and programme-specific indicators. At the council and facility levels, additional indicators have been defined by PO-RALG's health department. A recent set of facility-level indicators was also developed as part of performance-based financing. In addition, RHMTs, CHMTs, health centres and dispensaries are required to develop an annual health plan and budget informed by self-generated data. The facility plan includes health targets to be met throughout the year by implementing the budget. Facilities are expected to use data to determine if they meet these targets.

Additional analyses are needed to monitor the health status of Tanzanians and to prioritize resource allocation. Facility, council, regional and national level indicators that rely on facility data are subject to the limitations of that information, including incomplete reporting and the fact that those who do not access health care cannot be included in the data. Triangulating information from surveys, sentinel surveillance sites, and the Civil Registration and Vital Statistics system (once it is fully operational) is critical to truly understand the health care needs of Tanzanians.

Gaps

Numerous reviews have suggested that inadequate attention is given to data analysis, dissemination and use leading to lack of evidence-based decision-making and inappropriate planning of resources and policy making. There is minimal capacity on data analysis, interpretation, data dissemination and use that can be used to inform regional, council and facility performance (via feedback). Facilities, lacking computers for the most part, do not have access to their own data entered into DHIS.

This chapter provides guidance on:

- Data analysis
- Feedback and support
- Reporting and data use at all levels of the health system, i.e. community, council, regional and national levels

Guidelines

The MoHCDGEC shall develop and update the tool kit regularly to provide guidance on data analysis, dissemination and use at all levels of the health system.

3.1 Community-Level Data

- 3.1.1 Health workers at the community level and Community-based Health Programme coordinators shall perform basic data analysis of programme performance using data from monthly and quarterly reports to perform trend analysis, track performance and use findings for planning. Data on surveillance for the priority notifiable diseases, condition and events will be reported by the health workers at the community level to their nearby/respective health facilities **immediately** for timely response.

3.2 Facility-Level Data

Analysis

- 3.2.1 Facilities shall analysis service coverage, facility performance, disease incidence and top 10 diseases according to the tool kit. Facilities and councils may add additional indicators for issues of public health importance that they are following, given the varying nature of health issues affecting different geographical areas in the country.

- 3.2.2 In facilities with electronic health records or access to DHIS, the above analyses shall be conducted in the facility through the generation of automated reports.
- 3.2.3 In facilities with paper-based data collection systems, the council will support facilities to analyse and interpret their data. These facilities shall be able to request additional analyses from the district, as needed, for management.
- 3.2.4 Health facilities shall produce an annual health facility profile according to MoHCDGEC indicators and format.
- 3.2.5 Facilities shall use their analyses to plan and make decisions on service provision, investments and activities, as needed.

3.3 Council-Level Data

Analysis

- 3.3.1 Councils shall analysis service utilization and coverage, resource availability and use, disease incidence and prevalence, and top 10 diseases and facility comparisons according to the tool kit. Councils may add additional indicators for issues of public health importance that they are following, given the varying nature of health issues affecting different geographical areas in the country.

Feedback and Support to Facilities

- 3.3.2 The council shall provide facilities that do not have access to DHIS with a standardized output from DHIS as the needed information for facility analyses.
- 3.3.3 The council shall conduct supportive supervision of facilities, on a quarterly basis, to include a review of facility-level data and assistance to facilities to meet targets and implement their facility health plans. Visits must be documented and entered into DHIS.
- 3.3.4 The council shall calculate the population of the facility service area and provide this information to health facilities for their analyses, annually.
- 3.3.5 The district medical officer shall ensure that facilities have:
- List of facility-level indicators
 - Data analysis manual
 - Health facility planning guidelines and template

- 3.3.6 CHMT shall be responsible for motivating facilities to use their data.
- 3.3.7 CHMT shall set annual targets during the CCHP preparation process for each key indicator. Each facility in the council shall reflect these targets in their own plans.

Reporting

- 3.3.8 The district medical officer shall ensure production of quarterly council monitoring reports to be disseminated by the CHMT to health facilities, interested parties, and council health stakeholders.
- 3.3.9 Each council shall produce an annual performance report (district health profile) in the given format, submit it to the MoHCDGEC, and disseminate the final version to parties interested in health data, including district stakeholders, local government officials, and health facilities.
- 3.3.10 Prior to the release of reports, all analyses must be checked to ensure accuracy. Approval must also be given by the district medical officer and the regional M&E officer before release.

Data Use

- 3.3.11 Councils shall use data from the health information system to develop CCHPs. Health plans shall be based on interpretation of data from health facilities and the council.
- 3.3.12 CHMT management meetings shall include a review of key council level indicators and outputs from data analyses to determine whether the district is meeting goals for service delivery, coverage and resource use. This information shall be used for decision-making and course correction. Minutes shall be documented.

3.4 Regional Level Data

Analysis

- 3.4.1 Regions shall analysis service utilization and coverage, resource availability and use, disease incidence and prevalence, and top 10 diseases and district comparisons, according to the tool kit. Regions may add additional indicators for issues of public health importance that they are following, given the varying nature of health issues affecting different geographical areas in the country.

Feedback and Support to Councils

- 3.4.2 Regions shall provide quarterly feedback reports on the accuracy of analysis of council data to district/council level and all other stakeholders who are partners in health service management in the region.
- 3.4.3 Supportive supervision to the districts should include a review of council-level data analyses and assistance to the council to meet targets and better implement their CCHPs.
- 3.4.4 Data review meetings: The biannual data review meetings mandated by the DQA guidelines shall include a discussion of results from data analyses and how those results will be used to drive decision-making.
- 3.4.5 As an extension of the data review meetings, councils will meet with the regional M&E officer to receive guidance on preparation of the annual council health profile.
- 3.4.6 Regional M&E officers shall ensure that the regional health office has copies of:
 - Regional data analysis manual
 - Report templates of Regional Health Profiles
- 3.4.7 RHMTs shall be responsible for motivating councils and facilities to use their data.

Reporting

- 3.4.8 Regional M&E officers/regional HMIS focal person shall produce a quarterly monitoring report and disseminate it to councils and other regional stakeholders.
- 3.4.9 Regional M&E officers shall produce an annual performance report (regional health profile) in the defined format. The RHMT will submit it to the MoHCDGEC & PO-RALG's health department and disseminate the final version to parties interested in health data, including regional stakeholders, local government officials and councils.
- 3.4.10 Prior to releasing reports, all analyses must be checked by a second person on the RHMT to ensure accuracy. Approval must also be given by the RMO and the appropriate person in the MoHCDGEC M&E section.

Data Use Processes

- 3.4.11 Regions shall use data from DHIS to develop regional health plans annually.

- 3.4.12. RHMT meetings should include a review of indicators for the region and the councils under it on annual basis.

3.5 National Level—MoHCDGEC

3.5.1 Indicator Development

- a. The MoHCDGEC shall take the lead in developing facility, council and regional-level health indicators and national health indicators, in collaboration with PO-RALG, health programmes and relevant stakeholders.
- b. National health indicators shall be revised in conjunction with the development of the health sector strategic plan to ensure that they support key MoHCDGEC goals. Detailed definitions of indicators shall be provided in an indicator guide available on the web and in hard copy or printed for those without internet access.
- c. Targets for each indicator shall be set by the MoHCDGEC and programmed into DHIS on an annual basis. Regional, council, facility and community-level targets shall reflect the national targets.

3.5.2 Template Development

The MoHCDGEC and PO-RALG shall collaborate to develop annual report templates, data analysis manuals and design trainings at all levels.

Feedback and Supervision to Council and Regional Levels

3.5.3 Feedback on Data Analysis and Performance

The MoHCDGEC, in collaboration with PORALG, shall send feedback:

- a. Annually: via annual data review meetings for regions and councils
- b. Quarterly: via data review meetings
- c. On an ad-hoc basis: On any analyses or reports that have implications for regional or council performance

3.5.4 Supportive Supervision

The MoHCDGEC in collaboration with PO-RALG shall conduct annual supportive supervision in each zone. The supervision shall be conducted following existing supervision checklists and guidelines. Supportive supervision shall cover:

- a. Analysis of data: support and feedback on the quality, completeness, timeliness of reporting, and data analyses conducted at each level
- b. Use of data: support for using data analysis results for planning and

decision-making

- c. Data collection and reporting system-related issues (as described in Chapter 2)

National-Level Data Analysis

- 3.5.5 The Directorate of Policy and Planning of MoHCDGEC shalla.
Foster coordination and collaboration of stakeholders with interest in data analysis and use to avoid duplication and wastage of resources.
- b. Triangulate across data sources (MTUHA, population health survey, and demographic surveillance) to provide an accurate picture of the burden of disease in Tanzania and time trends.
 - c. Disaggregate analyses by age, gender, and location to identify vulnerable populations and areas that might require additional resources.
 - d. Compile data to calculate the national health indicators annually to determine progress toward targets.
 - e. Take the lead on defining needed analyses from individual patient data collected via electronic health records, either conducting the analyses themselves or contracting with organizations with the appropriate skills.
- 3.5.6 MoHCDGEC programmes shall be responsible for analysis of programme-specific health indicators.

National-Level Reporting

- 3.5.7 The Directorate of Policy and Planning of the MoHCDGEC shall conduct an annual analysis of health data to produce a national health performance profile and a national statistics and figures report, in coordination with national health programs
- 3.5.8 The Directorate of Policy and Planning should prepare performance reports for institutions under the ministry, including executive agencies and NHIF.
- 3.5.9 MoHCDGEC programs shall produce and submit to the Directorate of Policy and Planning a quarterly monitoring report covering health indicators not included in DHIS.
- 3.5.10 Each MoHCDGEC programme shall produce an annual performance report and submit it to the national level (MoHCDGEC, PO-RALG),

regional and council, and all other stakeholders.

- 3.5.11 Prior to releasing public reports containing routine health service data, all analyses must be reviewed by an accredited entity to ensure accuracy. Approval must also be given by the Director of Policy and Planning, the MoHCDGEC management team, and the permanent secretary.

Data Use

- 3.5.12 Presentation of a key indicator dashboard, the contents of which have been approved by the MoHCDGEC management team (including indicators from all routine health information systems), shall be a standard agenda item at monthly management meetings of MoHCDGEC directors. Additional indicators shall be presented and discussed with MoHCDGEC management, as necessary, such as after the release of new findings from routine, population-based surveys, surveillance, etc. Further, additional analyses and indicators should be reviewed based on the topics covered in the meetings.

3.5.13

- a. All departments and agencies shall use current, real data through approved Ministry of Health databases (e.g. DHIS2) to make all budgetary and programmatic decisions.
- b. When information is not available in an existing database, the respective department or agency shall work with the DPP to ensure that an approved database accurately captures current information required on a routine basis.

- 3.5.14 Basket fund indicators and results-based financing indicators shall be regularly reviewed annually at the basket fund meeting to determine continued funding levels.

- 3.5.15 Facilities will be designated to have a star rating between 0 and 5 stars based on a selected set of indicators defined by the department of quality assurance.

Dissemination

- 3.5.16 The Directorate of Policy and Planning of the MoHCDGEC shall upload all official regional, council and health facility profiles to the MoHCDGEC website, Tanzania National Health Observatory and the Tanzania HMIS web portal, and generate scorecards to disseminate the health.

- 3.5.17 The Directorate of Policy and Planning shall ensure that all reports are available electronically and in hard copy for those not able to easily access the internet.

3.6 National Level—PO-RALG

Indicators and Templates

- 3.6.1 The health department at PO-RALG shall collaborate with the MoHCDGEC to develop and update:
- a. National health indicators
 - b. Regional-level health indicators, which reflect the national indicators but are expanded to include indicators critical to regional-level planning
 - c. Council-level health indicators, which reflect the national indicators but are expanded to include indicators critical to council-level planning
 - d. Facility-level health indicators, with different indicators depending on the size of the facility
- 3.6.2 PO-RALG shall provide guidance to councils and regions on how to use their indicators to inform their CCHPs or regional health plans.
- 3.6.3 PO-RALG shall collaborate with the MoHCDGEC to develop facility, council and regional report templates and provide them to LGA facilities, councils and regions.

Reporting

- 3.6.4 PO-RALG shall ensure that regions and districts produce annual reports based on health indicators.

Feedback

- 3.6.5 PO-RALG shall provide feedback to health facilities under PO-RALG and interested parties based on financial and other management analyses.

3.7 Development Partners, Local and International Organizations

- 3.7.1 Health partners shall attend Monitoring and Evaluation TWG meetings to be informed of M&E issues of national interest and provide technical advice to the MoHCDGEC as required.
- 3.7.2 Health partners shall provide technical support on data analysis methods

at the program, council, regional and national level to meet international standards.

- 3.7.3 Health partners shall support national level MoHCDGEC staff & PORALG staff to develop and update data analysis and use guidelines.

4. Data Confidentiality and Security

Background

The concept of data privacy is about the collection, storage and use of personal information and considers whether data collected for one purpose can be used for another (secondary) purpose. Whether an individual has authorized particular uses of his/her personal information is a key determinant of establishing what information is considered private.¹⁴ Article 16 of the Constitution of the United Republic of Tanzania guarantees privacy to its citizens.¹⁵

The principles of confidentiality of personal health information have been established in previous policies and laws. For instance, the National Health Policy of 2003 maintains that “patient and client records are confidential information, and shall not be passed to unauthorized persons without prior written approval of the patient or client”.¹⁶ This is consistent with the Medical Council of Tanganyika’s Code of Ethics, the National Records and Archives Management policy, and the National Statistics Act. The National Statistics Act actually requires National Bureau of Statistics staff and contractors to take an oath not to disclose anything learned during their employment and considers individual survey responses to be confidential data.

Securing data storage is critical to safeguard confidential patient information. In addition, non-confidential information that is not in the public domain also needs to be protected both from unauthorized access and potential loss. The ICT unit at the MoHCDGEC is responsible for preventing unauthorized access to confidential data and ensuring that data storage, access, registration and deletion follow the “best security and management practices”.¹⁷ Data integrity, whether the data are truthful, is the desired result of data security. Data integrity can be threatened intentionally or unintentionally. Security measures can help prevent the former, but rigorous data verification and validation processes must be in place to catch the latter (covered in Chapter 3).

Gaps

Currently, most confidential health data are held in health facilities in paper-based registers where the risk of access by unauthorized individuals is relatively

low. However, Tanzania is quickly moving to a system of electronic health records. While there are potentially negative consequences to patients if their confidential health information is accessed in its current paper-based format, the risks are greater when all of their health information is available in an electronic system. Additional standards and practices around the confidentiality of patient data are critical. Currently, no specific law is in place to protect personal data in Tanzania, though there are various legislations in place to safeguard protected data.

This chapter gives guidance on health data

- Confidentiality
- Security
- Storage

Guidelines

4.1 Confidentiality

Policies

- 4.1.1 Confidential health information shall be defined as information that identifies an individual and relates to health information which comprises of (1) past, present or future health condition, (2) provision of health care to an individual, and/or (3) payment for health care.¹⁸ Examples of confidential health information include health records of individuals in either paper registers or electronic health records, or survey data that include both health information and identifiers.
- 4.1.2 Health data that are aggregated to the facility or community level shall not be considered confidential.
- 4.1.3 Confidential health data of an individual, once de-identified, shall no longer be considered confidential. This applies to all health records. De-identification requires at the very least that all of the following identifiers that designate an individual are removed: name, address, birthdate (year is okay), telephone or mobile number, e-mail address, national and employer ID number, national voter identification number, health insurance account number, driver's license number, vehicle license plate or serial number, finger or voice print, and photographs.

- 4.1.4 All identifiers, as in section 4.1.3 above, shall be treated as confidential data and can only be accessed by those authorized, as defined in Chapter 5.
- 4.1.5 Before de-identified data are made available, the MoHCDGEC shall consider whether combinations of variables can uniquely identify an individual. If removing the variables listed above in section 4.1.3 is not sufficient for de-identification, some strategies to combat this can be used. These could include recoding continuous variables, such as income, into categories and limiting geographic identifiers to areas with at least 100,000 residents.¹⁹
- 4.1.6 Disclosure of confidential information shall only be allowed in the following cases, or as the law requires:
- Reporting of births, deaths and cause of death to RITA
 - Notifiable disease reporting, outbreak investigations, and other public health surveillance
 - Patient care
 - Clinical supervision and M&E of programmes
 - To aid investigations of criminal cases
 - For auditing purposes
 - At the request/consent of respective individual
 - Request from National Identification Authority (NIDA)
- 4.1.7 All registers and other paper data collection forms that contain confidential health information shall be marked confidential. These shall not leave the health facility and cannot be photocopied or photographed except in the above cases.
- 4.1.8 At the community level, confidential health data shall only be handled by health workers at the community level, supervised by the health facility in-charge.
- 4.1.9 At the facility level, confidential health data shall only be handled by the following authorized users:
- Staff providing medical care to a patient
 - Staff entering data into either paper or electronic systems or providing quality control for data entry
 - Staff involved in billing

4.1.10 At the council or regional level, the authority to designate authorized users rests with the CHMT and RHMT. Confidential health data shall only be handled by the following authorized users who work at the council or regional level:

- Staff involved in responding to outbreaks
- Staff providing clinical supervision to facility health providers or otherwise involved in the quality improvement of clinical care
- Staff conducting DQAs to compare reporting forms to patient registers (paper-based system only)
- Staff conducting officially authorized operational research
- Staff involved in billing or health insurance reimbursements
- Other authorized users

4.1.11 At the national level, authority to designate authorized users within their own ministry rests with the permanent secretary on the advice of the director of the department who manages the system. If MoHCDGEC staff need to access PO-RALG data or vice versa, the permanent secretary of the staff's respective ministry shall recommend to the permanent secretary of the ministry that owns the system to grant access. Confidential health data shall only be handled by the following authorized Government of Tanzania users:

- MoHCDGEC staff involved in responding to outbreaks
- MoHCDGEC staff providing clinical supervision to facility health providers or otherwise involved in the quality improvement of clinical care
- MoHCDGEC staff conducting DQAs to compare reporting forms to patient registers (paper-based system only)
- MoHCDGEC and PO-RALG staff involved in managing electronic health records systems
- MoHCDGEC staff involved in analysis of electronic health records or survey data if identified data is critical to the analysis
- MoHCDGEC staff conducting officially authorized research
- MoHCDGEC and PO-RALG staff involved in billing or health insurance reimbursements
- Other MoHCDGEC or high-level government staff with permission from the permanent secretary
- Other authorized users

- 4.1.12 Authority to determine whether external partners can access confidential information rests with the permanent secretary. If data are transmitted to a partner, a data sharing agreement shall be required (see Chapter 5). Confidential health data shall only be handled by the following authorized users from local or international partners:
- Partners involved on the ground in responding to outbreaks
 - Partners providing clinical supervision to facility health providers or otherwise involved in the quality improvement of clinical care
 - Partners conducting DQAs to compare reporting forms to patient registers (paper-based system only)
 - Partners/researchers conducting research that has been approved and received ethical clearance from NIMR
 - Other authorized partners
- 4.1.13 All authorized users or handlers of confidential health information shall sign a non-disclosure agreement before accessing the data. Responsibility for ensuring non-disclosure agreements are signed depends on the level, but includes facility in-charge, village executive officer and ward executive officer (for community-based data), district executive director, district medical officer, regional medical officer, and ultimately the MoHCDGEC.
- 4.1.14 MoHCDGEC or PO-RALG staff or partners who disclose confidential data to unauthorized individuals shall face penalties according to applicable laws, including the National Statistics Act of 2015.
- 4.1.15 These standards shall apply to all health information collected in communities and at facilities, data from health research conducted in Tanzania, and data collected in MoHCDGEC co-sponsored surveys.
- 4.1.16 All information systems that interact in the health information exchange shall be designed so as to preserve confidentiality.

4.2 Data Security and Storage

- 4.2.1 Registers and reporting books containing confidential data collected at the community level shall be stored securely in the health workers' operational office space at the health facility. Digital data will be encrypted and stored on devices and applications requiring authentication.
- 4.2.2 Confidential data such as the health and social services client registry, electronic health records or employment data must be stored on an

authenticated secure server. Authentication should allow for role-based and need-to-use access, allowing users to access only the minimum set of data to which they are entitled.

- 4.2.3 Any facility or partner procuring an electronic health information system should conform to the integrated Health Facility electronic Management System (iHFeMS).
- 4.2.4 To enable high-quality patient care, within the health facility where the data is collected, patient identifiers can be stored with patient health information, in accordance with sections 4.2.1 and 4.2.2 above.
- 4.2.5 Individual identifying information shall be stored in the National Health Client Registry without individual identifiers.
- 4.2.6 All facility electronic health records shall be able to communicate with the National Health Client Registry in order to access health information about their patients from other facilities. Access to the National Health Client Registry shall be determined by the appropriate governing body.
- 4.2.7 Electronic data systems that do not contain confidential information (i.e. MTUHA) shall also be stored on a secure server. However, access to these systems should be widely available across the MoHCDGEC & PO-RALG health facilities, regional and local government authorities, and the general public (via the web portal). Access to each system will be granted by the part of the MoHCDGEC that is the custodian of the system.
- 4.2.8 Access to confidential data, whether electronic or on paper registers, must be logged by the health facility adhering to iHFeMS standards.
- 4.2.9 Electronic storage must be in-country or follow Government of Tanzania regulations.
- 4.2.10 All electronic systems shall be backed up, in line with MoHCDGEC guidelines.
- 4.2.11 Paper registers shall be stored securely and locked away when not in use. They shall be kept in locations that are safe from vermin, fire, flood/leaks, and mould. Access to paper registers by anyone outside of facility staff shall be documented in writing and kept at the facility.
- 4.2.12 The transmission of confidential data, whether paper-based or electronic, must be secured, and electronic transmission must be encrypted.

- 4.2.13 All individual health records, whether computer or paper-based, shall be retained for a minimum of an individual's lifetime plus 10 years. Paper-based registers shall be moved to storage and managed according to the Records and Archives Management Act, 2002.
- 4.2.14 Disposal of either paper-based registers, surveys, or electronic media storing confidential data must follow the policy of secure data disposal upon official authorization. Paper registers must be shredded and burned to ashes.
- 4.2.15 Data from health research conducted in Tanzania, and data collected in the MoHCDGEC & PO-RALG co-sponsored surveys, shall be stored and disposed of according to the Records and Archives Management Act, 2002.
- 4.2.16 All changes made to data collected as part of MTUHA or electronic health records must be officially logged at the level at which the change is made (in a paper log for paper register, electronically for electronic data).
- 4.2.17 Only MTUHA focal people are authorized to make changes to data when they detect an error and verify it with the data source.
- 4.2.18 The MoHCDGEC, in collaboration with PO-RALG, shall be responsible for coordinating training on data confidentiality and security for all regions and councils, which will be responsible for training facilities and communities.

5. Data Ownership and Sharing

Background

Access to health data is critical for decision-making, planning, and policy development.²⁰ As the health sector in Tanzania is made up of multiple ministries as well as other development partners, data sharing is critical for a well-coordinated health sector. Further, it reduces costs and duplication, since stakeholders who have access to government data will be less likely to invest in separate systems. Sharing data maximizes the use of data by making it available not only to stakeholders but also to researchers. Finally, sharing information on public health emergencies is mandated as part of the International Health Regulations, of which Tanzania is a signatory.

The guiding principles are to make data as open as possible while ensuring that the data shared are: (1) of high-quality and (2) do not violate the confidentiality of patients or survey participants.

Gaps

While the government of Tanzania has committed to making health data available, there are potential risks to sharing data, including breaching confidentiality of patients, misuse of data, and added burdens on MoHCDGEC staff.

This chapter give guidance on:

- Data ownership
- Classification of data sources
- Data-sharing agreements
- Data access to the public
- International reporting
- Data sharing between government agencies/ministries
- How to deal with the media

Guidelines

5.1 Data Ownership

- 5.1.1 The Government of Tanzania is the owner of all health records collected from health facilities or collected using government systems (i.e.

MTUHA). All health data collected outside of government systems shall follow Government of Tanzania guidelines.

- 5.1.2 Health data shall be shared with external partners as stipulated in the tool kit.

5.2 Classification of Data Sources

- 5.2.1 The MoHCDGEC will designate four separate classifications of data sources, depending on the potential for disclosure risk of the information:
- i. Authorized internal users only – only ministry officials or the owners of private facilities whose role requires them to have access to the data
 - ii. Limited access – can be made available to development partners, researchers or other health stakeholders (but requires a data sharing agreement)
 - iii. Registered users – available to individuals authenticated to access such data
 - iv. Publicly available – available without restrictions
- 5.2.2 Data that contain individually identifiable information shall not be shared and shall only be available to authorized users in the MoHCDGEC (or other government ministries such as PO-RALG and the NBS, as applicable).
- 5.2.3 Individuals can request their own personal health data from health facilities following existing procedures.
- 5.2.4 Development partners, researchers and other health stakeholders shall only be permitted to access de-identified datasets.
- 5.2.5 Individuals and organizations shall be required to complete an application to access data systems such as DHIS that contain real-time data aggregated to the health facility level. While there is no risk of disclosure of confidential information from aggregated data, the MoHCDGEC is responsible for ensuring that data released to the public are of high quality. Given that data uploaded to DHIS may not have gone through quality checks, this data should only be accessed by knowledgeable users who understand its limitations. Data in DHIS do not represent official statistics.

5.2.6 Cleaned, locked data sets from aggregated data (such as the health data portal) or limited individual-level datasets that have been de-identified and thoroughly reviewed to ensure that re-identification of individuals is not possible (ex: DHS) shall be made available to the public.

5.2.7 Data sources shall be classified as shown in the table below.

Data Source	Custodian	Access Level
National Health Client Registry	MoHCDGEC	Authorized internal users
Health survey data with identifiers	NBS	Authorized internal users
De-identified survey data	NBS	Publicly available
MTUHA data within DHIS: facility level	MoHCDGEC	Limited access
MTUHA data on the Health Data Portal	MoHCDGEC	Publicly available
Electronic health records with identifiers	MoHCDGEC and PO-RALG	Authorized internal users
Laboratory management information system	MoHCDGEC	Limited access
Electronic logistic management system	MoHCDGEC	Limited access
Integrated disease surveillance and response	MoHCDGEC	Limited Access/WHO
De-identified data from electronic health records	MoHCDGEC	Limited access
Human resources data including personnel records	MoHCDGEC	Authorized internal users
Aggregated human resources data	MoHCDGEC	Registered users
Vital statistics data – individual records	NBS/RITA/ MoHCDGEC/ PO-RALG	Authorized internal users
Vital statistics data – aggregated	NBS/RITA/ MoHCDGEC/ PO-RALG	Registered users/ international partners/ WHO
Official reports (health survey results, annual health statistical reports)	NBS/ MoHCDGEC/ Ministry of Finance	Publicly available

5.3 Data-Sharing Agreements

- 5.3.1 Applications to access health data that has been designated “Limited Access” shall be made by any development partners, stakeholders or researchers who would like to access the data. Applications shall be sent to the custodian of the data system (listed above). Applications must include all required information (see Appendix B for application template). Applicants must specify if they need one-time access, access for a specified period of time, or continual access.
- 5.3.2 Applications shall be reviewed by the custodian of the dataset and must be approved by the permanent secretary of the MoHCDGEC. In principle, applications shall be approved if use of the data will promote the public good and the applicant demonstrates that they will protect the integrity of the data.
- 5.3.3 Applications shall be processed in a timely manner, with no more than one month elapsing between the application and a response.
- 5.3.4. Applicants shall sign a data-sharing agreement with the custodian of the data source prior to receiving any data. Data-sharing agreements will vary in complexity depending on the type of data shared and should include:
- Aim/purpose of the goal of data sharing
 - A declaration of commitment that data should only be used for the sole purpose indicated in the application
 - Specific data shared
 - Any legal requirements around sharing the data
 - Governance: how the agreement will be enforced, how it can be terminated
 - Access: who specifically can access the data
 - Data quality: the MoHCDGEC must provide information on the quality of the data being shared to ensure that user understands any limitations of the data
 - Data Management: how the security of the data will be ensured
 - Costs
- 5.3.5 Development partners should incorporate data-sharing agreements as part of their MOU with the MoHCDGEC to ensure that they receive the data needed to regularly monitor their projects.
- 5.3.6 While in principle, data should be freely shared, some data requests

will require significant work on the part of the data custodian, which may include the creation of meta-data dictionaries, review of the data to ensure that participants cannot be re-identified, and translation of data into English, if required. In that case, provision of the data may take longer than specified in these guidelines. Further, if the time needed to appropriately clean the data would take key staff away from higher priorities, the MoHCDGEC may decline to share the requested data.

- 5.3.7 Partners granted access to DHIS or other MoHCDGEC databases containing aggregated data after the formal request process shall be provided temporary authentication to access specific required routine health information. If requesting data for a specific location (region, council, facility), an accompanying letter of support must be received from the regional medical officer, district medical officer or facility in-charge.
- 5.3.8 Partners granted access to individual-level data shall receive data in a manner consistent with the principles of secure data storage and transmission.

5.4 Data Access to Public

- 5.4.1 To ensure equity of access of health data to the public, the MoHCDGEC shall make information on key national health indicators available to the public through providing access to data sets on the MoHCDGEC website as well as by publishing reports that are made available both on the MoHCDGEC website and in hard copy. Data available on the internet will be readily accessible. The MoHCDGEC should prioritize reports and other data products most requested by stakeholders to prevent having to respond to multiple requests individually.
- 5.4.2 The MoHCDGEC shall ensure that data made available to the public through the MoHCDGEC website and web portal meet the needs of its stakeholders. Data should be timely, available within one quarter of their entry into DHIS, and shall not be cited as official statistics, as they are considered 'preliminary'. Final statistics are published in annual health statistical publications. Further, the contents of the portal should be reviewed with stakeholders as the need arises.
- 5.4.3 The MoHCDGEC shall release the following official reports, to be considered official statistics, each year:

- Health Sector Performance Profile report
- Statistical tables and figures
- Health in Figures – a pocket book
- National Specialized and Referral Hospital Annual Performance Report
- Facility, council and regional health profiles
- Vertical program reports
- Vital statistics report

- 5.4.4 All official reports, in order to be considered official MoHCDGEC data, shall be approved by the permanent secretary of the MoHCDGEC.
- 5.4.5 The MoHCDGEC/NBS shall release reports providing summaries of the results of health surveys within specified time frame, as well as make available to the public anonymous datasets and metadata.
- 5.4.6 Any immediate and specific requests for health information, other than in the formats specified above, shall be made directly to the permanent secretary of the MoHCDGEC.
- 5.4.7 To be considered official, all health information prepared by vertical programmes shall be approved by the permanent secretary.
- 5.4.8 All health information to be shared as official health statistics of the Government of Tanzania must be approved by the permanent secretary.
- 5.4.9 All data available in accordance with these guidelines shall not be used in contravention to any government directives or any law of the country.

5.5 International Reporting

- 5.5.1 As a signatory of the International Health Regulations, Tanzania is mandated to report to WHO all events that could potentially constitute a public health emergency of international concern, such as smallpox, SARS, poliomyelitis due to wild-type polio virus, and new types of human influenza. Other diseases or events may be reportable if they meet at least two of the following criteria:²¹
- Serious public health impact
 - Unusual or unexpected health outcomes
 - Significant risk of international spread
 - Significant risk of international travel or trade restrictions
- 5.5.2 Tanzania shall report aggregated mortality data (by sex, age and cause) and morbidity data to WHO annually.

5.6 Data Sharing Between Government of Tanzania Agencies/ Ministries

- 5.6.1 Health care workers at facilities shall report births, deaths and causes of death regularly to RITA through the Civil Registration and Vital Statistics system.
- 5.6.2 RITA shall work with the MoHCDGEC to ensure interoperability of vital statistics data of interest (births, deaths and cause-of-death data) with existing MoHCDGEC systems.
- 5.6.3 Data from electronic health records systems managed by PO-RALG shall be interoperable with DHIS to ensure the MoHCDGEC has access to key indicators without adding extra burden to front-line health workers.
- 5.6.4 Designated MoHCDGEC officials shall have access to the data from any other electronic health records systems operating in health facilities.

5.7 Media

- 5.7.1 The permanent secretary of the MoHCDGEC shall be the designated entity to provide official health statistics to the media, as requested.

6. Health Information System Coordination

Background

The Tanzanian health sector is committed to creating one coordinated health information system, rather than multiple and fragmented systems. However, the complexity of the health care system can make it difficult to coordinate systems. Major stakeholders in the health information sector include the MoHCDGEC, PO-RALG, NBS, RITA, development partners, and private and faith-based health facilities, all with their own priorities.

The MoHCDGEC is responsible for monitoring the health status of Tanzanians as well as health services within the country.²² Within the MoHCDGEC, overall responsibility for M&E and data validation falls under the Directorate of Policy and Planning. Outside the MoHCDGEC, the NBS has a mandate to oversee all government statistics and therefore has a key role to play in the analysis and dissemination of health information.

Population data surveys, census and vital statistics are the major sources of information on the health status of the population. Surveys can also provide insight into health delivery performance. Health surveys and the census are led by the NBS in collaboration with the MoHCDGEC. Vital statistics data come from the civil registration system, which is governed by the RITA.

Gaps

Systemic coordination is required for health institution–based data and population health data, of which the MoHCDGEC is one of the main consumers.

This chapter summarizes the MoHCDGEC roles in the following areas:

- Health institution–based data
- Population-based data
- Civil Registration and Vital Statistics
- Sentinel surveillance
- Community-level data

Guidelines

6.1 Health institution-based data—Responsibilities of the MoHCDGEC

- 6.1.1 Develop, manage and oversee MTUHA and other information systems components with input from other health programmes, including:
 - Data collection procedures and tools
 - Data quality assurance and standards
 - Data management
 - Standards for data analysis and use at all levels
 - Data sharing with stakeholders
 - Protection of patient data
- 6.1.2 Coordinate closely with PO-RALG and health programmes on all aspects of data collection, quality assurance and use.
- 6.1.3 Coordinate with health training institutions to develop pre-service training on health information systems including data collection, quality assurance, analysis and use.
- 6.1.4 Develop, coordinate, and conduct, as needed, in-service training on MTUHA and electronic health record data collection, data quality assurance, data analysis, and data use at the facility, council and regional levels, in close coordination with PO-RALG.
- 6.1.5 Develop standards for individual-level data analyses across individual programme areas, as electronic health records become more widely available.
- 6.1.6 Oversee all data from health institutions and agencies such as the national laboratory, and national referral hospitals, RRHs, TFDA, NHIF, TFNC, NIMR, MSD and Government Chemist Laboratory Authority.
- 6.1.7 Work with the National Health Insurance Fund to develop a collaborative mechanism for sharing information.
- 6.1.8 Work with PO-RALG to produce reports on shared indicators.
- 6.1.9 Work with PO-RALG to ensure that information technology support (for DHIS, GoT HOMIS, etc.) is well-linked and that there is open communication among all ICT departments.
- 6.1.10 Reports, profiles and other analyses developed by the MoHCDGEC, and shared internally, shall also be shared with PO-RALG in a timely manner, and vice versa, to facilitate decision-making at both agencies.
- 6.1.11 Validation of all official results that are produced via surveys, routine

data collection and surveillance, by any stakeholder in the country, shall be verified and officially approved by the MoHCDGEC.

- 6.1.12 All electronic health record systems in Tanzania shall be interoperable, and part of the Health Information Exchange. These include: the human resources for health information system, lab management information system, logistics management information system, Epicor (financial data), the Health Facility Registry (which provides the master facility list), the Client Registry and Terminology Services, and Administrative Area Registry.²³ Interoperability of information systems and data exchange and coding at the facility level shall be operationalized as per iHFeMS standards.²⁴
- 6.1.13 The data systems of MoHCDGEC programmes that do not either deliver health services or operate through health facilities or health workers at the community level such as the Food and Drug Authority, food safety, port health, etc. shall not be required to be interoperable with the health information exchange, but they shall provide reports to the MoHCDGEC using an agreed format on a quarterly basis.
- 6.1.14 The permanent secretary of the MoHCDGEC is the executive sponsor of the iHFeMS. All electronic management information systems at the facility level shall be implemented by the iHFeMS implementation team at the facility level, with support from the National Electronic Health Steering Committee.

6.2 Health Institution–Based Data—Responsibilities of Faith-based and Private Health Care Organizations

- 6.2.1 All private and faith-based health facilities in the country shall be required to collect and report routine data to the council. In the case that they institute an electronic medical records system, it should be able to export data to DHIS (and the cost should be borne by the group developing the software). Only facilities that report MTUHA data to the council can be recognized as functional by the MoHCDGEC.
- 6.2.2 The Christian Social Services Commission (CSSC), the National Muslim Council of Tanzania (BAKWATA), and the Association of Private Health Facilities in Tanzania (APHFTA), under coordination of the MoHCDGEC, are required to supervise their health facilities to ensure that complete and high-quality data are collected. Since councils receive routine

reports from FBO and private health facilities, they shall provide routine feedback to these facilities (i.e. facility comparison analysis).

- 6.2.3 Private health facilities or their associations will ensure availability of MTUHA tools for data collection at the facility.
- 6.2.4 Private health facilities shall follow the MoH guidelines on data confidentiality and security (see Chapter 5).
- 6.2.5 All private health facilities shall be included in any routine MTUHA trainings conducted by the MoHCDGEC or PO-RALG.
- 6.2.6 AFHPTA, CSSC and BAKWATA shall all be represented on the ICT and M&E TWG.

6.3 Health Institution–Based Data—Development Partners and Other Non-Governmental Organizations

- 6.3.1 Development partners shall fund and provide technical support for a central, integrated health information system rather than supporting multiple, fragmented, vertical data systems at all levels of the health system.
- 6.3.2 Funding for M&E systems should be incorporated into large grants and geared toward improving MoHCDGEC systems in a sustainable, integrated fashion.
- 6.3.3 Development partners shall be granted access to information necessary to monitor their programmes according to a data-sharing agreement (see Chapter 5).
- 6.3.4 Development partners and other partner organizations shall be represented on and actively participate in the ICT and M&E TWG and will be able to provide M&E-related guidance and technical support to the health sector through this mechanism.
- 6.3.5 Development partners and other partner organizations shall collaborate with the MoHCDGEC to jointly manage implementing partners working to develop an integrated health information system.
- 6.3.6 Development partners and other partner organizations shall collaborate with the MoHCDGEC to jointly monitor progress on a central, integrated health information system.

6.4 Population Health Surveys—Roles and Responsibilities

- 6.4.1 NBS shall work closely with the MoHCDGEC to plan, implement, analyse and disseminate surveys and the data they generate. Specific activities done in collaboration include: developing questionnaires, training interviewers, gathering data, supervising field operations, analysing data, writing reports, and disseminating survey results.
- 6.4.2 The NBS shall form a task force to implement each survey. A member of the Monitoring and Evaluation Section of the MoHCDGEC shall chair survey task forces for population health surveys. Representatives from MoHCDGEC health programmes shall also be represented on these task forces, as relevant.

6.5 Civil Registration and Vital Statistics—Roles and Responsibilities

- 6.5.1 The MoHCDGEC shall work with RITA to ensure that registration of births and deaths is implemented as per the Civil Registration and Vital Statistics strategy.
- 6.5.2 RITA shall ensure any birth and death reporting tools and systems are available to health facilities and wards.
- 6.5.3 The MoHCDGEC, as a key partner in the Civil Registration and Vital Statistics system, shall:
- Ensure that some health facilities are designated as registration centres, as stipulated in the Civil Registration and Vital Statistics Strategy
 - Facilitate the use of MoHCDGEC and PO-RALG infrastructure and health facility staff to strengthen efficiency of the registration of birth and death events
 - Review existing health facilities' guidelines to integrate proposed added roles of health personnel toward birth and death registration
 - Collaborate with PO-RALG to issue directives to the CHMT, clarifying added responsibilities for health workers and mechanisms through which these shall be monitored by local government
- 6.5.4 To improve the quality of vital statistics data, the MoHCDGEC shall:
- Ensure that the reporting of deaths and their causes adheres to the latest International Classification of Diseases (ICD) standards
 - Collaborate with RITA to review existing tools and reinforce birth and death registration within the health facilities

- Work with RITA and PO-RALG to develop the requisite skills within designated health facilities
- Collaborate with the human resources division and training institutions to integrate the registration of both hospital and community births and deaths and ICD coding of causes of deaths into training school curricula for health cadres

6.5.5 Staff from the MoHCDGEC, NBS, and RITA shall collaborate to analyse mortality and fertility data on a regular basis.

6.6 Sentinel Surveillance—Roles and Responsibilities

6.6.1 The MoHCDGEC shall coordinate data collection and analysis tools and methods across demographic surveillance sites in collaboration with demographic surveillance site operators.

6.6.2 The MoHCDGEC shall help solicit funding and budget for demographic surveillance sites regardless of whether they are run by the government or a non-governmental organization.

6.6.3 The MoHCDGEC shall coordinate the analysis and dissemination of all demographic surveillance data among core stakeholders (demographic surveillance site operators, NBS) on an annual basis.

6.6.4 Demographic surveillance site operators shall manage individual demographic surveillance sites, including hiring personnel, managing the budget, and collecting, managing, analysing, and reporting data.

6.6.5 Demographic surveillance site operators shall support the MoHCDGEC in data analysis and report writing using population-based data and in using population-based data to adjust health institution-based data.

6.6.6 Qualified institutions shall conduct operations research on health.

6.7 Community-Level Participation

6.7.1 Health data for the community-based health programme will be collected by health workers at the community level, community-based health programme coordinators, and at community health worker training institutes.

6.7.2 Existing data collection tools will be used (including MTUHA Book Number 3, the corresponding tally sheet and monthly summary form, and the eIDSR supervisor's register).

6.7.3 Health workers at the community level shall use paper-based data

collection tools until digital data collection tools are available, in which case data collection at the community level will be done in line with the MoHCDGEC's e-Health strategy.

- 6.7.4 CHMT technical committee members shall support health workers at the community level on M&E efforts.
- 6.7.5 Health workers at the community level shall also support the collection of survey data.
- 6.7.6 Health workers at the community level shall be supported by the existing public health facility within their catchment area.

7. Human and Financial Resources

Background

Health information systems are critical to monitoring the goals of the health sector as well as for effective routine management of the health system at all levels. However, functioning health information systems require a significant investment of resources in personnel, financing, ICT and other supplies.

The right combination of skilled personnel is a critical component at all levels. At the national level, skilled epidemiologists, statisticians, and demographers are needed to oversee data quality and standards for collection, and to ensure the appropriate analysis and utilization of information. At lower levels, health information staff need to have the capacity to conduct data collection, reporting, and analysis. Improvements to health information systems require attention to be given to the training, deployment, remuneration, and career development of human resources at all levels.

Statistics are needed to help drive the outcomes that policies are designed to generate. Regular and adequate budgeting for health information systems is a requirement for the sustainability of producing national statistics. Investment in statistical capacity will pay for itself many times over by improving the efficiency with which the government allocates resources to health information systems.

Gaps

The shortage of appropriate personnel dealing with the health information system allocated at all health systems levels is a major gap to improving the national health information system. A lack of sustainable financial resources allocated to health information at all levels of the health system undermines the quality of data collected, which leads to lower demand and hence fewer resources, i.e. a vicious cycle. Finally, there are not sufficient ICT resources in place to facilitate the Government of Tanzania's stated plans to introduce electronic health records at all facilities.

This chapter provides guidance on resources required to support activities described in these guidelines, specifically:

- Human resources
- Financial resources
- ICT requirements and infrastructure

Guidelines

7.1 Human Resources

To be fully successful, health information system functions need to be carried out at all levels of health care delivery, from the national to the community level. The following section outlines the key responsibilities of various levels under which M&E functions reside.

7.1.1 Central Level

At the central level, the MoHCDGEC and PO-RALG shall have sufficient staff with an appropriate skill mix to manage the roles and responsibilities of the section.

7.1.2 Regional Level

Regions shall have a M&E officer/HMIS focal person dedicated as co-opted members of the RHMT and will liaise with the MoHCDGEC/PO-RALG on M&E of data.

7.1.3 Council Level

Councils shall have a M&E officer/HMIS focal person as a co-opted member of the CHMT and will liaise with the MoHCDGEC/PO-RALG on monitoring of data.

7.1.4 National, Zonal, Specialized, Regional Referral, and Council Hospitals:

- National, zonal, specialized and regional referral hospitals shall have a M&E officer who reports to the MoHCDGEC
- Council Hospitals shall have a M&E officer who reports to PO-RALG through the district executive director
- All aforementioned hospitals shall have a well-equipped and staffed medical records department that operates 24 hours per day, responsible for collecting and storing individual patient information
- Hospitals shall have at least two staff trained in data analysis, dissemination and use

7.1.5 Health Centres

Health centres shall have medical recorders and a data analyst to compile facility data and submit it to the council level. Each health centre

shall have at least two health care providers trained in data analysis, dissemination, and use.

7.1.6 Dispensaries

- Heads of a facility and section heads shall be responsible for their facility's data collection and simple analysis. The head of a facility shall forward routine data to the HMIS office at the council level. High utilization dispensaries may also employ an assistant medical recorder.
- Dispensaries shall have at least two health care providers trained in data analysis, dissemination and use.

7.1.7 iHFeMS implementation

- Each health facility shall have an iHFeMS implementation team assigned when migrating from a paper-based to electronic information system, per iHFeMS standards.

7.1.8 Community Level

Health workers at the community level shall be responsible for maintaining community MTUHA registers and reporting to the supervising health facility.

7.2 Financial Resources

7.2.1 As recommended by WHO, 10 percent of the national health budget should be allocated to M&E activities.

7.2.2 All donor-funded projects should budget at least 10 percent of funds toward health information system costs and improvement, including M&E. These funds should be targeted not just at vertical systems but also at strengthening the entire health information system.

7.2.3 Financing for health information systems shall come from government budgets, multilateral funds, bilateral donors, and other sources. The investments shall cover:

- Data collection: collection tools, preparations (paper & electronics), and dissemination
- Data Quality Assessment: DQA guidelines, tools, training, assessment, and reporting
- Data analysis and use: strategies, workshops, software, capacity building
- Data dissemination: writing reports, policy briefs, press releases,

printing of reports, hosting reports on the MoHCDGEC website, and updating DHIS software

7.3 ICT resources

Computers

- 7.3.1 Dispensaries and health centres shall each have sufficient computers to implement electronic health records per iHFeMS standards in the facility.
- 7.3.2 Hospitals shall have at least one computer per department to implement electronic health records per iHFeMS standards.
- 7.3.3 Councils shall have sufficient computers for the sole use of M&E activities.
- 7.3.4 Regions shall have sufficient computers for the sole use of M&E activities.
- 7.3.5 All M&E staff in the MoHCDGEC/PO-RALG shall have a computer to manage data.
- 7.3.6 Funding shall be budgeted for computer maintenance, service, and replacement at all levels of the health system.

Software

- 7.3.7 All computers used for health information system data should be equipped with necessary applications and programmes, virus protection software, and protected behind a firewall. At the facility level, all software used shall be compliant with iHFeMS standards.
- 7.3.8 Computers at the council, regional and national level shall all have basic data analysis software such as Microsoft Excel or Epi-info.
- 7.3.9 Computers used by staff tasked with analysing individual-level data (electronic health records, survey data) shall be equipped with data analysis software such as STATA, SAS, SPSS, or R.
- 7.3.10 All computers with personal health information shall be password-protected.

Internet

- 7.3.11 All facilities, councils, regions, and national ministries shall have access to the internet to be able to enter data and access it in web-based systems.

- 7.3.12 All software applications used for data entry shall have the option to enter data in offline mode.

7.4 Infrastructure

- 7.4.1 Central, regional, council and individual facility-levels shall provide office space and equipment, including a fully equipped iHFeMS standards-compliant computer space, for medical records, relevant ICT infrastructure, and storage facilities for paper-based data.

Appendix A: Table 1—Summary of Institutional-Based Data Sources in Tanzania

Component	Responsible Organization	Reporting Structure	Short Description	Frequency of Data Collection	Methods	Report to Monitoring and Evaluation Section
Health Institution–Based Data: Administrative Records						
National Health Accounts	MoHCDGEC—Directorate of Policy and Planning	National level special study	Gathers financial data from all sources to understand how resources are mobilized/ managed for health systems	Every 2 years	Survey of public and private finance sectors	Not officially, but data are available
Epicor (financial data)	PO-RALG/ MoHCDGEC	Health facility to council, council to national via Epicor	Routine financial data and accounting system	Continuous	Separate electronic system	No
Health Facility Registry (HFR)	MoHCDGEC—Directorate of Curative Services & Directorate of Policy and Planning	District level to national level	Gathers health facility administrative data, services and location	Continuous	Paper and electronic system	Yes
Human Resource for Health Information System	MoHCDGEC—Directorate of Human Resource Development	HRHIS —Facilities report to councils, which report to regional, and national report to regional level THIS – Health Training Institute reports directly to national level	<i>Human Resource for Health Information System (HRHIS)</i> —Tracks all personnel in the MoHCDGEC system individually <i>Human Resource Training Information System (THIS)</i> – provides information on all health personnel trained by the Health Training Institute	Continuous	HRHIS and THIS computer systems	DHIS extract some information from HRHIS

Component	Responsible Organization	Reporting Structure	Short Description	Frequency of Data Collection	Methods	Report to Monitoring and Evaluation Section
Health Institution–Based Data: Service Records						
Laboratory Management Information System (LMIS)	MoHCDGEC— Directorate of Curative Services	Labs (all 4 levels—basic, I, II, III, IV) report to councils	System captures information on diagnostic screenings done at each level	Routinely	Separate electronic data collection system	There is a plan to make this interoperable with DHIS
Electronic Logistic Management Information System (eLMIS)	Medical Store Department (MSD)	Facilities report to councils using reporting and request forms. Councils report to MSD through eLMIS	Manages distribution of pharmaceuticals in the country. It facilitates the collection, organization, and management of logistics data. It provides accurate real-time data on commodity transactions from central distribution to health facilities	Continuous	Separate electronic data collection system	Will interface with DHIS
Health Institution–Based Data: Disease Records						
MTUHA—Community Data	MoHCDGEC— Directorate of Policy and Planning	Health facility staff aggregate data from CHWs and fill in community register. Report summary data to council, which enters into DHIS	Data are based on outreach to communities assigned to facility. Collected information includes population, deaths, births, etc.	Routinely	Combined paper and electronic system (DHIS)	MTUHA is directly coordinated by M&E section

Component	Responsible Organization	Reporting Structure	Short Description	Frequency of Data Collection	Methods	Report to Monitoring and Evaluation Section
MTUHA—Facility Data	MoHCDGEC—Directorate of Policy and Planning	Health facility staff fill paper registers Report summary. data to council, which enters into DHIS	Includes service data from outpatient, admissions data, ante-natal care, labour and delivery, child health, family planning, etc. There are also registers on medicines and supplies and human resources	Routinely	Combined paper and electronic system (DHIS)	Yes—via DHIS
Vertical disease surveillance programmes	Health programmes—Directorate of Preventive Services	Coordinated by M&E officers of respective vertical health programmes	Separate systems include: <ul style="list-style-type: none"> • HIV/AIDS • Tuberculosis and leprosy • Malaria • Immunization and vaccine development • NCDs TB and HIV systems have the capacity to follow individual patients over time	Routinely	Separate electronic systems	Malaria and HIV report through DHIS. Tuberculosis and Leprosy reports through etl.moh.go.tz
Integrated Disease Surveillance and Response (IDSR)	Epidemiology Section—Directorate of Preventive Services	Facilities use mobile phones (eIDSR) to report to higher levels; also report via MTUHA	Reportable disease surveillance system, mandated by international law	Immediately, weekly or monthly, depending on the disease	MTUHA Book 5, eIDSR, DHIS	Yes—integrated with DHIS

Appendix A: Table 2—Summary of Population-Based Data Sources in Tanzania

Component	Implementing Organization	Short Description (Key Data Collected/Data Use)	Frequency of Implementation	Related Deliverables	Report to Monitoring and Evaluation Section
Population-Based Data: Census					
Census and population projections	NBS	Census data and population projections are used as the denominator for many health indicators. The census also provides national figures on fertility and mortality levels	Every 10 years (14 years passed between 1998 and 2012 census)	Various reports	No
Population-Based Data: Surveys					
Household budget survey	NBS and Ministry of Labour	Not a health-specific survey, but collects information on education, economic status, and health status, as well as expenditures	Every 3 years	Survey report	No
National Panel Survey	NBS	Health modules are included in the economic survey on service utilization and expenditures	Every 2 years		No
Tanzania Demographic and Health Survey (TDHS)	NBS with MoHCDGEC and Macro International	International survey that collects data on household population and characteristics, fertility, infant and child mortality, maternal and child care, adult and maternal mortality among other topics	Approximately every 5 years since 1991–92	Data available on DHS website; report	No

Component	Implementing Organization	Short Description (Key Data Collected/Data Use)	Frequency of Implementation	Related Deliverables	Report to Monitoring and Evaluation Section
Tanzania Malaria and HIV/AIDS Indicator Survey (THMIS)	NBS with MoHCDGEC	Population survey specifically targeting information on HIV and malaria including: <ul style="list-style-type: none"> - Knowledge and behaviour regarding HIV and AIDS and malaria; - HIV prevalence; - Malaria in children 	Approximately every 4 years since 2003–04	HIV and Malaria Indicator Report	No
STEPS Survey		Population survey focusing on the prevalence of non-communicable disease risk factors as well as diabetes and hypertension	2011	STEPS report	No
Population-Based Data: Civil Registration and Vital Statistics					
Health demographic Surveillance System (HDSS)	Sites currently run by NIMR and IHI Coordinated by the Directorate of Policy and Planning	DSS sites provide high-quality, detailed data on mortality and cause of death for those communities. Funding is at risk for many sites	Continuous		Yes—coordinated by Monitoring and Evaluation Section
Civil Registration and Vital Statistics	Registration, Insolvency and Trusteeship Agency	Information on births and deaths (including cause of death) are collected at the facility and the community*	Continuous		It is supposed to feed into DHIS. Under development
Village Registration System	Prime minister's office -Hamlet chairperson reports to village executive officer	This system contains information about village residents and is updated as births or deaths occur	Continuous		No

Component	Implementing Organization	Short Description (Key Data Collected/Data Use)	Frequency of Implementation	Related Deliverables	Report to Monitoring and Evaluation Section
Tanzania Service Provision Assessment (TSPA)**	NBS, with MoHCDGEC	Nationally representative sample of facilities (public, private and faith based) to measure general performance of facilities that offer maternal, child, and reproductive health services as well as services for specific infectious diseases including sexually transmitted diseases, HIV/AIDS, and tuberculosis	2006 and 2014	Survey report	No
Service Availability and Readiness Assessment (SARA)	Ifakara Health Institute (implementation), Directorate of Policy and Planning (coordination)	Nationally representative sample of facilities to monitor health care delivery capability across 19 health areas (e.g. family planning, HIV testing, etc.)	2012	Survey report	Yes

*The Civil Registration and Vital Statistics system is not fully operational and currently captures a very low percentage of births and only facility-based deaths.

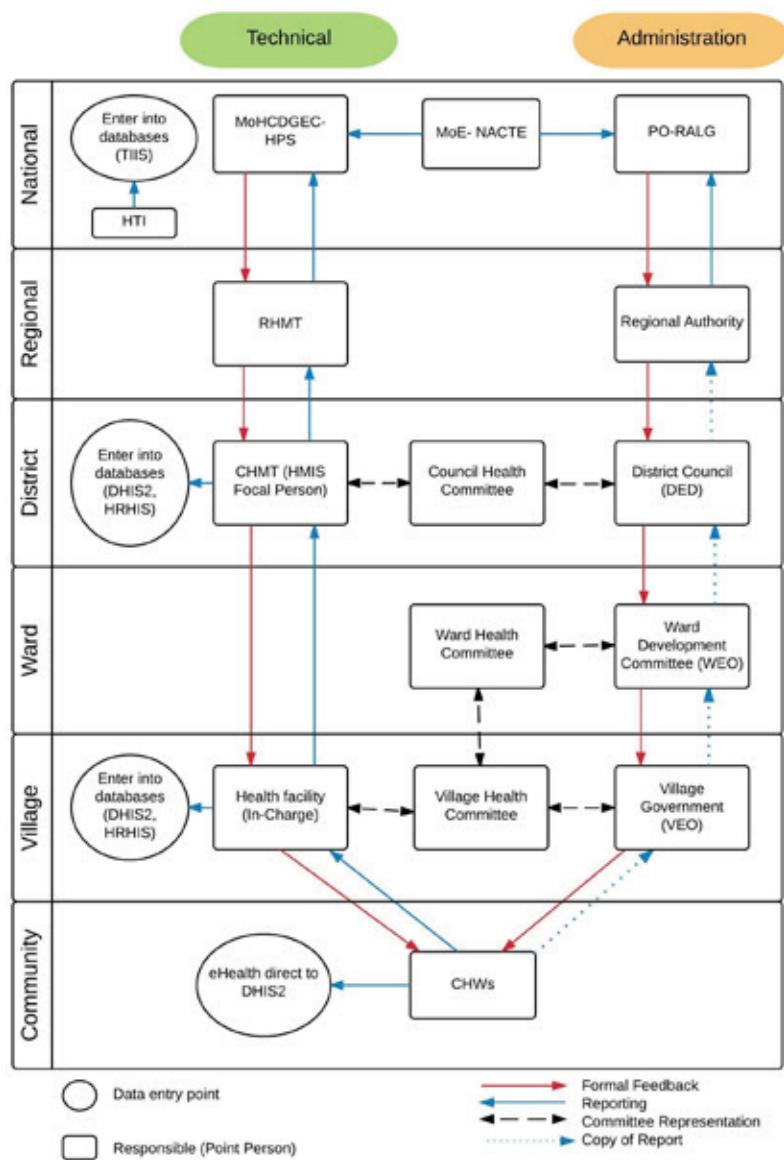
**Master facility list will replace SAM (not included) and TSPA. This will be administered by the Monitoring and Evaluation Section of the MoHCDGEC.

Appendix B: Application for Access to Data

Name of individual requesting for data		Date of request	
Email		Telephone	
Institutional affiliation of intended users			
Request made to (Department/Unit Name):			
Purpose of request			
Intended use			
Data required: refer to specific reporting formats and data elements			
Geographic coverage	<input type="checkbox"/> National <input type="checkbox"/> Selected Regions <input type="checkbox"/> Selected districts _____ <input type="checkbox"/> Selected health facilities _____		
Health programme	<input type="checkbox"/> All programmes <input type="checkbox"/> Specific programmes		
Format of data requested	<input type="checkbox"/> Individual data <input type="checkbox"/> Aggregated data		
Type of request	<input type="checkbox"/> One time <input type="checkbox"/> Continuous access <input type="checkbox"/> Time-bound _____	From:	To:
Review by Department/Unit that keeps custody of the data			
Request reviewed by	Name:	Position:	Department:
Action taken	<input type="checkbox"/> Recommends final approval by the Permanent Secretary <input type="checkbox"/> More details required _____ <input type="checkbox"/> Rejected	Signature:	Date:
Approval by the Permanent Secretary			
Final decision	<input type="checkbox"/> Approved <input type="checkbox"/> More details required <input type="checkbox"/> Rejected	Signature:	Date:

Adapted from Ministry of Health, Rwanda. Sharing and Confidentiality Policy for Aggregate Data in the Health Sector DRAFT, 2012

Appendix C: Community-Level Health Data Flow Diagram



Source: The United Republic of Tanzania MoHCDGEC, Community Development, Gender, Elderly and Children. National Community-Based Health Programme Implementation Design. 2017

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