THE UNITED REPUBLIC OF TANZANIA

NATIONAL AUDIT OFFICE

PERFORMANCE AUDIT ON THE MANAGEMENT OF HEALTHCARE WASTE

MINISTRY OF HEALTH AND SOCIAL WELFARE

A REPORT OF THE CONTROLLER AND AUDITOR GENERAL OF THE UNITED REPUBLIC OF TANZANIA

MARCH 2014

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NATIONAL AUDIT OFFICE

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PREFACE

The Public Audit Act No. 11 of 2008, Section 28 authorizes the Controller and Auditor General to carry out Performance Audit (Value-for-Money Audit) for the purposes of establishing the economy, efficiency and effectiveness of any expenditure or use of resources in the MDAs, LGAs and Public Authorities and other Bodies which involves enquiring, examining, investigating and reporting, as deemed necessary under the circumstances.

I have the honour to submit to His Excellency the President of the United Republic of Tanzania, Dr. Jakaya Mrisho Kikwete and through him to Parliament the Performance Audit report on the Management of Healthcare Waste in Tanzania.

The report contains conclusions and recommendations directed to the Ministry of Health and Social Welfare (MoHSW) and the Prime Minister's Office – Regional Administration and Local Government (PMO-RALG) forcusing on addressing the identified deficiencies and weaknesses.

The Ministry of Health and Social Welfare and the Prime Minister's Office – Regional Administration and Local Government were given the opportunity to scrutinize the factual contents and comment on the draft report. I wish to acknowledge that the feedbaack received has been useful and constructive in improving the quality of the report.

My office intends to carry out a follow-up audit at an appropriate time regarding actions taken by the audited entities in relation to the recommendations given in this report.

The office also subjected the report to a critical review by Professor Jamidu Katima and Dr. Stephen Mbuligwe who came up with very useful inputs in improving the report.

This report has been prepared by Mr. Michael Malabeja, Mr.Frank

Mwalupale and Mr. Denis Charle under the supervision and guidance of Eng. James Pilly and Ms. Wendy W. Massoy. I would like to thank my staff for their devotion and hardwork in the preparation of this report. My thanks should also be extended to the auditees for their fruitful interactions with my office.

Ludovick S. L. Utouh,
Controller and Auditor General,
Dar es Salaam,
March, 2014

ABBREVIATIONS AND ACRONYMS

CC	City Council
CHMT	Council Health Management Team
CCHP	Comprehensive Council Health Plan
DMO	District Medical Officer
DLGAs	Directorate of Local Government Authorities
EMA	Environmental Management Act
HIV	Human Immune Virus
HCWM	HealthCare Waste Management
NHCWMP	National HealthCare Waste Management Plan
HMIS	Health Management Information System
HCFs	Health - Care Facilities
HCW	Health - Care Waste
HBV	Hepatitis B virus
IPC	Infection Prevention and Control
LGAs	Local Government Authorities.
MTUHA	Mfumo wa Taarifa za Ufuatiliaji wa Huduma za Afya
MoHSW	Ministry of Health and Social Welfare
MSD	Medical Stores Department
NEMC	National Environmental Management Council
NSP	National Standard and Procedures
PMO-RALG	Prime Minister's Office-Regions Administration and Local Government
RMO	Regional Medical Officer
RS	Regional Secretariat
RHMT	Region Health Management Team
SOPs	Standard Operating Procedures
VPO	Vice President's Office
WHO	World Health Organisation

EXECUTIVE SUMMARY

The management of healthcare waste is of great importance to the welfare of the people and country at large due to its potential environmental hazards and public health risks. The waste produced in the course of health-care activities carries a higher potential for infection and injury. The World Health Organization has graded healthcare waste (HCW) as the second most hazardous waste after radioactive waste. Tanzania like other developing countries faces the problem of healthcare waste management (HCWM). There are no reliable statistics on healthcare waste generated in the country.

The Ministry of Health and Social Welfare (2007) estimated that, an average annual generation of healthcare waste in the country is 4,745tons. The generated rate is estimated to be around 0.41 kg/ occupied bed/day of clinical waste is generated in hospitals. In healthcare centres and Dispensaries, the rate is estimated to be 0.03 kg/patient/day of healthcare waste are generated. Most of the HCW generated is not properly managed especially when it comes to waste segregation, collection, storage and disposal or treatment.

The National Audit Office, based on its legal mandate decided to conduct an audit on healthcare waste management with the intention of analysing the problem and make necessary recommendations for corrective actions that will improve the situation. The objective of the audit was to examine if the Ministry of Health and Social Welfare and the Prime Minister's Office – Regional Administration and Local Government have a mecanisme of ensuring that healthcare waste is properly managed to protect public health and environment.

Data was collected from (4) referral hospitals, nine (9) regional hospitals, ten (10) districts hospitals and ten (10) health centres. The audit covered an examination period of fiscal years 2010/2011 to 2012/2013. Various methods of gathering data and information such as documentary reviews, interviews, physical observation have been used in the conduct of this audit.

The audit found out that:

Out of 33 HCFs visited only three (Muhimbili, Agakhan-Mbeya and Mwananyamala) had a register to record the amount of waste generated, while three other (Dodoma regional hospital, Temeke and Amana Hospitals) estimated the waste generated in their hospitals without a daily recording the ledger. The rest, 27 hospitals had no data on the amount of waste generated. None of the visited health facilities had prepared a waste management plan. Activities regarding the management of HCW were implemented on ad-hoc basis.

Referral hospitals appear to perform well in waste segregation assessment. Based on the interviews and physical observation made, it was noted that good performance by referral hospitals was attributed to the availability of good financing systems including the budget for HCWM. Also, the approval processes of funding for HCWM issues were relatively shorter for hospitals to procure relevant equipment for segregation of hospital waste.

Likewise, Regional hospitals' level of compliance with segregation practices ranges between 60% to 80%. On the other hand, assessment of the placement of explanatory tools shows that only parts of the wards were placed with explanatory tool. Three out of twelve District Hospitals have compliance level below 50% while the remaining ranges from 50% to 60%. Four out of nine health centres have compliance level of 50% while the remaining five health facilities range between 50% to 60%. In all health facilities visited, waste was only segregated at the points of generation, and then mixed by laborers at the storage and treatment sites. This canceled out the value of segregation attempted at the point of generation. No health facilities were found to have the supervision or inspection checklist, which could be used during the daily supervision by nurses and ward in charges.

Assessment of the waste collection practices in the visited referral hospitals showed that the schedule/time table for collection of healthcare waste was clearly written. Likewise, the visited regional hospitals assessment revealed that the schedule/time table for collection of healthcare waste was not clearly written. District hospitals as well showed that most district hospitals, had arranged to

collect HCW from each point of generation within hospital premises twice a day, in the morning and in the evening.
In all facilities visited, there was no register for the waste collection to indicate the amount collected and show if waste were collected on time. In relation with health centres, the assessment revealed that in most of the health centers, there was no specific time set for the collection of waste. Issues on healthcare waste management were not given priory in health centers.

The audit found out that 31 out of 33 visited health facilities did not have recommended trolleys or moving baskets for transporting HCW. Only two hospitals were found to comply with the required transportation facilities. These hospitals are the Muhimbili National Hospital and Mbeya Referral Hospital.

More than 50% of the visited regional hospitals, District hospitals and health centres did not have central waste collection points to store waste before being disposed. Healthcare waste was placed in the burning chamber or stored outside the incinerator's building or in an open area of the health facilities' premises.

All visited referral hospitals except Mbeya Referal Hospital have health officers whose academic background is environmental health. Both of them have hospital matrons who were trained on Infection prevention control.

Five Regional hospitals (Amana, Arusha, Dodoma, Mawenzi and Temeke) have two persons each (a health officer and hospital matron). The remaining three hospitals (Mbeya, Mwananyamala and Sekou-toure) have hospital matrons who are also responsible for managing healthcare waste. The District hospitals visited did not have health officers. Three health centres (Magomeni, Mnazi mmoja and Nyamagana) appear to have health officer and hospital matron trained on environmental health and Infection and Prevention control respectively. While the remaining six health centres (Agakhan-Mbeya, Mwafrika, Mbagala Rangitatu, Sinza, Uyole and Vijibweni) has matron playing the role of managing healthcare waste.

The audit noted that, basic equipment for healthcare waste management was not readily available from the suppliers when health facilities needed them. As a result, health facilities did not have enough color coded bins, bin liners and other key equipment.

It has been noted in the visited LGAs that, the inclusion of healthcare waste management in their CCHP mainly focuses on the procurement and installation of incinerator. Likewise, LGAs were not using the checklist recommended by the MoHSW as a tool for monitoring their performances. According to interview with officials from the 16 visited Councils, non utilisation of the issued guide was due to lack of awareness of its existence. This could be due to inadequate supervision conducted by the higher authorities.

Inspection coverage was the highest in Arusha where 98% of HCFs were reached for supervision. Kibondo was the lowest with only 45% of all HCFs inspected. According to interviews with officials in Arusha, the good performance was because of geographical location of the HCFs. Most of HCFs in Arusha City were found within the city in the radius of 18km. This made it easier for health officials to make frequent visits for supervision. On the other hand, low coverage in Kibondo DC was attributed to long distance between the district headquarters and the health facilities.

LGAs did not have proper systems of monitoring performance of management of healthcare waste in healthcare facilities. LGAs did not identify key target groups for the awareness campaigns. Out of 16 LGAs visited only two made analysis of the target groups for awareness campaigns.

Seven visited LGAs funds are mostly allocated to Council's Medical Office and Council's hospital. Two LGAs have allocated funds to health centres and dispensary. However, fund for environmental and sanitation was not allocated to the Voluntary Agencies and communities.

The two entities (Ministry of Health and Social Welfare and the Prime Minister's Office – Regional Administration and Local Government) did not have in place specific arrangements for

monitoring the implementation of healthcare waste monitoring plan by various actors. Plans for inspections and supportive supervisions were only prepared on ad-hoc basis when they received funds either from donors or the government.

The MoHSW and PMO-RALG report on the implementation of their annual plans through quarterly reports. However, according to interviews with ministries' officials, the existing reporting system does not support the smooth flow of HCW management information from health facilities, LGAs and Regional Secretariats.

Audit noted that the MoHSW did not conduct quarterly review of the performance of the actors in HCWM as required by the guidelines. Likewise, the MoHSW did not analyze the HCWM trends to evaluate the country's performance in HCW management. The analysis was not done partly because the ministry did not have data on the amount of HCW from the health facilities in the country.

The Ministry of Health and Social welfare was not able to effectively coordinate HCWM issues from various stakeholders. Furthermore, the MoHSW as the central documentation point for HCWM monitoring in the country, was not able to provide effective information and reliable documents on HCW management stakeholders. The ministry has not been able to maintain a reliable and up-to-date database of HCW information from LGAs and health facilities since the Health Information Management System does not accommodate that.

PMO-RALG has not integrated issues of HCW management in its monitoring activities regarding the performance of LGAs. As a result, HCW management activities were not included in the budget as an item that needed to be monitored.

Review of the progress reports prepared by the RHMTs showed that all the six Regional Secretariats visited did not receive any information regarding HCWM from LGAs. This was because the only reports submitted by the LGAs concerned implementation of CCHP and did not include healthcare waste issues.

Our audit findings gave us reasons to conclude that despite the presence of clearly described National Standards and Procedures for healthcare waste management, healthcare waste in Tanzania is not well managed. Issue of healthcare waste management to protect public and environmental health is inadequately prioritized. Information to the public on generation rates, types of waste, related environmental health risks, and problems of waste management are hardly available. Neither government nor medical facility authorities significantly pay due public attention towards the above issues. Audit observation indicates that medical waste is handled like any other domestic waste.

MoHSW and PMO-RALG have not set up an appropriate monitoring and control system for effective management of healthcare waste in the country. Likewise, the Regional Health Management Team and the Council Health Management Team have demostrated that they are ineffective performance in conducting supportive supervision and inspection of healthcare waste management in the health facilities.

The audit conclusion led us to recommend as follows:

The MoHSW should:

- Develop and implement a plan for monitoring of the implementation of healthcare waste management activities at all the administrative levels (i.e. Regions, LGAs and HCFs). The plans have to include the long term milestones and targets for supportive supervision and inspections to the health facilities on healthcare waste management issues.
- Establish financing mechanism for healthcare waste management activities.
- Provide a link in the HMIS that will accommodate collection of healthcare waste management data in order to improve monitoring and reporting system.
- Introduce healthcare waste management issues into the curriculum of the training institutes that conduct courses on healthcare issues so as to equip them with healthcare waste management knowledge before they become healthcare

practitioners.
- Include healthcare waste management equipment/tool in the catalogue of essential items that MSD should procure to ease the availability of healthcare equipment for the health facilities.

The MoHSW in collaboration with PMO-RALG should ensure that:
- LGAs include the healthcare waste management issues in the reports submitted to Region Secretariat in order to improve the Monitoring functions of the RS. Based on reports from LGAs, RSs should conduct monitoring of HCWM activities.
- The supportive supervision done by LGAs to health facilities should be well planned and include issues of healthcare waste management.
- LGAs give adequate priority to healthcare waste management activities in allocation of resources.
- LGAs facilitate safe disposal of incinerator ash and residues by all HCFs.

The MoHSW in collaboration with PMO-RALG should ensure that health facilities:

- Pursue more opportunities to reduce, reuse and recycle materials that enter the healthcare waste stream in order to minimize the waste generation.
- Establish a close supervision and follow up to ensure that, standard operating procedures which describe the working procedures are complied with.
- Designate a specific health officer to oversee all healthcare waste management issues in each health facility.
- Conduct training programs on waste sorting as well as training needs assessment to identify training gaps and put priority on those staff that will require specific training.
- Establish a system of recording and documenting information and statistics of waste generated at each facility.
- Regularly maintain their incinerators so that treatment of healthcare waste is done efficiently.
- Integrate healthcare waste management activities in their strategic and operational plans; the plans should provide

detailed description of objectives, activities and resources to be used, types of waste generated, the way they are segregated, time and place of handover, storing and final handling/disposal.

CHAPTER ONE

INTRODUCTION

1.1 Background

The management of healthcare waste is of great importance to the welfare of the people and the country at large due to its potential environmental hazards and public health risks. In pursuing their aims of reducing health problems and eliminating potential risks to people's health, health-care services inevitably create waste that may itself be hazardous to health. The waste produced in the course of health-care activities carries a higher potential for infection and Injury[1]. Also, poor Healthcare Waste treatment methods may produce poisonous chemicals. The World Health Organization has graded healthcare waste (HCW) as the second most hazardous waste after radioactive waste.

Tanzania like other developing countries faces the problem of healthcare waste management (HCWM). There are no reliable statistics on healthcare waste generated in the country. The Ministry of Health and Social Welfare (2007) estimated the average annual generation of healthcare waste in the country to be 4,745 tons. The generation rate is estimated to be around 0.41 kg/occupied bed/day of clinical waste in hospitals. In Healthcare centres and Dispensaries, the rate is estimated to be 0.03 kg/patient/day of healthcare waste generated. Most of the HCW generated is not properly managed in waste segregation, collection, storage and disposal or treatment.

A study conducted in Dar es Salaam in year 2012[2], estimated that, the generation of healthcare waste in Dar es Salaam city with more than 650 Healthcare facilities is 2592 tonnes per year out of which 1898 tons, which is 73% of the total needs to be incinerated according to International practice. The main reason for the increased HCWM generation in the country include: the

1. Safe management of wastes from health-care activities/edited by A. Prüss, E. Giroult, P. Rushbrook
2. Feasibility study report for Establishment of Central Healthcare Waste Treatment, in Dar es salaam, 2012.

increased generation of HCW due to the multiplication and expansion of healthcare facilities particularly in urban areas as a result of dramatic population growth, on-going immunization campaigns for measles, Tuberculosis and tetanus, usage of disposable syringes and needles in avoidance of HIV/AIDS transmission.

Because of the wide spread of healthcare waste generated which is an indicator of the risk to public health, there has been a general public outcry from health experts, common citizens and politicians, calling for immediate actions to be taken on inappropriate exposure and handling of waste in hospitals and other health institutions. Health and Environmental risks that may result from mishandling and improper disposal of medical wastes includes the release of substances such as radio isotopes, dioxin& furans, virus' and other harmful matter into the environment through which the health and safety of the public is placed in jeopardy.

Likewise, improperly handled, infectious healthcare waste can lead to the transmission of disease to workers who physically handle the material. It is also dangerous for the public who may come into contact with it. Scavengers who attempt to retrieve materials of value during solid waste collection and disposal are a good example of people who can come into contact with medical waste and may be subjected to its dangerous properties.

The National Audit Office, based on its legal mandate decided to conduct an audit on healthcare waste management with the intention of analysing the problem and making necessary recommendations for corrective actions that will improve the situation.

1.2 Audit objective

The objective of the audit was to examine if the Ministry of Health and Social Welfare and the Prime Minister's Office – Regional Administration and Local Government ensure that healthcare waste is properly managed to protect public health and environment.

In order to address the set audit objective, the audit was guided by

the three main audit questions as follows:
Table 1.1: Audit questions

Audit Question 1:	Is the generated healthcare waste by the health facilities in the country properly managed to protect public health and environment?
Audit Question 2:	Do the LGAs and Regional Secretariat appropriately support, monitor and evaluate management of healthcare waste in the healthcare facilities?
Audit Question 3:	Do the Ministry of Health and Social Welfare and PMO-RALG effectively monitor and evaluate the level of performance of healthcare waste in the country?

See Appendix 1 which contains the set of all questions and Sub questions.

1.3 Audit Scope, Methodology and Assessment Criteria

The audit examined the performance of the Ministry of Health and Social Welfare and the Prime Minister's Office Regional Administration and Local Government as regards to the management of healthcare waste in the country. The focus was on the entire healthcare waste management stream from waste generation to final disposal. The examination excluded management of toxic waste and radiological waste.

Data was collected from (4) referral hospitals, nine (9) regional hospitals, ten (10) districts hospitals and ten (10) health centres. The sample was made to ensure that the entire country is represented geographically, facilitate comparison of results from similar health facilities in various regions and consider diversity and homogeneity of nature of the activities done in the country. The audit covered an examination period of three fiscal years from 2010/2011 to 2012/2013[3]. This audit focused on HCWM activities in Tanzania Mainland.

Various methods of gathering data and information such as documentary reviews, interviews, physical observation have been

3. This is after the enactment of the National Health Care Waste Management Plan of 2007 which provides the window of three years period of implementation before the time of assessment of the level of performance.

used in the conduct of this audit.

Documents were reviewed in order to get comprehensive, relevant and reliable picture of the performance of the healthcare facilities and responsible authorities in as far as the management of healthcare wastes is concerned. Documents reviewed included: meeting minutes at all levels related with the provision of healthcare waste management; monitoring reports; planning and implementation reports; supervision reports; progress and performance reports.

A number of interviews were also conducted with the officials in the visited healthcare facilities, councils, regions and ministries mainly to confirm or provide further clarification from the documents reviewed. Structured as well as open – ended interviews were used by the audit team.

To find out whether healthcare waste is properly managed at the health facility level, interviews were conducted with health workers in the health facilities. The objective was to assess the extent generated waste is segregated, treated and disposed.

Local Government and Regional authorities' officials responsible for supervision and monitoring of healthcare waste were also interviewed in order to confirm information received from the health facilities and also reports from the LGAs relating with the healthcare waste.

To evaluate, whether the MoHSW and PMORALG have monitored and evaluated the performance of health facilities in managing healthcare waste, interviews were conducted with the responsible ministries officials.

The audit team also visited storage and disposing sites in order to observe the way healthcare waste are stored and disposed respectively.

1.4 Audit Assessment Criteria

The audit assessed the performance of the healthcare waste management against criteria drawn from the legislation,

regulations, policies, and guidelines as well as best practices in the area of healthcare waste management.

Table 1.2: Audit Assessment Criteria

At the National level, the MoHSW and PMORALG are expected to:	• Encourage and support Councils and health facilities to incorporate HCWM in the Comprehensive Health Plans or other health facilities plans • Include HCWM budget in the national annual budget • Conduct supervision and monitoring on HCWM • Capacity building to health facility staff and waste handlers • Develop a legal framework (Regulations) to enforce safe management of HCW
At the Regional level, the **Regional Administrative Secretary** is expected to:	• Translate policy guidelines and standards into actions • Follow-up Councils on HCWM monitoring issues • Support Councils to solicit adequate funds for maintaining hospital hygiene • Ensure that the HCWM plan of each hospital is in conformity with the National Guidelines. • Set up regular monitoring and control procedures. • Analyze HCWM monitoring reports from Councils • Summarize Councils HCWM monitoring reports and forward them to the MoHSW and PMORALG • Assist Councils in addressing HCWM operational issues/problems identified in the monitoring process • Provide feedback to Councils on HCWM performance
At the Council level, the Municipal and District Director is expected to:	• Develop a plan and budget for HCWM and incorporate it into the comprehensive Council Health Plan (Include operation and maintenance) • Include HCWM in the supervision checklist • Report on HCWM • Create Data Base for HCWM • Monitor and Inspect any health facility, treatment or disposal facility located within the area of his jurisdiction to check that the provisions of the National guidelines are being complied with any contravention shall be reported. • Create community awareness on HCWM risks

At the health facility level, they are expected to:	• Ensure that monitoring tools (Checklists and Questionnaires) are completed at each point in the HCW steam (generation, storage, transportation and disposal) • Maintain a HCW movement log/register at each point of HCW stream • Collect completed HCW tools and summarize them on a weekly basis and submit to district HCWM Committee/ Officer • Identify gaps/weaknesses in HCWM process and advise facility management on a daily basis on outstanding problems • Conduct/organize monthly meetings with all personnel manning points in the HCW stream and prepare quarterly reports. • Practice proper segregation, collection, storage, treatment and disposal of Healthcare waste • Order and procure working equipments for HCWM • Monitor and supervise daily HCWM activities

1.5 Data Validation Process

The Ministry of Health and Social Welfare (MoHSW) and the Prime Minister's Office Regional Administration and Local Government (PMORALG) were given the opportunity to read a draft version of the report in order to examine its content from a factual point of view and providing their comments.

1.6 Disclaimer Note

The audit was done in accordance with INTOSAI standards. Those standards require that the auditing is planned and performed in order to obtain sufficient and appropriate evidence to provide a reasonable basis for the findings and conclusions based on audit objectives. It is believed that according to the audit objectives, the evidence obtained provides a reasonable basis for the findings and conclusions.

1.7 Content and Structure of the Report

The remaining part of this report is presented in six chapters as follows:

Chapter Two presents the system for managing healthcare waste that describes also various processes involved in HCWM.

Chapter Three present the findings of the audit based on the audit questions one that focus on the management of healthcare waste by health facilities;

Chapter Four also provide findings of the audit based on the audit questions two that focus on the Council's reaction to healthcare waste management;

Chapter Five present findings to audit questions three that focus on the monitoring of healthcare waste by the Central Government;

Chapters Six provide the conclusions of the report based on the objective; whereas

Chapter Seven provide the recommendations directed to different actors in the health sector aimed at improving the situation.

CHAPTER TWO

SYSTEM FOR MANAGING HEALTHCARE WASTE

2.1 Organisation and Management Structure of the National Healthcare Waste System

The National Healthcare Waste Management System is integrated into the central government, regional administration and the local government. The Ministry of Health and Social Welfare (MoHSW), Prime Minister's Office Regional Administration and Local Government (PMO-RALG) are jointly responsible for the management of healthcare waste in the country. They are responsible for policy formulation and the development of guidelines to facilitate policy implementation.

At the regional level, the HCWM is administered by the Regional Health Management Teams (RHMTs). The RHMT interprets various HCWM policies and monitor their implementation at the council level. The Council Health Management Team (CHMT) is responsible for all council health services including HCWM issues in the health facilities located in their areas of jurisdiction. The CHMT is headed by the District Medical Officer (DMO) as in charge of all health services in the Council.

The CHMT follows HCWM guidelines issued by MoHSW and PMO-RALG for planning and management of HCW. The DMO is accountable to the Council Director on administrative and managerial matters, and report to the Regional Medical Officer (RMO) on technical matters. The RMO reports to the Ministry of Health on issues related to medical management and PMO-RALG through the Regional Administration Secretary (RAS) on issues related to health administration and management. **Appendix 4** gives details regarding the roles and responsibilities of various actors in the HCW management.

Governing Laws, Regulations and Policies

The Healthcare waste management in Tanzania is governed by a number of laws and regulations as shown in Table 2.1:

Table 2.1: Governing Laws, Regulations and Policies

REGULATION	REQUIREMENT
Public Heath Act, 2009	Section 89 requires healthcare waste to be managed in accordance with the guidelines and standards under the Environmental Management Act.
Environmental Management Act (EMA), 2004	VPO in collaboration with the MoHSW to: • Ensure that healthcare wastes are sorted and stored in prescribed coded containers and transported in disposal of healthcare wastes refuse trucks designed and registered for that purpose; and • Prescribe the best possible method for final disposal of various types of healthcare wastes.
Occupational Health and Safety Act of 2003;	Safety and Health Inspectors are required to inspect all workplaces in order to determine whether they are in compliance with the OHS legislation and standards. • There should be regular inspection, supervision and monitoring to assess the safety practices at health institutions. • Staff should be trained in the application of safety standards so that they are aware of the potential risks in non-compliance. • Accidents should be reported and dealt with in accordance with established protocols. • Persons who handle healthcare waste should be provided with protective gear and clothing as recommended by the WHO guidelines.

Healthcare Waste Management National Policy Guidelines	The policy Guideline aims at identifying appropriate HCWM methods that can be applied in healthcare facilities and within communities. More specifically it aims at: • Providing a better knowledge of the fundamentals of HCWM Planning and better understanding of the hazards linked to HCWM; • Developing HCWM plans, standards and procedures, which are protective for both the human health and the environment, in compliance with the current environment and public health legislations of Tanzania taking into consideration the financial possibilities of each institution; • Setting priority actions in order to tackle most sensitive problems related to HCWM; • Reviewing Appropriate and sustainable technology to treat and dispose of HCW; • Facilitating the analysis of HCWM problems and develop strategies for safe management of HCWM at all HCFs; and • Sensitizing private sectors to invest in HCWM.
Healthcare Waste Management Monitoring Plan	It aims at providing a monitoring guideline for all stakeholders involved in healthcare waste management at central, regional, district and local levels. It contains template and checklists for the monitoring plan to be used by all levels. This document helps authority to be able to: • Establish actions that must be performed as a minimum to ensure the safe handling and disposal of HCW; • Establish/develop indicators that will demonstrate the actions/activities have taken or are taking place; • Develop tools for information collection, analysis and construction of the indicators; and • Define institutional arrangement and assignment of duties, roles/responsibilities for those who will be involved in monitoring HCWM activities.
National Standards and Procedures for healthcare waste management in Tanzania	Provide technical information for planning and implementation of healthcare waste management. This document is focused on brief technical areas necessary for operations of HCWM and recommended options. The manual includes standards, procedures for best practices and specifications regarding selected HCW treatment options in brief in order to ensure that the document is user friend.

All these documents aim at identifying appropriate HCW management methods that can be applied in healthcare facilities and within communities. They provide guidelines for all stakeholders involved in healthcare waste management at central, regional, district and local levels. They also provide technical information for planning and implementation of HCW management to all workers dealing with HCW in one way or the other.

The summary of the institutional management healthcare waste system at different levels is shown in figure 1 below.

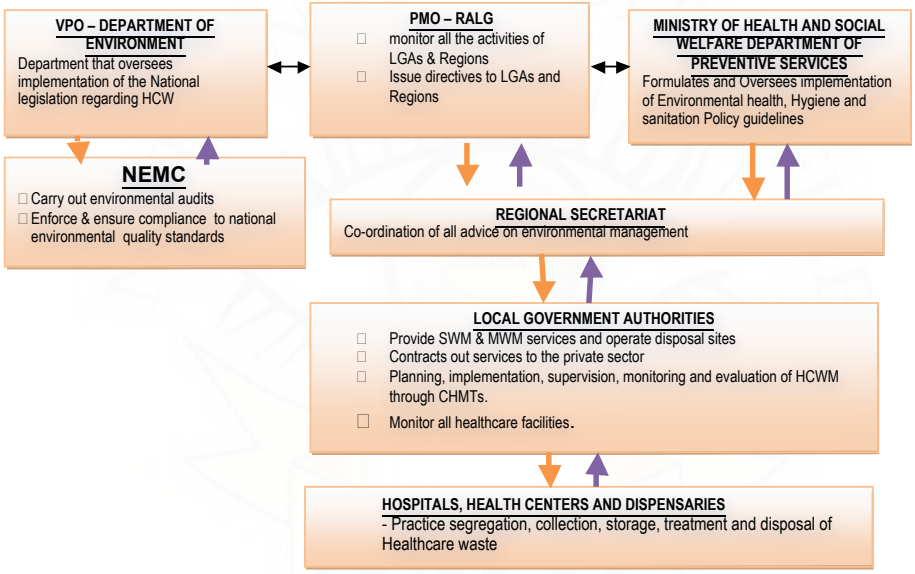

Figure 1: System for healthcare waste management

2.2 Key Process in the Management of Healthcare waste at health facility level

Healthcare waste includes all waste generated by healthcare establishments, research facilities, and laboratories. In addition, it includes the waste originating from minor or scattered sources such as that produced in the course of healthcare undertaken in the home (e.g. dialysis, insulin injections, etc.). However, the audit has focused on the healthcare waste generated by the healthcare facilities.

Hospitals and other healthcare facilities are responsible for the delivery of patient care services. In the process of delivering

this healthcare waste is generated. The incorrect management of healthcare waste can have direct impacts on the community, individuals working in healthcare facilities and natural environment.

The safe management of healthcare waste may be achieved by ensuring care in dealing with the healthcare waste. Hence it is the ethical responsibility of management of hospitals and healthcare establishments to have concern for public health.

The management process requires mobilization of the entire mechanism securing that the whole process is functional and effective. To this end, it is expected to have in place a detailed plan, officials responsible for coordinating these activities and ultimately internal control and external inspection/supervision in place. All these have a common primary goal: not to endanger health and the environment.

Safe handling, segregation, storage, subsequent destruction and disposal of healthcare waste ensures mitigation and minimization of the concerned health risks involved through contact with the potentially hazardous material, and also in the prevention of environmental contamination.

2.2.1 Healthcare waste tracking

The National Healthcare Policy Guideline requires the healthcare facilities to record the amount of HCW generated and treated. The daily, weekly and annual quantities of different categories of HCW generated by the health facilities need to be estimated in each department.

Effective waste tracking has a number of benefits as follows: ensuring appropriate disposal of clinical and related wastes; facilitating monitoring of waste segregation programs; providing for the maintenance of records on the quantities and type of waste generated and disposed of; and helping to pin-point areas of education needs with respect to waste management .

2.2.2 HCW Segregation

Segregation is one of the most important steps to successfully manage HCW. HCW is required to be sorted based on their categories[4] of non-hazardous and hazardous wastes at source (where it is generated). This is because some of the HCW presents greater risks and needs to be handled with caution. Between 75% and 90% of the waste produced by healthcare providers is usually considered non-risk or general healthcare waste, comparable to domestic waste. The underlying principles in waste segregation are:

- to reduce the volume of hazardous waste destined for special treatment or expensive off-site disposal;
- to maintain safety standards during handling, transportation and treatment;
- to eliminate the need for waste segregation to occur at disposal sites; and
- to facilitate the recycling process

Below is the summary of Healthcare waste management segregation process at facility level.

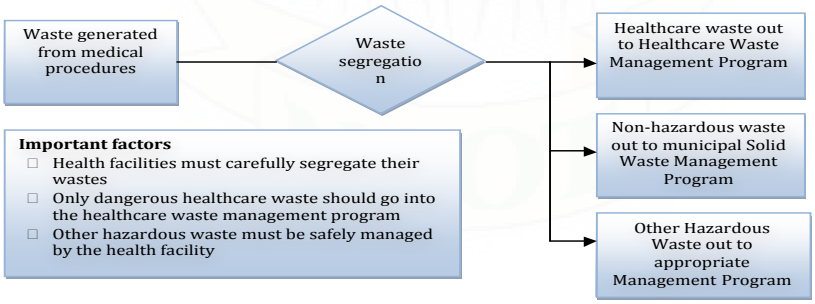

Figure 2.1: Health facility waste segregation decision alternatives

Use of posters, brochures stickers etc., also helps the members of staff and patients and their visiting relatives to segregate the waste. Standard Operating Procedures (SOPs) are supposed to be placed in wards and other department where various procedures of HCWM are administered. An example of the SOPs is indicated in **Photo 1** below.

4. Categories of Health Care Waste are: Infectious waste, Pathological waste, Sharps, Pharmaceutical waste, Genotoxic waste, Chemical waste, Wastes with high content of heavy metals, Pressurized containers and Radioactive waste. **Appendix 5** provides explanations regarding the categories.

Photo 1: *Standard Operating Procedures placed on the wall of a ward to provide guidance on how to segregate waste based on their categories. (Photo taken in Mbozi District hospital - Mbeya Region).*

Both generators and waste disposal contractors should practice waste segregation. Clearly and unique identifiable containers are supposed to be used for various kinds of waste for ultimate disposal. There are various categories of waste, including the non-infectious, infectious, highly infectious, and sharp objects. The recommended color codes are black or blue, yellow and red. The red storage bags need to be removed daily or when three quarter full. They are then deposited in a HCW storage container.

Effective waste segregation has a number of benefits. It ensures proper disposal pathways for each category of waste, helps protect personnel, reduces costs and facilitates staff training.

2.2.3 HCW Handling/Collection

HCW handlers and all other people involved with waste handling are required to handle it appropriately and with caution bearing in mind the risks involved. In order to prevent injuries from sharp objects, porters and other operatives are to wear overalls, heavy duty or industrial gloves and sturdy shoes including goggles and

masks for incineration. These protective clothing are to be worn when handling, transporting or incinerating the waste.

All cuts, abrasions and other injuries sustained during the handling are to be reported to the Infection Control Officer. Safety rules, precautionary measures and actions to be followed are to be clearly and strategically displayed. HCW operatives and all other persons involved in handling waste are to be given Hepatitis B vaccination as a means of protection from infection. Personnel responsible for Health and Safety are to ensure that all persons including contractors handling wastes are suitably protected.

2.2.4 HCW Storage

When containers are full to the required capacity, the waste is removed from the collection points. The plastics containing HCW are to be stored in a secured room or adequate area of reasonable size in relation to the quantity and frequency of collection. Waste is not supposed to be stored for more than 48 hours.

The storage is not supposed to be accessible to unauthorised personnel or scavengers. Bulk storage areas are to be kept locked and access to these areas is limited to those responsible for handling, transporting, incinerating and ultimate disposal but kept secure from wild and domestic animals, birds, rodents and insects by means of a locked wire mesh cages.

The HCW that need to be removed to off site for incineration is to be stored in an appropriate manner and in accordance with the HCWM practices as recommended. All inside and outside storage containers are to be kept clean and disinfected and easily drained. This process is to be followed regularly.

An efficient system for storage and collection of waste is the key to preventing risks to human health, environmental problems and other nuisances.

2.2.5 HCW Transportation

Where waste is transported within the facility red bags and/rigid containers need to be labelled "HCW" are to be used at the place of production and conveyed by red wheeled bins, trolleys and carts, which are specifically designed for that purpose. Trolleys are to be steam cleaned or disinfected at the end of each working day.

The surfaces of conveyance are to be smooth and impervious to prevent them from harbouring insects. The covering is needed to prevent the waste from falling over. They need to be easily cleaned, drained and allow waste to be handled without difficulty.

Where waste is transported from the facilities to disposal places by the respective Local Authorities' or contractor vehicles, there has to be a liaison between waste producers and those responsible for its disposal. Purpose designed vehicles are to be used solely for the transportation of such waste.

It is important that different types of waste are stored separately in order to prevent contamination of 'clean' waste by infectious or pathological wastes, and to allow easy transportation.

2.2.6 HCW treatment and disposal

Sharps are supposed to be incinerated before disposal, to reduce them to harmless particles. HCW needs not be compacted by mechanical or any means prior to disposal except through incineration. In order to ensure complete combustion of all waste, the incineration is to have two combustion chambers. The incinerator's temperature is to reach 850°C and above in the primary chamber and 1000°C in the secondary chamber. Incinerators are to be at least 50 metres from buildings and areas with access to the general public.

The respective Local Authorities or contracted licensed company transport HCW residual and ash from the places of production/ generation to disposal places.

Waste residual and ash is supposed to be collected and disposed off by the respective Local Authorities or companies contracted for that purpose. The responsibility of permitting it to leave the premises is supposed to be vested in authorised persons and those persons are to ensure that it is identified. The ash and residual remnants or ashes from the incinerators is to be placed in covered containers or approved receptacles/ skips for transportation to the dumpsite. It is to be buried in a special excavation, lined and covered with soil immediately after deposit. Its location within the landfill is to be clearly identified and recorded.

The HCW National Standards and Procedures require Referral Hospitals to use pyrolitic incinerators, whereas Regional Hospitals are supposed to use either pyrolitic or De Montfort incinerators. The District Hospitals and health centres are supposed to use the De Montfort incinerators.

Improper disposal of health-care wastes, syringes and needles that are scavenged and reused may lead to significant numbers of hepatitis B, hepatitis C, HIV and possibly other infections.

2.2.7 HCW Training

Healthcare worker, drivers, orderlies and all operatives including Incinerator Operators whose duties include segregation and ultimate disposal of HCW residual/ashes are to be trained so that, waste segregation, collection, storage, treatment and disposal is properly done.

Knowledge of the characteristics of the waste and proper monitoring of the waste quantities being generated are important in order to choose the best way to approach waste handling. Training develops and imparts skills to responsible individuals and also raises awareness.

As explained in section 2.2.7 above, each step in the management sequence is important in the overall success of any healthcare waste management program. The management process of the healthcare waste is as summarised in Figure 2.2 below.

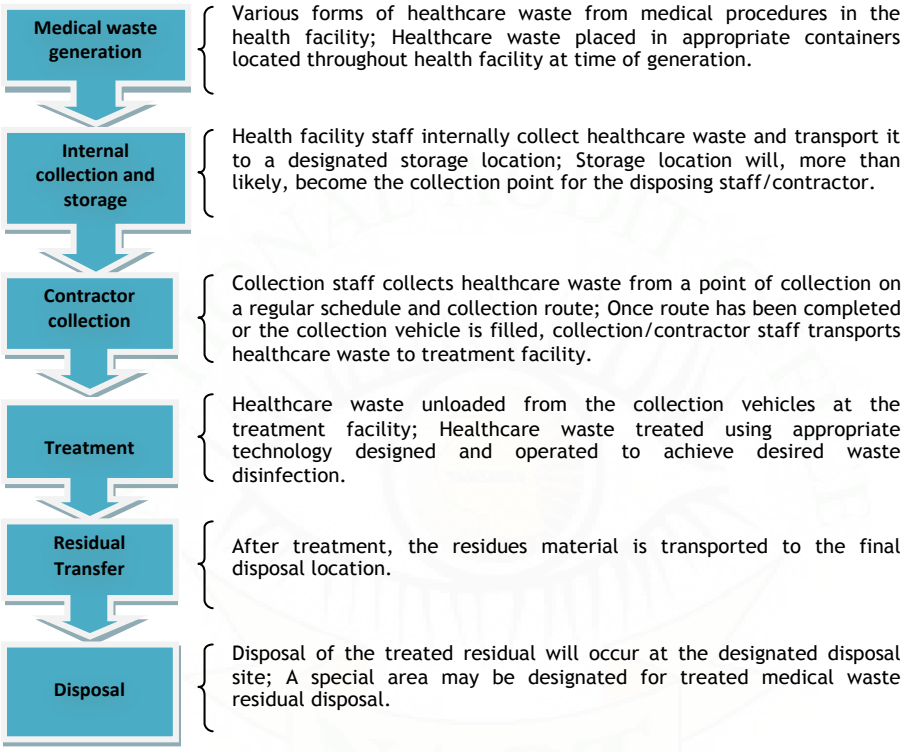

Figure 2.2 Healthcare waste Management from generation to final disposal.

CHAPTER THREE

MANAGEMENT OF HEALTHCARE WASTE BY HEALTH FACILITIES

This chapter focuses on the audit findings relating to examination of the management of the healthcare waste by health facilities from the point of generation to disposal. As explained in section 2.1 of this report, health facilities has the responsibilities of ensuring that activities for segregation, collection, storage, treatment and disposal of Healthcare waste are properly practiced. Findings are structured as follows: Waste generation management; Waste – segregation practices; Waste Handling and collection; Storage of healthcare waste; and Treatment and disposal of healthcare waste.

3.1 Healthcare waste generation management

The National Healthcare Policy Guideline requires the healthcare facilities to record the amount of HCW generated and treated. The daily, weekly and annual quantities of different categories of HCW generated by the hospitals need to be estimated in each department.

It was found that, out of 33 HCFs visited only three (Muhimbili, Agakhan-Mbeya and Mwananyamala) had a register to record the amount of waste generated and other three (Dodoma regional hospital, Temeke and Amana Hospitals) estimated the waste generated in their hospitals without the daily recording in the ledger. The rest, 27 hospitals had no data on the amount of waste generated.

The MoHSW[5] developed a HCW generation factor that can be used to estimate the HCW generated in the HCFs. According to MoHSW generation factor for inpatient department is 0.41 kg/occupied bed/day of HCW waste is generated in Referral, Regional and District Hospitals. In Healthcare Centers generation factor is around 0.03 kg/patient/day of HCW waste is generated[6]. A detailed table showing the computations is in **Appendix 5**.

5. National Standards and Procedures for Healthcare Waste Management in Tanzania - Ministry of Health and Social Welfare
6. The factors were estimated in year 2003

Using the estimated factors above the audit team estimated the waste generation for each facility to get the picture of how much HCW each HCF generated. **Table 3.1** below shows the estimated amount of HCW generated in the hospitals.

Table 3.1A Estimated HCW in the Referral Hospitals

Name of the Health facility	Total estimated HCW kg/day	Recorded HCW kg/ day
Bugando Medical Centre	374	No records
Mbeya Referral Hospital	204	No records
Muhimbili National Hospital	615	900
Ocean Road Cancer Institute	108	No records

Source: Auditors analysis based on the statistics collected from HCFs

As shown in Table 3.1A three visited referral hospitals do not maintain records of generated healthcare waste per day. The Muhimbili hospital is the only one found to maintain healthcare waste records. However, the amount that has been estimated is lower comparing with the actual amount generated. According to interview with official from the Muhimbili Hospital, the estimate is based on the bed capacity while visitors accommodated are beyond the bed capacity. The review in regional hospitals is as reflected in Table 3.1B below.

Table 3.1B Estimated HCW in the Regional Hospitals

Name of the Health facility	Total estimated HCW kg/day	Recorded HCW kg/ day
Amana Hospital	152	300
Dodoma Regional Hospital	180	No records
Maweni-Kigoma	126	No records
Mbeya Regional Hospital	123	No records
Mt. Meru-Arusha	210	No records
Mwananymala Hospital	245	78
Sekou-Toure-Mwanza	153	No records
Temeke	137	290

Source: Auditors analysis based on the data collected from health facilities

Likewise, Table 3.1B reflects that only three out of the eight visited Regional Hospitals maintain records of generated healthcare waste. The figures for the amount of waste generated in Temeke and Amana Hospitals were estimated by the respective health facilities but they

do not have a register. Similarly for the case of District hospital, the situation is as reflected in Table 3.1C.

Table 3.1C Estimated HCW in the District Hospitals

Name of the Healthcare facility	Total estimated HCW kg/day	Recorded HCW kg/ day
Mpwapwa	79	No records
Mbarali	153	No records
Mbozi	67	No records
Kibondo	70	No records
Kasulu	84	No records
Magu	64	No records
Misungwi	51	No records
Longido	8	No records

Source: Auditors analysis based on the data collected from health facilities

As shown in the Table 3.1C above, all visited District hospitals except one has estimated healthcare waste to be generated per day. However, all of them do not maintain records of the quantities of healthcare waste generated. The situation revealed in the visited health centres is as shown in the Table 3.1D below.

Table 3.1D: Estimated against actual generated healthcare waste in Health centre

Name of the Healthcare facility	Total estimated HCW kg/day	Recorded HCW kg/ day
Uyole	30	No records
Mnazi Mmoja	20	No records
Magomeni	20	No records
Sinza	55	No records
Agakhani - Mbeya	10	No records
Mbagala Rangitatu	200	No records
Mwafrika	50	No records
Nyamagana	30	No records
Vijibweni	35	No records

Source: Auditors analysis based on the data collected from facilities

Collected data from health centres reveals that none of them have documented the amount of healthcare generated. However, according to auditor estimates, the generated amount ranges from 20 to 55 kilograms with exception of Mbagala Rangitatu which generates 200kilograms of healthcare waste.

Lack of documented information and statistics on the amount of healthcare waste generated makes it difficult for the health facilities to plan for its management.

3.2 Healthcare waste management plans

According to the HCWM monitoring plan for Year 2006, waste management must be integrated in the day-to-day activities of the healthcare institutions to be effective. The plan has to include clearly segregated competences of all actors involved in the waste management process.

However, the audit found that, no HCFs had prepared a Waste Management Plan. Activities regarding the management of HCW were implemented on ad-hoc basis. Because of that, the HCFs were unable to provide detailed description of objectives, activities and resources to be used, types of waste generated, the way they are segregated, time and place of handover, storing and final handling/ disposal. The staff responsibilities in the HCFs were unclear.

The HCFs did not have explicitly stated roles and responsibilities of each actor in the HCWM, which was to be mentioned in the plan. Based on interviews with HCFs officials and review of documents it was revealed that the job descriptions of HCF supervisory staff (Head of HCF, Department Heads, Matron/Senior Nursing Officer, Infection Control Officer, Pharmacist, and Laboratory Supervisor) did not include the responsibility for HCWM.

Since there were no plans, healthcare officials in charge of healthcare waste management could not single out the costs involved in managing healthcare waste in their facilities. In some cases it was difficult to separate the cost of managing waste from other cost since the costs had been lumped with other operational costs.

It was difficult for the hospitals to assess their performance on healthcare waste management, because of the improper plans and lack of developed indicators of performance. Likewise, LGAs were not evaluating performance of their activities on healthcare waste

management. All LGAs were doing the evaluation of the CCHP, but did not adequately address issues of healthcare waste.

The reasons for health facilities not preparing healthcare waste plans are such as healthcare waste activities are not integrated in health facilities' strategic and operations plans. This is also caused by inadequate training and supervision to the officers responsible for monitoring healthcare waste at all level.

3.3 Compliance with healthcare waste management procedures

The compliance level on the management of healthcare waste was examined in terms of waste segregation, collection, transportation, storage, treatment and disposal as follows.

3.3.1 Healthcare waste segregation practices by health facilities

The audit team made analysis to evaluate the level of compliance of segregation in different levels of healthcare facilities. The analysis made revealed that all 33 health facilities visited attempted to carry out waste segregation. However, segregation practices were not done according to Standard Operation Procedures (SOPs) stipulated in the national guidelines[7]. This is as explained hereunder:

Segregation practice in visited Referral Hospitals

Based on the interviews and physical observation made, it was noted that the observed good performance from referral hospitals was attributed to the availability of good financing systems including the budget for HCWM. Also the approval processes of funding for HCWM issues were relatively shorter for hospitals to procure relevant equipment for segregation. Also it was noted that referral hospitals had qualified staff that were aware of issues of HCWM, as a result there was close supervision on HCWM issues.

7. The National Standards and procedures for Healthcare waste management in Tanzania.

Table 3.2: Healthcare waste segregation practices in the Referral Hospitals

Name of the Referral Hospital	Level of compliance in segregation practices
Bugando Medical Centre	73%
Mbeya Referral Hospital	80%
Muhimbili National Hospital	75%
Ocean Road Cancer Institute	65%

Source: Auditors analysis based on the data collected from the health facility

As reflected in Table 3.2 above, all visited referral hospitals appear to comply to a large extent to segregation practices at the point of generation. However, assessment of labeling of waste bins and color of liners to differentiate between waste categories shows that only part of the wards was placed with explanatory tool. There were no posters placed in the waste storage places; transportation; and treatment and disposal sites.

Segregation practice in visited Regional Hospitals

Assessment of the segregation practices at the generation point in the visited regional hospitals shows as follows:

Table 3.3: Healthcare waste segregation practices in the Regional Hospitals

Name of the Referral Hospital	Level of compliance in segregation practices
Amana Hospital	80%
Dodoma Regional Hospital	80%
Maweni-Kigoma	75%
Mbeya Regional Hospital	60%
Mt. Meru-Arusha	80%
Mwananymala Hospital	70%
Sekou-Toure-Mwanza	75%
Temeke	80%

Source: Auditors analysis based on the data collected from the health facility

Likewise, Regional hospitals' level of compliance with segregation practices range 60% to 80%. On the other hand, assessment of the placement of explanatory tools (SOPs) shows that only parts of the wards were placed with explanatory tool. There were no posters

placed in the waste storage places; transportation; and treatment and disposal sites were not placed with posters to differentiate between different waste categories.

Segregation practice in visited District Hospitals

Unlike in referral hospitals, the district hospitals showed low levels of compliance in the segregation of HCW. This is as shown hereunder:

Table 3.4: Healthcare waste segregation practices in the District Hospitals

Name of the Referral Hospital	Level of compliance in segregation practices
Kibondo	30%
Igawilo	30%
Longido	40%
Ngarenaro	40%
Kasulu	45%
Mbarali	45%
St. Elizabeth	45%
Mbozi	50%
Misungwi	50%
Mpwapwa	55%
Magu	60%
Meru	60%

Source: Auditors analysis based on the data collected from the health facility

Table 3.4 reflects that three out of twelve District Hospitals have compliance levels below 50% while the remaining ranges from 50% to 60%.

Underperformance at District Hospitals was attributed to low priority given to financing of HCWM activities right from the budgeting stage. We noted that all district hospitals did not use recommended equipment for enhancing HCW segregation practices. In district hospitals, the majority of HCW handlers were not well trained on HCWM.

Similarly, only part of the wards was placed with explanatory tool. There were no posters placed in the waste storage places; transportation; and treatment and disposal sites were not placed with posters to differentiate between different waste categories.

Segregation practice in visited Health Centres

Assessment of the segregation practices at the generation point in the visited Health centres shows as follows:

Table 3.5: Healthcare waste segregation practices in the Health centers

Name of the Healthcare facility	Level of compliance in segregation practices
Uyole	40%
Mnazi Mmoja	40%
Magomeni	45%
Nyamagana	45%
Mbagala Rangitatu	50%
Mwafrika	50%
Sinza	55%
Vijibweni	55%
Agakhani - Mbeya	60%

Source: Auditors analysis based on the data collected from facilities

As reflected in Table 3.5, four out of nine health centres have attained compliance level of 50% while the remaining five health facilities ranges from 50% to 60%. Similarly, the assessment of the availability of SOPs as an explanatory tool in different places of the visited health centres shows that posters were neither placed in the waste storage nor at the treatment and disposal sites.

No health facilities were found to have the supervision or inspection checklist, which could be used during the daily supervision by nurses and ward in-charges. The supervision was rather focusing on management of patients and not on trial issues of healthcare waste.

In all health facilities visited, waste was only segregated at the points of generation, and then mixed by laborers at the storage and treatment sites. This canceled out all the good values of segregation attempted at point of generation. Mixing of waste exposes health-care personnel, patients and public to disease causing agents. The greatest risks posed by infectious waste are accidental needle stick injuries, which could cause hepatitis B and hepatitis C and HIV infection.

Factors that contributed to mixing of HCW include lack of awareness by the staff and patient, inadequate labeling of collection bins, inadequate training etc. The following sub section gives details regarding labeling of collection vessels.

The non compliance was associated with lack of close supervision, inadequate HCW handling equipment, lack of proper trainings and awareness to HCW handlers in the District Hospital and Health Centres. Because of that, significant amount of HCW produced was not appropriately segregated. This resulted into mixing together of non-infectious, infectious, highly infectious and sharps wastes.

3.3.2 Waste collection

Waste is supposed to be collected when the waste collection bins are three-quarter full for ease of handling. In healthcare facilities visited, it was observed that, healthcare waste was not collected on time.

Assessment of the waste collection practices in the visited referral hospitals shows that the schedule/time table for collection of healthcare waste is clearly written. But the audit could not find out whether the time tables were being followed as required or not, because all referral hospital visited had no register to show the actual collection time of waste from different points. The audit noted that, in referral hospital the guidelines for healthcare waste are adequately distributed to staff. The hospitals encouraged the on-job training on healthcare waste management to all healthcare workers. In referral hospitals, most of them were found to follow the procedures for HCW collection. In most cases HCW was deposited/ handled according to the color coding.

Likewise, the assessment of the waste collection practices in the visited regional hospitals reveals that the schedule/time table for collection of healthcare waste was not clearly written. According to interview with staff, waste is either collected twice a day or once the garbage is full. Also, no regional hospital was found to have the records of the waste collection.

Guidelines for healthcare waste management are not adequately distributed and exposed to responsible staff. The regional hospitals were found to conduct on the job training on healthcare waste management to all healthcare workers particularly on the Infection prevention control. However, it was noted in regional hospitals that procedures for healthcare waste collection were not adequately followed because of unavailability of color coding vessels. The hospitals are having containers for each category of healthcare waste collection, and standard trolleys for healthcare waste collection and transportation.

District hospitals assessment of waste collection practices shows that most district hospitals, had arranged to collect HCW from each point of generation within hospital premises twice a day, in the morning and in the evening. However, interviews with nurses and matrons in the health facilities visited revealed that, waste collection bins got full even before the time for collection was reached.

In all facilities visited, there was no register for the waste collection to indicate the amount collected and show if wastes were collected on time. In most districts hospitals the training were rarely conducted on HCW collection to all healthcare workers particularly on the Infection prevention control. Because of that, in-house procedures for HCW collection were not adequately followed. On the other hand, most of the district hospitals had no color coding vessels and containers for each category for HCW collection and transportation.

In relation with health centres, the assessment has revealed that in most of the health centers, there was no specific time set for the collection of waste. Issues on healthcare waste management were not given priory in health centers. Waste was found uncollected in the facility's premises. In health centers the training were rarely conducted on healthcare waste collection to all healthcare workers particularly on the Infection prevention control. Because of that, in-house procedures for healthcare waste collection were not adequately followed. On the other hand, most of the health centers had no color coding vessels and containers for each category of healthcare waste generated for collection and transportation.

According to the healthcare facilities officials interviewed, all healthcare facilities collected their waste from each point of generation within hospital premises twice a day, in the morning and in the evening. However, interviews with nurses and matrons in the HCFs visited, revealed that, waste collection bins got full even before the time for collection was reached. In all facilities visited, there was no register for the waste collection to indicate the amount collected and show if wastes were collected on time. **Photo 2** below shows the presence of waste filled to the brim as seen in one of the health facilities visited.

Photo 2: *Waste collection bins filled to the brim at Mpwapwa District Hospital and Bugando Referral hospital respectively because of untimely collection.*

The delay in collecting HCW was caused by lack of supervision to ensure that HCW was collected in different points of generation. Untimely collection of waste creates nuisance and poses a great risk of infection to people who are within hospital premises.

In some of the healthcare facilities containers for collecting HCW did not have lids. In other places the HCW container did not have lid that can be easily opened. This posed the risk to waste handlers as well as patients of getting contamination from hazardous healthcare waste. For example, **Photo 3** indicates the bucket which was used

to collect the placenta from labor ward had neither appropriate bin-liner nor lid.

***Photo 3**:A bucket without a lid and the bin liner is used for collection of placenta (Photos taken at Sekou Toure Regional hospital in Mwanza).*

It is clearly shown that most of the health facilities (Referral, Regional, District and Health centres) do not comply with recommended practices regarding segregation and use of appropriate tools for collecting healthcare waste. This is because of lack of trainings on healthcare waste management; lack of close supervision; absence of the designated Health Officers in the health facilities, who should manage healthcare waste issues; low priority given in financing healthcare waste which affects the entire process of healthcare waste management. As an example, the incinerators are not maintained, recommended colour coded bins and bin-liners are not purchased as required. Likewise, health facilities have not developed healthcare waste collection and transport strategies which have led to late collection of waste.

3.3.3 On-site and off-site Transportation of HCW

Healthcare waste is expected to be transported by means of wheeled trolleys, containers or carts that are not used for other purposes. In all of the visited HCFs, transportation of medical waste was not properly done.

The audit found that 31 out of 33 visited health facilities did not have

recommended trolleys or moving baskets for transporting HCW. Only two hospitals were found to comply with the required transportation facilities. These hospitals are the Muhimbili National Hospital and Mbeya Referral Hospital.

The availability of transportation equipment was different in various levels of healthcare facilities where only two facilities had proper designated transportation equipment as indicated in the **Table 3.6** below.

Table 3.6: Transportation of Infectious HCW within HCFs

Category of the Health facilities	Number of Facilities with designated trolley or moving basket	Comments
Referral Hospitals (N-4)	2	Only Mbeya Referral Hospital, others have the wheelbarrows which are not recommended for HCW collection
Regional Hospitals (N=8)	0	There is no recommended trolley
District Hospitals, Health Centers (N=21)	0	4 HCFs carry manually by hand in plastics bags and buckets 7 HCFs do not have recommended trolley (use wheel barrows)

Source: Health facilities visited

Physical observations showed that the healthcare waste was carried manually by waste handling persons using polythene or ordinary plastic bags without any safety gears. By this practice, handlers were exposed to all forms of infections. Carrying of healthcare waste by hands poses a great danger because blood or liquid substances may leak while being transported from hospital wards to incinerators or disposal point.

Wheelbarrows were found to be a common form of tools used for transportation of waste within the HCFs compounds, while only a few of the facilities were using trolleys as shown in **Table 4**. However,

the use of trolleys was not dedicated to hazardous wastes only. It was used to carry all other types of waste, therefore posing the risk of contamination. According to interview with healthcare facilities' officials, the use of wheelbarrows was encouraged because it was relatively cheap as compared to the recommended standard trolley. **Photo 5** below shows the kind of trolley used for HCW collection in one of the HCF visited.

Photo 4: *Wheelbarrow which is used for moving HCW from point of generation to storage on site though it is not recommended. (Photo taken at Maweni Regional Hospital in Kigoma).*

On the other hand **Photo 5** shows one of the modern and recommended waste transportation bins found in one of the health facilities visited.

Photo 5: *Moving buckets for internal transportation of healthcare waste (Photo taken at Mbeya Referral Hospital).*

The use of transport facilities (mainly wheelbarrows) which are not designed for healthcare waste collection may lead to spillage of waste and may pose potential risk for injury and infection.

3.3.4 Storage of healthcare waste

Section 2.2.4 of this report provides healthcare waste storage requirement to be followed by generators of healthcare waste. Assessment of the availability of central collection point in the visited health facilities and average time healthcare waste are kept in storage point before treatment is as shown in the Table 3.7 below.

Table 3.7: Assessment of the availability of central collection point

Health facility category	No. of health facilities with central collection point	Percentage
Referral Hospitals	3	75%
Regional Hospitals	3	37%
District Hospitals	2	16%
Health Centres	2	22%

Source: Auditor's analysis based on the physical observation

As shown in Table 3.7 above, more than 50% of the visited regional hospitals, District Hospitals and Health Centres did not have central

waste collection points to store waste before being disposed. Healthcare waste was placed in the burning chamber or stored outside the incinerator's building or in an open area of the health facilities' premises.

The physical verification of the condition of the storage facilities and sites reveals as follows:

Table 3.8: Number of health facilities with recommended quality features

Health facility category	Fenced	Lockable door	Impervious floor	Drainage system	Spill kit
Referral Hospitals	1	4	4	0	0
Regional Hospitals	0	1	1	0	0
District Hospitals	0	2	0	0	0
Health Centres	2	2	0	0	0

Source: Auditor's analysis based on the physical observation

As depicted in the Table 3.7 and 3.8 above, most of the visited places where waste was stored were not as per recommended standard. Eight health facilities had storage point but they did not meet the set basic standards that minimizes the impact on the environment. The storage areas were not fenced; they did not have lockable doors as well as impervious floors. Photo 6 below shows some of the healthcare waste storage facilities in health facilities visited.

***Photo 6a**: The photos shows HCW being stored in the barrel, others*

dumped on the floor in open space

Photo 8a above demonstrates healthcare waste dumped on the flow in an easily accessible area. Likewise, Photo 6b below reveals healthcare waste stored in barrels. However, standard operating procedures require no waste is to be stored for more than two days before being treated or being disposed of.

Photo 6b: *A Healthcare Facility operating without having waste storage chamber/room. The waste was found to be stored in the barrels. (Photo taken at St. Elizabeth Hospital in Arusha).*

Interviews with officials in these health facilities indicated that, storage facilities were not constructed because of budgetary constraints in those facilities.

However, in some health facilities like Mnazimmoja and Mwananyamala hospitals, the budgets were approved by the Municipal Councils but the funds were not allocated for construction of storage facilities. Interviews with officials in the respective LGAs revealed that allocation of funds was based on the priorities set by the municipalities for that financial year, of which the healthcare waste management activities was given low priority. The municipalities mainly focused on buying drugs and other health equipments. Due to lack of storage bases, waste was mostly stored in open places and because of dumping in open places there was high risk of wind blowing over the dumped waste, dispersing healthcare waste to nearby communities posing risk to public health and pollution to water and soil.

Photo 7a and **7b** shows the municipal waste mixed with healthcare waste both dumped together.

Photo 7a: Infectious wastes stored outside the incinerator building in Mwananyamala Hospital

***Photo 7b**: Infectious wastes stored outside the incinerator building in Mbeya Regional Hospital together with other waste because there are no storage rooms for the hazardous wastes.*

3.3.5 Retention of healthcare waste in storage base

The national healthcare waste standards and procedure requires that, no waste is to be stored for more than 48hrs (two days) before being treated or being disposed off. However, the assessment of the average time that healthcare waste are left in the storage facilities before being treated or disposed is as shown in the Table 3.9 below.

Table 3.9: Average number of days healthcare waste are kept before being treated

Health facility category	1 - 2	3 - 5
Referral Hospitals	3	1
Regional Hospitals	4	4
District Hospitals	9	3
Health Centres	7	2

Source: Auditor's analysis based on the health facilities response on the questionnaire

Assessment of the average time healthcare waste is kept in the storage facilities before being treated shows that there are health facilities that keep healthcare waste for three to five days before being treated against the recommended standard that is within 48 hours after its generation.
It was noted in the Ocean Road Cancer Institute, hazardous HCW is collected once in a week, this implies that HCW stays for 124hrs (six days).

The healthcare waste generated in seven days at ocean road cancer institute is estimated to be 540kilograms. This a relatively long storage time compared to the limit set in the guidelines. According to interview with officials at the hospitals, this frequency of waste collection was set by the private contractor who is responsible for waste collection at the hospital.

Prolonged storage before collection, pose high risk of that waste decaying and hence causing air pollution (unpleasant smell) and may also result in eruption of diseases.

As for non-hazardous waste, its collection was done by LGAs. On average, in some hospitals visited the collection of non-hazardous waste was done two to three times a week, while in some hospitals such as Temeke, Muhimbili, Mwanayamala and Amana collection was done on daily basis. However, with exception of Muhimbili, Mwanayamala and Aghakhan-Mbeya, the HCFs did not have collection register.

Photo 8a: *Waste storage room with hazardous healthcare waste awaiting collection (Photo taken at Ocean road Cancer Institute)*

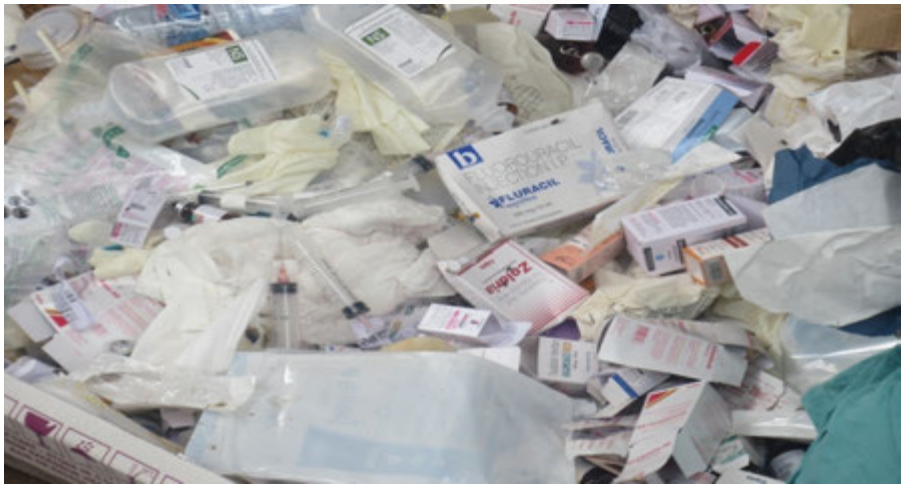

Photo 8b: *Waste storage room with hazardous healthcare waste awaiting collection (Photo taken at Ocean Road Cancer Institute)*

According to interviews with healthcare officials, obtaining resources to purchase bins, bin-liners and maintenance of incinerators was difficult in most facilities.

3.3.6 Treatment and disposal of Healthcare Waste

An assessment of the incineration service was also conducted in the visited health facilities to check whether they comply with the recommended standard (refer section 2.2.6 of this report). The audit reveals the following:

The healthcare waste National Standards and Procedures require Referral Hospitals to use pyrolitic incinerators, whereas Regional Hospitals are supposed to use either pyrolitic or De Montfort incinerators and the District Hospitals are supposed to use the De Montfort incinerators. Table 3.10 below presents different conditions of incinerators and types in use at different hospitals.

Table 3.10: Assessment of incineration service in Referral Hospitals

Health facility	Does the facility have incinerator?	If Yes, what type of incinerator?	If no, where is healthcare waste disposed
Ocean Road	No	-	Muhimbili National Hospital
Bugando	No	-	Municipal dumpsite
Mbeya	Yes	De Montfort	
Muhimbili	Yes	Pyrolitic	

Source: Auditor's analysis based on the physical observation

It was noted in Mbeya Referral hospital that the available incinerator is not burning the waste properly. The Chimney is short, causing disturbances to the neighbors. For Muhimbili National Hospital the incinerator is modern. It requires to be maintained to its rated capacity.

The assessment conducted in regional hospitals show that all eight visited regional hospitals had the required type of incinerator as stated in section 2.2.6 of this report. However, the condition of the incinerators was as described in Table 3.11.

Table 3.11: Assessment of incineration service in Regional Hospitals

Health facility	Type of incinerator in place	Condition
Mbeya and Arusha	Pyrolitic and De Montfort	The Pyrolitic is the modern type but not well maintained. The De Montfort is dilapidated.
Amana, Temeke, and Mwananyamala	Pyrolitic	Modern but not well maintained
Dodoma, Sekou-Toure and Maweni - Kigoma	De Montfort	Not performing well

Source: Auditor's analysis based on the physical observation

It shown in Table 3.11 above Mbeya and Arusha Regional hospital have the modern type of incinerator but they are forced to use the old one when the pyrolitic is not working. This has been observed also in Amana, Temeke, and Mwananyamala regional hospitals. Likewise, Dodoma, Sekou-Toure and Maweni have incinerators that are not working properly since they are old and dilapidated, and as a result waste were not fully burned to ashes. At the time of audit, the incinerator in Maweni - kigoma was closed and waste was burned at an open pit.

Assessment of the District Hospitals[8] revealed that all of them have the recommended type of incinerator (De Montfort). However, these incinerators were not performing well as they are old and dilapidated. As a result waste is not fully burned into ashes. Physical observations of the incinerator ashes showed that waste was not completely burned. This poses great risk to public health and environment as the half burned waste and sharps could host some disease causing pathogens.

Likewise, assessment of the health centre[9] showed that all of them do not have incinerator. The health facilities uses open burning pit to treat their healthcare waste although health centres are required to have De Montfort type of incinerator.

8. Mpwapwa, Mbarali, Mbozi, Kasulu, Kibondo, Magu, Misungwi, Meru, Igawilo, St. Elizabeth, Longido and Ngarenaro Distric Hospitals

9 Agakhani Mbeya, Sinza Health Centre, Magomeni, Mbagala Rangitatu, Uyole, Mwafrika, Nyamagana,Vijibweni, and Mnazi Mmoja Health centres.

3.3.7 Disposal sites

Physical observation of the disposal sites revealed that ashes and residue from incinerators were disposed in open spaces or in unlined excavations in dumpsites without being covered. According to recommended practices, this is not suitable as the ash from incinerator may contain heavy metals. Photo 9 and 10 below demonstrate disposal site in Mwanza and Arusha Regional Hospitals respectively.

Photo 9: *Ash from incinerators disposed at open space, Sekou Toure Hospital, Mwanza*

Photo 10: *Ash and residue from incinerator disposed in an unlined open excavation, Mount Meru Hospital, Arusha.*

As shown in the Photo 9 and 10, residuals from incinerator were disposed in unlined open space which poses a risk to scavengers and environmental health.

3.4 Documentation of HCW amount generated and treated

As explained in section 2.2.1 of this report, information regarding healthcare waste needs to be properly maintained. Review of the record keeping of the generated and treated healthcare waste is as shown hereunder.

Table 3.12: Number of health facilities with healthcare waste quantities generated daily, weekly and annually

Health facility category	Daily records	Weekly records	Annual records
Referral Hospitals	0[10]	2	0
Regional Hospitals	2[11]	0	0
District Hospitals	0	0	0
Health Centres	0	0	0

Source: Auditor's analysis based on the health facilities response on the questionnaire

Table 3.12 shows that two referral hospitals maintain weekly records and two regional hospitals that maintain daily records. Neither referral nor regional, district and health centres maintain annual records of generated healthcare waste. Assessment of the documented healthcare waste generated by category regardless of whether it is the daily, weekly or annual records is as shown in Table 3.13 below.

Table 3.13: Number of health facilities with records of HCW quantities generated by category

Health facility category	Number of health facilities	Percentage
Referral Hospitals	2[12]	50
Regional Hospitals	2[13]	25%
District Hospitals	0	0
Health Centres	0	0

Source: Auditor's analysis based on the health facilities response on the questionnaire

10. Mbeya referral hospital has bought weigh scale for weighing healthcare waste but until the time of the audit it has not put into use
11. Mbeya and Dodoma do not record their waste but they estimate based on the number of waste bag collected. A bag is estimated to carry 20kg of waste.
12. Muhimbili National Hospital and Bugando Hospital
13. Mwananyamala and Dodoma Regional Hospital

Table 3.13 shows that 50% of Referral hospitals and 25% of Regional hospitals maintain records of healthcare waste generated by category. However, visited District hospitals and Health centres do not maintain records of generated healthcare waste by categories (i.e hazardous and non hazardous)

Health facilities do not record the quantities of generated and disposed healthcare waste because the responsible overseers and key players (MoHSW, PMO-RALG, RS and LGAS) have not enforced the National Standards and Procedure for the HCWM which provides a monitoring form for the assessment of daily waste generation.

3.5 Utilization of available resources

Review of the available resources that can be used for managing healthcare waste in the visited health facilities is as shown below.

Human resources available

An analysis of the number of persons involved in the collection, handling, and storage of healthcare waste, their designation, their training in healthcare waste handling and management, and the number of years of experience for this type of work in the visited health facilities is as shown in Table 3.14 below.

Table 3.14: Assessment of available health workers responsible for managing HCW in Referral Hospitals

Health facility	Number persons	Designation	Training	Average years of experience
Ocean Road	2	Health officer and Hospital Matron	Environmental health Infection, prevention control	18yrs Estate Manager and 7yrs Matron
Bugando	2	Health officer and Hospital Matron	Environmental health Infection, prevention control	10 years
Mbeya	1	Hospital Matron	Infection, prevention control	16 years

Muhimbili	2	Health officer and Hospital Matron	Environmental health Infection, prevention control	10 years

Source: Auditor's analysis based on the health facilities response on the questionnaire

As reflected in Table 3.14 above, all visited referral hospitals except one have health officers whose academic background is environmental health. All of them have hospital matron who was trained on Infection, prevention control.

Table 3.15: Assessment of available health workers responsible for managing HCW in Regional Hospitals

Health facility	Number persons	Designation	Training	Average years of experience
Amana, Arusha, Dodoma, Maweni-Kigoma and Temeke	2	Health officer and Hospital Matron	Environmental health Infection, prevention control	
Mbeya, Mwananyamala and Sekou-Toure	1	Hospital Matron	Infection, Prevention control	

Source: Auditor's analysis based on the health facilities response on the questionnaire

Table 3.15 above reflects that five Regional hospitals have two persons each (health officer and hospital matron). The remaining three hospitals have hospital matron responsible for also managing healthcare waste. The matrons have been trained on Infection, Prevention control. The assessment of district hospitals is as shown in Table 3.16 below.

Table 3.16: Assessment of available health workers responsible for managing HCW in District Hospitals

Health facility	Number persons	Designation	Training	Average years of experience
Igawilo	1	Matron	Infection, Prevention control	
Kasulu	1	Matron	Infection, Prevention control	
Kibondo, Magu, Misungwi, Mbozi and Mpwapwa	2	Matron Health Officer	Infection, Prevention control and Environmental Health	
Ngarenaro	1	Matron	Infection, Prevention control	
Longido	1	Matron	Infection, Prevention control	
Mbarali	1	Matron	Infection, Prevention control	
Meru	1	Matron	Infection, Prevention control	
St. Elizabeth	1	Matron	Infection, Prevention control	

Source: Auditor's analysis based on the health facilities response on the questionnaire

Seven District hospitals visited did not have health officers as reflected in the Table 3.16 above. The matron is the one responsible for managing healthcare waste. The matrons were also trained on Infection, Prevention control. On the other hand, the situation in health centre is as depicted in the Table 3.17 below.

Table 3.17: Assessment of available health workers responsible for managing HCW in Health centres.

Health facility	Number persons	Designation	Training	Average years of experience
Agakhan-Mbeya	1	Matron	Infection, Prevention control	
Magomeni, Mnazi Mmoja and Nyamagana	2	Matron and health officer	Environmental health, infection, prevention and control	
Mwafrika, Mbagala Rangitatu, Sinza, Uyole, Vijibweni	1	Matron	Infection, Prevention control	

Source: Auditor's analysis based on the health facilities response on the questionnaire

Three health centres have health officer and hospital matron trained on environmental health and Infection, Prevention control respectively. One health centre has one health officer while the remaining five health centres has the matron playing the role of managing healthcare waste.

HCW Equipment and tools available

The healthcare waste management National Policy Guideline requires health facilities to properly plan and estimate the equipment required for handling healthcare waste management activities. Equipment such as safety boxes, color coded bags as well as bag - holders, containers, collection trolleys and protective equipment for healthcare waste handling have to be made readily available.

The audit noted that, basic equipment for healthcare waste management was not readily available from the suppliers when health facilities needed them. As a result, health facilities did not have enough color coded bins, bin liners and other key equipment. For instance, ordinary plastic bags were used as bin liners as shown

in **Photo 11**.

Photo 11: *Ordinary plastic bags used as bin liners*

The audit noted that MSD did not supply most of the healthcare waste management equipment. Because of that, hospitals had to buy from private suppliers who were not specialized in supplying medical equipment. Healthcare waste management equipment such as bins and bin liners that were bought outside the MSD did not meet specifications for handling healthcare waste management because they were not meant for that purpose.

Financial resources available for HCW management

Analysis of the financial resources allocated for the management of healthcare waste in the visited healthcare facilities show that there are no specific funds allocated for management of healthcare waste. The activities of HCWM were usually included in the budgets as part of 'Hospital Supplies and Equipment'.

CHAPTER FOUR

COUNCIL'S REACTION TO HEALTHCARE WASTE MANAGEMENT

This chapter focuses on the audit findings relating to the management of the healthcare waste by LGAs. As explained in section 1.3 of this report, Councils' Directors have the responsibilities of ensuring that HCW management activities are properly conducted in their areas of jurisdiction. They are also required to create database for healthcare waste management and report to the higher authorities. Findings in this chapter are structured as follows:

4.1 Monitoring of Healthcare Facilities Performance by LGAs

LGAs were expected to incorporate HCWM activities into their Comprehensive Council Health Plan (CCHP) to enable them to monitor its implementation. Assessment of the visited councils' comprehensive plans reflects as follows:

Table 4.1: Assessment of the inclusion of healthcare waste in CCHP

LGAs	Are the HCW activities included in CCHP?	If yes, was it implemented?	Comment
Temeke	Yes	No	The burning chamber was not constructed at kigamboni health centre. And the placenta pit was not constructed in three dispensaries.
Kinondoni	Yes	Yes	Constructed 10 incinerators in 10 facilities and managed to procure working tools from waste management unit for disposal.

Ilala, Misungwi and Mbarali	No		The HCWM are not clearly mentioned in the CCHP, but issues of HCWM are included in the procurement of hospital supplies and equipment
Meru	Yes	No	There was an activity to renovate 5 incinerators in 5 dispensaries but was not implemented.
Chamwino	Yes	No	
Mwanza CC	Yes	No	Construction of placenta pit and construction of 6 incinerators in 6 dispensaries was not done
Arusha	Yes		

Source: Comprehensive Council's Health Plan and their respective implementation reports

It has been noted in the visited LGAs that, the inclusion of healthcare waste management in their CCHP mainly focus on the procurement and installation of incinerator. For instance, Temeke MC and Mwanza CC planned to construct placenta pit, but was not implemented. Furthermore, Meru DC planned to renovate incinerators in five dispensaries, but was also not implemented. Kinondoni MC is the only council appears to implement what they have planned in their CCHP as regards to healthcare waste management as shown in Table 4.1 above. According to interview with officials in the respective council and review of the CCHP implementation report, non implementation was due to unavailability of funds. The initially planned fund to finance the activity was not released.

Likewise, LGAs were assessed whether healthcare waste management activities were among the focus area when conducting supervision visit. Review of the supervision checklist in the visited 16 Councils revealed that healthcare waste was not separately assessed. The checklist that has been in use assesses if the following issues are available, adequate and functional:

- the solid waste disposal facilities
- hazardous waste materials collection and disposal facilities

However, the MoHSW has issued a guideline for HCW management monitoring tool/checklist at the health facility level that could be used during supervision visit to assess:

- healthcare waste generation
- outside storage
- on-site treatment and disposal
- special storage containers for healthcare waste
- off-site transport

According to interview with officials from the 16 visited Councils, non utilisation of the issued guide was due to lack of awareness of the existence of the guide. This could be due to inadequate supervision conducted by the higher authorities.

Lack of monitoring report affected the LGAs in understanding the performance of HCFs. This resulted into LGAs lacking reliable information to submit to the Ministry of Health and to PMO-RALG on the status of healthcare waste management in their areas. The health facilities use HMIS to report healthcare information to LGAs which then consolidate with other health facilities in their areas of jurisdiction and report to the Regional Secretariat. However, the system used does not accommodate waste information generated in the respective health facilities. Consequently healthcare waste information is not reported to the higher authorities. Lack of monitoring information at LGA can negatively affect them in planning for the use of resources such as funds, personnel, equipment and materials necessary for safe handling and disposal of healthcare waste.

4.2 **Inspection of HCW management by Council's Officials**

As part of monitoring, Council through CHMT is expected to inspect health facility treatment or disposal facility located within the area of his jurisdiction. The objective is to check if provisions of the National guidelines are being complied with and any contravention to be reported. However, it has been noted in all visited councils that inspection was conducted during the supervision visits.
The LGAs are supposed to conduct supportive supervision to all Hospitals, Health Centres and Dispensaries both private and public

owned. The supervision should aim at ensuring that, management of HCW is done according to stipulated standards. Through the Council Health Management Team (CHMT) the supportive supervision should be planned and frequently conducted. However, it was found that, performance of supportive supervision was not adequate. Most LGAs did not reach all the HCFs for supervision in a year. **Table 4.2** below shows the coverage of supervision by LGAs.

Table 4.2: Inspections activities to healthcare facilities by LGAs (2013)

LGAs	Number of health facilities	Number of supportive supervision visit made to HCFs per year	Coverage to the HCFs for inspection	Number of HCFs not visited for inspection per year
Temeke	280	4	70%	84
Kinondoni	202	4	60%	81
Ilala	171	4	75%	43
Kibondo	41	4	45%	23
Misungwi	43	48	50%	22
Meru	57	12	90%	6
Magu	46	12	67%	15
Mbarali	41	4	50%	21
Kasulu	56	4	65%	20
Longido	23	12	90%	2
Mpwapwa	52	4	85%	8
Chamwino	64	4	70.3%	19
Mbozi	64	4	67%	21
Mwanza CC	60	12	80%	3
Mbeya CC	55	96	100%	-
Arusha	78	48	98%	2

Source: Interview with LGAs and supervision reports

Based on **Table 4.2** above, coverage was the highest in Arusha where 98% of HCFs were reached for supervision whereas Kibondo was the lowest with only 45% of all HCFs that were reached. According to interviews with officials in Arusha, the good performance was because of geographical location of the HCFs. Most of HCFs in Arusha City were located within the city within the radius of 18km. This made it easy for health officials to make frequent visits for supervision follow ups.

On the other hand, low coverage in Kibondo DC was attributed to long distance between the district headquarters and the health facilities. Other factors included the poor road conditions especially during the rainy seasons. According to DMO, the district has insufficient capacity in terms of cars and staff because some of the resources that were planned for supportive supervision were shifted to the newly established district, Kakonko. This had to a large extent affected the performance of supportive supervision because there were no replacements. As it can also be seen in Table 4.2 above, the number of health facilities not reached in Dar es Salaam is higher. In Dar-es-salaam, there are more facilities than supervisors can handle.

Interviews with LGAs Health Officers in Dar es Salaam indicated that, there is high risk of increased illegal dumping of healthcare waste and mixing of hazardous waste with other municipal wastes in all health facilities not reached for supervision. Health Officers in LGAs confirmed that, most private health facilities or other profit oriented health facilities took advantage of the loophole of low inspection to minimize the cost of treating their healthcare waste by mixing them with other municipal waste.

According to interviews with LGAs officials, the most common problems that LGAs found during their supportive supervisions were linked to poor waste segregation practices in the health facilities, lack of or malfunctioning incinerators and lack of healthcare waste management equipment. Figure below shows the distribution of the common findings in most health facilities found by the LGAs.

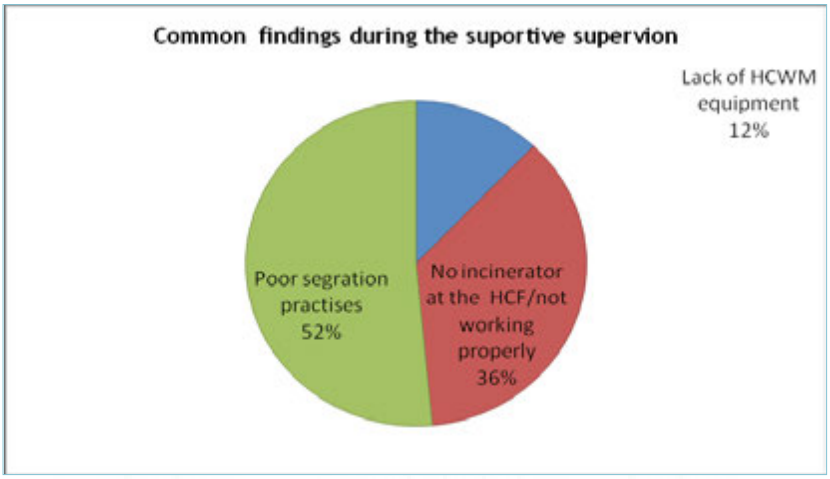

Figure 2: Most common findings in HCFs according to LGAs officials based on auditors analysis of the questionnaires from LGAs

In addition, non of the LGAs (through their respective CHMTs) conducted training programmes to health facilities staff along with the supportive supervisions. Such trainings were expected to be conducted as part of capacity building on healthcare waste management matters for all categories of health facilities staff.

4.3 Council's reports of HCW management to higher authorities

LGAs were expected to assess management of healthcare waste. One method could be through analysis of the information from health facilities and identify problem areas that needed attention and assist the health facilities in addressing identified problems.

We noted that, LGAs did not have proper systems of monitoring performance of management of healthcare waste in healthcare facilities. Also the LGAs did not monitor performance of equipment like monitoring of emissions found in their areas. One of the reasons that affected monitoring performance of LGAs was lack of clear reporting mechanism.

Equally, LGAs were expected to report on healthcare waste management in their respective areas of jurisdiction. This could be based on the report submitted by health facilities in their

respective areas. However, the health facilities did not report healthcare waste management issues to LGAs.

Health facilities use Health Management Information System (HMIS) to report health issues performance. However, HMIS reports did not address all issues related to healthcare waste management at the health facility level. HMIS reports mainly covered some issues of general sanitation condition of hospitals. Apart from issues reported through HMIS, health facilities submitted other reports on condition of diseases and other issues like Malaria, vaccination etc.

Lack of healthcare waste management information from the level of health facilities to the Council affected the Council in planning, monitoring and evaluation of performance of health facilities. Likewise, Council's Health Management Team could not effectively identify problems areas that needed immediate attention and therefore unable to help health facilities in addressing identified problems or issues on healthcare waste management. This is because Councils have not created database for healthcare waste management.

4.4 Council's information campaign to Community

Councils were also expected to create communities awareness on healthcare waste management risks as mentioned in section 1.3 under assessment criteria. Interviews and review of different reports showed that, all LGAs did not conduct information dissemination campaigns, as required by guidelines[14], to community to ensure that they are aware of risks of poor management of healthcare waste. The awereness campaigns conducted mainly adresssed issues of water, sanitation and hygine and issues related to prevention of communicable diseases like cholera and malaria.

LGAs did not identify key target groups for the awareness campaigns. Out of 16 LGAs visited only two made analysis of the target groups for awareness campaigns. The awareness campaigns conducted targeted health workers but there was no campaign that was organised to

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address the general public. According to interviews with Health officials in LGAs, no documented evaluation was made to ascertain the effectiveness of the awareness campaigns, although experienced officials noticed some changes in their performance in terms of precaution taken at works.

Likewise, the LGAs conducted annual consultative meetings with healthcare facilities' management on the general and specific perfomance of healthcare waste management in the LGAs in general. Through these forums health officials discussed various things on the management of health issues in their health facilities. However, Kasulu and Longido have persistently failed to conduct the consultantive meetings. **Table 4.3** below gives information on the extent of consultative meetings held in various LGAs.

Table 4.3: Status of consultative meetings held

Name of LGA	Status of of the annual consultative meeting		
	2010/11	2011/12	2012/13
Chamwino, Arusha City Council, Meru, Ilala, Temeke, Kinondoni, Magu, Mwanza City Council , Misungwi, Mbeya City Council	Done	Done	Done
Mbozi, Kibondo, Mbarali, Mpwapwa	Not done	Done	Done
Kasulu, Longido	Not done	Not done	Not done

Source: interview at HCFs visited and their annual progress reports

The two districts budgeted for the meetings as part of training programmes, however, in the last three years PMO-RALG was unable to conduct training activities in the LGAs because of financial constraints.

4.5 Utilization of the available resources by Council to manage healthcare waste

According to interviews with health officials and document reviews in the visited LGAs we found that, the LGAs developed budgets for healthcare waste management activities, however, the buggets were

not allocation of resources was not based on the magnitude of the HCW stream . In all LGAs the healthcare waste issues were placed as lumpsum in the category of environment and sanitation issues. Issues of healthcare waste in LGAs were given less priority as much more resources were allocated to buying of medicine and other curative activities for the health facilities under the LGAs

Table 4.4: LGAs Specific Budget summaries for health basket grant on Environmental and sanitation for year 2012/13

LGAs	DMOs/ MMOH Office	Council Hospital	Health Centre	Dispensary	Voluntary Agency	Community	Total
Mbarali	20,229,044	4,047,200	0	0	0	0	24,276,244
Magu	9,732,500	8,208,000	4,655,000	32,023,182	0	0	54,618,682
Kinondoni[16]	2,000,000	49,613,000[17]	27,943,118	44,936,674	0	0	144,492,792
Mwanza[18]	160,939,341	0	0	0	0	0	160,939,341
Temeke[19]	13,020,000	92,612,240[20]	0	0	0	0	134,438,240
Ilala[21]	44,489,880		0	0	0	0	44,489,880
Misungwi	14,229,000	1,200,000[22]	0	0	0	0	15,429,000

Source: Annual Performance Progress Technical and Financial Report for the Comprehensive Council Health Plan

As shown in the Table 4.4 above, most of the funds of the seven visited LGAs are allocated to Council's Medical Office and Council's hospital. Two LGAs have allocated funds to health centres and dispensaries. However, Voluntary Agencies and communities appear not to be allocated with funds for environmental and sanitation.

The MoHSW developed the National Healthcare Waste Management Plan in the year 2008. However, this document has not been translated into activities for implementation by lower levels (i.e. Regional Secretariats, LGAs and health facilities). LGAs and health facilities have not developed healthcare waste management activities for implementation based on the National Healthcare Waste Management Plan. Consequently, the overall strategy cannot achieve the desired national results.

Low priority given in financing healthcare waste affects the entire process of management of healthcare waste. As an example, the incinerators are not maintained, recommended colour coded bins and bin liners are not procured as required.

CHAPTER FIVE

MONITORING OF HEALTHCARE WASTE BY THE CENTRAL GOVERNMENT

This chapter presents the audit findings as answers to the audit questions provided in Chapter One of this report. The audit findings presented provide insights regarding performance of the MoHSW, PMO-RALG, Regional Secretariats and LGAs in conducting oversight, monitoring and supportive supervision of healthcare waste activities of health facilities. It also covers the performance of health facilities in managing healthcare waste they generate.

5.1 Monitoring Plan of the HCWM by the MoHSW and PMO-RALG

The MoHSW is expected to monitor the performance of various actors in the management of healthcare waste in the country to ensure safe handling and disposal of healthcare waste. MoHSW and PMO-RALG are expected to ensure that actors, at all levels, develop and implement specific plans for monitoring in accordance with the healthcare waste management monitoring plan.

According to interviews with ministries' officials, the two ministries did not develop specific arrangements for monitoring of the implementation of healthcare waste monitoring plan by various actors (i.e. Regional Secretariat, LGAs and HCFs). Interviews and review of documents also revealed that both ministries, MoHSW and PMO-RALG had prepared the annual plans and the strategic plans.

However, the plans did not include the milestones and targets for supportive supervision and inspections to the health facilities on issues concerning healthcare waste management. Based on the interviews with the ministries' officials, the plans for inspections and supportive supervisions were only prepared on ad-hoc basis when they received funds either from donors or the government. The only information that was put in the ad-hoc plan as obtained from the National Coordinator of the healthcare waste management is the list of LGAs and health facilities to be visited for supportive supervision. The approach of preparing the plans on an ad hoc basis had the

adverse effect of the ministries failing to evaluate their performance in implementation of the healthcare waste management in the country.

Lack of specific plans for monitoring of healthcare waste management made it difficult for both ministries to integrate healthcare waste management issues into their day-to-day activities such as the infection and prevention control programs which contain some elements of the management of waste. As a result, the two ministries did not have enough information regarding healthcare waste management across the country. As a result, they were not able to ascertain the trends regarding performance of health facilities in managing healthcare waste. Also the ministries lacked information on how the LGAs, regional administration and other organs in the country monitored the healthcare waste management activities.

Although the plan for monitoring of implementation of various HCWM activities is of vital importance, the two ministries have not taken any action to ensure this document is annually prepared and implemented.

5.1.1 Implementation of the HCWM Monitoring Plan

The audit noted that, the MoHSW and PMO-RALG report on the implementation of their annual plans through the quarterly reports. However, according to interviews with ministries' officials the existing reporting system does not support the smooth flow of HCW management information from health facilities, LGAs and regional secretariats. As a result, the progress of performance of HCW management in the country was not adequately reported at central level and the ministries could not properly plan for managing and monitoring of the HCW management in the country.

On the other hand, we noted that the MoHSW did not have clear strategies of disseminating healthcare waste management education in the country. According to interviews with officials at MoHSW, training was not regularly conducted. Dissemination of healthcare waste management issues was done only when various professionals in the field of health services gathered in workshops, seminars, meetings

and other events that attracted large numbers of participants.

A review of documents has confirmed that, during the period under review the MoHSW organized three events aimed at training staff on how to operate incinerators, training on SOPs, and a workshop on National Catalogue and Regulation on HCWM. The participants in those events, however, did not represent the whole country. Because of this, the feedback from the MoHSW could not reach all the stakeholders including healthcare services practitioners who have a vital role to play in management of HCW in dispensaries, Health Centers and hospitals.

5.1.2 Use of Monitoring Results

The audit noted that the MoHSW did not conduct quarterly review of the performance of the actors in HCWM as required by the guidelines. Likewise, the MoHSW did not analyze the HCWM trends to evaluate the countries' performance in HCW management. The analysis was not done partly because the ministry did not have the required data on the amount of HCW from the health facilities in the country.

According to interviews with officials at MoHSW dealing with HCW management, some of the information on HCW was manually collected when various teams went for supportive supervision and inspection in different places in the country. However, we found that the MoHSW conducted only one supportive supervision which focused on HCW management in the last three years and this supportive supervision covered only nine regions (i.e. about 36% of the country).

Based on the results of supportive supervision and inspection made by MoHSW, various decisions were made including conducting training of the incinerator operators. However, during the audit we noted that the ministry did not give documented feedback to the LGAs and health facilities regarding the HCW results of the inspection conducted. As a result, it will be difficult for the ministry to make follow up and notice any changes that may take place in the LGAs and health facilities on the subsequent round of the supportive supervision.

5.1.3 Coordination of Ministries and Agencies responsible for HCWM

Since 2001 the Ministry of Health and Social Welfare in collaboration with other stakeholders has been promoting several initiatives and interventions such as workshops, trainings and awareness campaigns aimed at safe management of healthcare waste at the point of health services delivery. Ongoing healthcare waste interventions at different levels of health services delivery are an indication of increased awareness and commitment by the healthcare Management and Health workers.

However, the MoHSW was not able to effectively coordinate HCWM issues from various stakeholders. Departments within the Ministry were not sharing HCW management information. For an example, the National Coordinator of HCW was not using HCW management information that was available at the offices of the other coordinators like the Coordinator of HIMS, PlanPEP and other information management systems. The coordinator of HCW management at the ministry could easily get the information from LGAs from the coordinator of LGAs at the ministry.

As a result, MoHSW could not prepare reports on the position of HCW management. Likewise, the MoHSW as the central documentation point for HCWM monitoring in the country, was not able to provide to stakeholders effective information and reliable documents on HCW management.

5.1.4 PMO-RALG's involvement in monitoring of HCWM issues

PMO-RALG did not integrate issues of HCW management in its monitoring activities regarding the performance of LGAs. As a result, HCW management activities were not included in the budget as an item that needed to be monitored. The audit noted that, PMO-RALG did not assist the LGAs in their duty to manage HCW particularly in dealing with problems regarding equipment, disposal sites and enforcement of by-laws.

5.1.5 Use of the HMIS in collecting HCWM information from HCFs

The Ministry of Health did not use the Health Management Information System (HMIS) for collection of the healthcare waste information from the health facilities. According to interviews with the MoHSW officials, the HMIS database did have a section for entering HCW information. Non utilization of the HMIS for HCW management made the PMO-RALG and MoHSW lack crucial information of HCW from the LGAs and HCFs.

Lack of known system for reporting issues of HCW management from LGAs and HCFs has been a challenge the ministry faced in collecting HCW from LGAs and HCFs. As a result, the ministry could not maintain a reliable and up-to-date database of HCW information from LGAs and health facilities.

5.2 Monitoring of HCWM activities by the Regional Secretariats and LGAs

5.2.1 Monitoring of health facility's performance by the Regional Secretariat

Interviews with Regional Health Officers and Medical Officers in regions visited, all six RSs through their respective RHMTs, conducted supportive supervision as a means of monitoring of performance of healthcare waste management in LGAs. Along with the supportive supervision, RHMTs were supposed to analyse, summarise and report to the MoHSW the monitoring reports from LGAs[23]. However, review of the progress reports prepared by the RHMTs showed that all the six regional secretariats did not receive any information regarding HCWM from LGAs. This was because the only reports submitted by the LGAs concerned implementation of CCHP and these reports did not include healthcare waste issues. The RSs did not make any efforts to obtain the HCWM information from the LGAs.

Lack of HCW information in these reports prevented the RHMTs from getting key information generated from the LGAs. This made it difficult for the RHMTs to support LGAs on issues of HCW management.

23. Healthcare Waste Management monitory plan guidelines issued by MoHSW

5.2.2 Feedback from Supportive supervision by the RHMT

Upon completion of the supervisory activities, the RHMT teams were supposed to give both verbal and written feedback to the LGAs and later on make follow up to assess implementation of the issues raised through the feedbacks. However, we found that, the feedback was usually verbal except for the case of the RHMT of Mbeya who was the only one gave both verbal and written feedback. **Table 5.1** below shows the mode of feedback from regional secretariats.

Table 5.1: RHMT's feedback to LGAs

Region	Mode of delivering feedback	
	Verbal	Written
Dodoma	V	
Mbeya	V	V
Kigoma	v	
Mwanza	v	
Arusha	v	
Dar es salaam	v	

Source: Supportive supervision reports

Based on Table 5.1 above, it can be seen that most regions preferred giving only verbal feedback. We, further noted that it was difficult for RHMTs to make follow up of implementation of the verbally given feedback because they were not recorded anywhere.

5.3 Financing the HCWM activities

Review of the MoHSW's budgetary provisions for OCs in the annual budgets revealed that no funds were allocated to HCWM activities from the own source for the entire period under review (i.e. 2010/11 to 2012/13). All the HCWM activities that were carried out by the MoHSW relied on funds from the Development Partners.

CHAPTER SIX

AUDIT CONCLUSION

Our audit findings presented in previous chapters gave us reasons to draw the following conclusions:

6.1 Overall Conclusion

Despite the presence of clearly described National Standards and Procedures for healthcare waste management, healthcare waste in Tanzania is not well managed. Issues of healthcare waste management are not given priority to protect public and environmental health. Information to the public on generation rates, types of waste, related environmental health risks, and problems of waste management are hardly available. Neither the government nor medical facility authorities significantly pay due attention towards the above issues. Audit observation indicates that medical waste is handled just like any other domestic waste.

MoHSW and PMO-RALG have not set up an appropriate monitoring and control system for effective management of healthcare waste in the country. Likewise, the Regional Health Management Team and the Council Health Management Team have shown an ineffective performance in conducting supportive supervision and inspection of healthcare waste management in the country's health facilities.

6.2 Specific Conclusions

6.2.1 Public health and environmental protection are less prioritised

Health facilities have not demonstrated that public health and protection of environment is their top priority. This is because health facilities do not follow best practices of managing healthcare waste. Waste segregation is inadequately done in most of the health facilities. Significant amount of healthcare waste generated is not appropriately segregated.

Waste segregation and treatment are the most important interventions in the management of hazardous wastes, which, however, was insufficiently

practiced in some of the visited health facilities. Non-infectious, infectious, highly infectious and sharps waste are mixed. The non-compliance is associated with lack of close supervision, inadequate supply of healthcare waste handling equipment, lack of proper training and awareness to healthcare waste handlers. It was also noted that healthcare waste handlers are inadequately equipped on waste management. This is because healthcare waste issues are not in the curriculum of health training institutes.

Data for generated and disposed healthcare waste is not effectively managed. Health facilities do not sufficiently document key information and statistics of healthcare waste generation. Likewise, healthcare waste generated is not well treated prior to disposal. In most district hospitals and in some regional hospitals where most of the old De Montfort type of incinerators are used the HCW does not completely burn HCW to ashes. Ash from incinerators is disposed off in open spaces and unlined excavations thus posing a risk of contaminating the soil with heavy metals. This poses great risk to public health and environment as the partially burned waste and sharps host disease causing pathogens.

No health facilities have managed to integrate its waste management activities in its day-to-day activities through a well developed HCW management activity plan. Health facilities are unable to provide detailed description of objectives, activities and resources to be used for all activities from starting point of generation to final point of disposal.

Availability of healthcare waste management equipment and tools to health facilities is unreliable. MSD does not adequately supply HCW management equipment/tools to health facilities. This is because MoHSW has not included the HCWM equipment in their catalogue of essential items that MSD should procure to meet the demands of the health facilities.

6.2.2 Inadequate Monitoring of HCW management activities by RSs and LGAs

Supportive supervision conducted by LGAs to health facilities is inadequately addressing issues of healthcare waste management. Health facilities do not have sufficient knowledge of managing healthcare waste. As a result, there is an increased rate of illegal dumping of healthcare waste and mixing of dangerous waste with other municipal wastes in all health facilities not reached for supervision.

The awareness campaigns conducted to communities in most cases address issues of sanitation and hygiene leaving healthcare waste management issues unattended.

Allocation of resources (i.e. human, equipment, and financial) does not give priority to healthcare waste management activities. No LGA has developed specific budget for healthcare waste management issues. This gives an implication that prevention issues are less prioritised.

6.2.3 HCW activities are inadequately monitored by MoHSW and PMO-RALG

The Ministerial level is less informed about management of healthcare waste due to inefficient reporting systems. The healthcare waste issues are not sufficiently reported in all levels. The existing reporting system does not support the smooth flow of information from health facilities, Council's Director and Regional Secretariat. As a result, key healthcare waste management issues are not adequately reported at the National level. The National level as the central documentation point for healthcare waste monitoring is incapable of providing reliable information. Without proper reports of management of healthcare waste in the country, it is difficult for government to measure its progress and also to identify weak areas where further plan of action is required.

The MoHSW does not have sufficient healthcare waste management data to support its decisions and likewise to evaluate its performance. There are problems in data availability, timeliness, quality, and accuracy. The HMIS database does not provide room for data

collection of healthcare waste.

Healthcare waste management activities in the country are not well coordinated at all levels. Responsible actors in the Councils, health facilities and Regional Secretariat are not aware of their roles in relation to healthcare waste management. This is because important guidance materials regarding healthcare waste are not adequately shared among various actors.

The MoHSW does not have clear strategies of disseminating HCW management education to stakeholders in the country. The awareness programs are not regularly conducted. Dissemination of HCW management issues is done only when various professionals in the field attend workshops, seminars, meetings and other events that attract substantial numbers of the stakeholders.

Healthcare waste management issues are not adequatelly financed. The financing problems is mainly due to little priority given to healthcare waste management activities in allocation of various resources.

CHAPTER SEVEN

RECOMMENDATIONS

This chapter provides recommendations which are derived from the findings and conclusions. The recommendations aim to address the identified deficiencies and weaknesses and are directed to the MoHSW and PMO-RALG, which are responsible for overseeing HCWM in the country. The recommendations are in two groups, the first being those which are to be directly implemented by the ministries, whereas those in the second group are to be implemented by the health facilities, LGAs under the collaborative supervision of the ministries.

7.1 Recommendations on the actions of the MoHSW and PMO-RALG

It is recommended that the MoHSW undertake the followings:

- Develop and implement a plan for monitoring of the implementation of healthcare waste management activities at all the levels (i.e. Regions, LGAs and HCFs). The plans have to include the long term milestones and targets for supportive supervision and inspections to the health facilities on issues concerning healthcare waste management.
- Establish financing mechanism for healthcare waste management activities.
- Provide a link in the HMIS that will accommodate data collection of healthcare waste management in order to improve the healthcare waste management monitoring and reporting system.
- Introduce healthcare waste management issues into the curriculum of the training institutes that conduct courses on healthcare issues so as to equip them with healthcare waste management knowledge before they become healthcare practitioners.
- Include healthcare waste management equipment/tool in the catalogue of essential items that MSD should procure to ease the availability of healthcare equipment for the health facilities.

7.2 Recommendations on the actions of the RS and LGAs

To improve the situation at the health facilities and LGAs, the MoHSW in collaboration with PMO-RALG should ensure that:

- LGAs include the healthcare waste management issues in the reports submitted to Regional Secretariat in order to improve the Monitoring functions of the RS. Based on reports from LGAs, RSs should conduct monitoring of HCWM activities.
- The Supportive supervision done by LGAs to health facilities should be well planned and include issues of healthcare waste management.
- LGAs give adequate priority to healthcare waste management activities in allocation of resources.
- LGAs facilitate safe disposal of incinerator ash and other residues by all HCFs.

7.3 Recommendations on the actions of the HCFs

To improve management of HCW processing i.e. (segregation, collection, transportation, treatment and disposal) at the health facilities, the MoHSW in collaboration with PMO-RALG should ensure that health facilities:

- Pursue more opportunities to reduce, reuse and recycle materials that enter the healthcare waste stream in order to minimize the waste generation,
- Establish a close supervision and follow up to ensure that, standard operating procedures which describe the working procedures are complied with,
- Designate a specific health officer to oversee all healthcare waste management issues in each health facilities,
- Conduct training programs on waste sorting as well as training needs assessment to identify training gaps and assign priority on staff who require specific training,
- Establish a system of recording and documenting various information and statistics of waste generated at each facility,

- Regularly maintain their incinerators so that treatment of healthcare waste is done efficiently, and
- Integrate healthcare waste management activities in their strategic and operational plans; the plans should provide detailed description of objectives, activities and resources to be used, types of waste generated, the way they are segregated, time and place of handover, storing and final handling/disposal.

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APPENDICES

Appendix 1: Audit questions

In order to address the set audit objective, the audit was guided with three main audit questions and sub-questions as follows:

Audit Question One: Is the generated healthcare waste by the health facility properly managed to protect public health and environment?

Sub-question 1.1	**Has the Healthcare facility developed Healthcare waste management plans? Are the plans effectively implemented?**
Sub-question 1.2	**Do hospitals and health centres effectively follow the procedures for managing HCW stream i.e. (segregation, collection, transportation, treatment and disposal)?**
Sub-question 1.3	**Does the healthcare facilities properly document amount of HCW generated and treated?**
Sub-question 1.4	**Does the heath facility efficiently use the available resources (human, equipment, and financial) to ensure the HCWM is well conducted?**

Audit Question Two: Do the LGAs and Regional Secretariat appropriately support, monitor and evaluate management of healthcare waste in the healthcare facilities?

Sub-question 2.1	**Do the councils have appropriate systems for monitoring healthcare facilities performance (in terms of quality and quantity)?**
Sub-question 2.2	**Are the councils conducting adequate inspections on how the healthcare facilities run and manage healthcare waste?**
Sub-question 2.3	**Does LGAs regularly reports on the performance of HCW to regional/ Ministry?**
Sub-question 2.4	**Are LGAs regularly conducting information campaigns to community to ensure that they are aware of risks of poor HCWM?**
Sub-question 2.5	**Does the LGA efficiently use the available resources (human, equipment, and financial) to ensure the HCWM is well conducted?**

Audit Question Three: Do the Ministry of Health and Social Welfare and PMO-RALG effectively monitor and evaluate the level of performance of HCWM in the country?

Sub-question 3.1	**To what extent does central government ensure that HCWM monitoring is effectively implemented in the country?**
Sub-question 3.2	**Does the Central government, analyze and use the HCW monitoring data to make appropriate decision and action for improving performance of HCWM in the country?**
Sub-question 3.3	**Is the Central government ensuring the effective coordination of the Ministries and Agencies responsible for the HCW monitoring activities?**
Sub-question 3.4	**Does the Management Information System (HMIS) function well to collect healthcare waste information from health facilities?**
Sub-question 3.5	**Does the Central government include HCWM Budget in the national annual budget?**

Appendix 2: Audit Methodology

The data collection methods included the interviews, document reviews and field visits. The sample included visiting four (4) referral hospitals, nine (9) regional hospitals, ten (10) districts hospitals and ten (10) health centres. The sample was made to ensure that the entire country is represented geographically, facilitate comparison of results from similar HCFs in various regions and consider diversity and homogeneity of nature of the activities done in the country.

Document Review
Documents were reviewed in order to get comprehensive, relevant and reliable picture of the performance of the hospitals and LGAs in as far as the management of healthcare wastes is concerned. Documents reviewed include:

- *Monitoring reports*. These assisted the auditors to understand what issues were addressed.
- *Planning and Implementation reports*.
- *Meeting minutes at all levels related with the provision of healthcare waste management*. These assisted the auditors to understand whether the issues have been raised during such meetings were addressing the challenges faced.
- *Progress and performance reports*. These reports were key to the auditors since they highlighted the achievement in management of healthcare waste at all different levels.

Interviews
Interviews were conducted, mainly to:
- Confirm or explain information from the documents reviewed;
- Give clues to relevant information in cases where information in the formal documents was lacking or missing; and
- Provide context and additional perspectives to the picture from the Healthcare facilities and LGAs.

The following officials at different levels of the management of healthcare waste were interviewed:

- Officials at MoHSW under the Directorate of preventive

health and the department of Environmental Health and Sanitation Services since they are the supervisors of the implementation of all HCWM in the country.

- Prime Minister's Office – Regional Administration and Local Government: Officials at PMO-RALG under the Directorate of Local Government Authorities (DLGAs) since they are the supervisors of the implementation of all related health activities at LGAs.
- Regional Level: Regional Medical Officers (RMOs) from the sampled regions
- District Level: District Medical Officers from the sampled councils because they are the ones who had the details of HCWM

Appendix 3: Audit Criteria

The criteria have been drawn from the legislations, regulations, policies, and guidelines as well as best practices in the area of Healthcare Waste Management in Tanzania, these documents include:

- Legislations: Public Health Act No. 1 of 2009, Environmental Management Act No. 20 of 2004,
- Environmental Management Regulation 20 of 2009
- National Health Policy, National Action Plan for Healthcare Waste Management, Healthcare Waste Management Monitoring Plan
- Guidelines:
    - National Standards and procedures for HCWM in Tanzania, Tanzania
    - National Healthcare Waste management Plan,
    - HCWM National policy guidelines

The detailed assessment criteria and their underlining sources are shown below:

Management of the healthcare waste by Hospitals and Health Centres

According to the National Standards and procedures for HCWM in Tanzania guideline of 2006 and the Environmental Management Regulation no. 20 of 2009 the Health Facilities (Hospitals, Health Centres and Dispensaries) ought to:

- Comply with the standards for waste generation, segregation, collection, transportation, treatment and disposal,
- Have appropriate technology in place to handle/manage healthcare waste,
- Properly[25] budget for the HCWM activities,
- Develop and effectively implement the Healthcare waste management plans,
- Properly record amount of HCW generated and treated, and

25. Properly in this case means that budget should be independent line and prepared based on plan.

- Have the capacity (human resources, equipment, and financial allocation) to ensure the HCWM is effectively conducted.

Supportive supervision and Inspections to healthcare facilities by LGA

According to the Environmental Management Regulation No. 20 of 2009 and other Healthcare Waste Management Monitoring Plan of 2006 the Local Government Authorities (LGAs) are supposed to conduct monitoring, supportive supervision and Inspections to healthcare facilities to ascertain if the management of HCW is done according to the stipulated standards. LGA are supposed to analyze reports from health facilities and identify problems areas that need immediate attention and transmit the HCWM report to the lead Ministries.

Monitoring of performance of HCWM in the country

According to the Public Health Act No. 1 of 2009, Environmental Management Act No. 20 of 2004, the Ministry of Health and Social Welfare (MoHSW) and the Prime Minister's Office-Regional Administration and Local Government (PMO-RALG) are regularly supposed to monitor and evaluate the performance of HCWM in the country to ensure that the management of HCW is done according to the stipulated standards

Appendix 4: Roles and responsibilities of key Actors in HCWM

1. Ministry Of Health and Social Welfare (MoHSW)

Ministry of health and social welfare plays a major role in the management of the Public Health Services through:

i. Policy formulation through appropriate legislation and regulations;
ii. The development of guidelines and standards to facilitate the implementation of the National Health Policy;
iii. The monitoring and evaluation of the health services to improve their quality;
iv. The training, the deployment and transfers of all cadres of health workers;
v. On a daily basis the ministry should also:
   - Encourage districts and health facilities to incorporate HCWM in the Comprehensive District Health Plans
   - Solicit support from key stakeholders and partners on HCW Management
   - Monitor HCWM implementation in the country
   - Assist on capacity building to health facility staff and waste handlers

2. Prime Minister's Office - Regional Administration and Local Government (PMO-RALG)

The main functions of PMO-RALG in relation to healthcare waste management is to oversee the implementation of the functions of LGAs. However, the broad functions are to:

i. Facilitate LGAs to provide quality services;
ii. Manage the critical interfaces with Ministries and Development Partners and LGAs and formulating policies;
iii. Monitor support provided to LGAs by Regional Secretariats (RS) as well as regional affairs;
iv. Provide quality and timely information;
v. Provide sound advice to LGAs on policies, approaches, systems and planning methodologies;
vi. Build capacity; and
vii. Provide legal support and advice to RAs and LGAs.

3. Regional Secretariats (RS)

The Regional Secretariat should undertake the followings:

i. Translate policy guidelines and standards into actions
ii. Follow-up districts on HCWM monitoring issues
iii. Support districts to solicit adequate funds for maintaining hospital hygiene
iv. Ensure that the HCWM plan of each hospital is in conformity with the National Guidelines. They should also set up a regular monitoring and control procedures.
v. Summarize district HCWM monitoring reports and forward them to the RHMT

3. Local Government Authorities (LGAs)

The LGAs should undertake the followings:

i. Development HCWM in the CCHP and supervision checklist and Report on HCWM,
ii. Provide adequate sanitary latrines at facility level,
iii. Create community and households awareness on HCWM risks and provide adequate water supply and storage facilities at facility level,
iv. Supervise and inspect health facilities on the implementation of HCWM procedure, and
v. Ensure safe practices on collection, storage, treatment and disposal of HCW.

4. Health Facilities (Hospitals and Health Centres)

Health facilities should:

i. Ensure that monitoring tools are completed at each point in the HCW steam (generation, storage, transportation and disposal),
ii. Identify gaps/weaknesses in HCWM process,
iii. Practice proper segregation, collection, storage, treatment and disposal of Healthcare waste,
iv. Order and procure working equipments for HCWM and ensure adequate sanitation, and
v. Monitor and supervise daily HCWM activities.

Appendix 5: Estimated HCW in the Regional and Referral Hospitals

Name of the Healthcare facility	Bed capacity	Estimated number of out Patient	Estimated waste(KG)/ day –for the inpatient department	Estimated waste(KG)/ day –for the outpatient department	Total estimated HCW KG/ day
Ocean Road Cancer Institute	257	100	105.37	3.00	108
Bugando Medical Centre	900	176	369.00	5.28	374
Mbeya Referral Hospital	477	275	195.57	8.25	204
Mbeya Regional Hospital	279	275	114.39	8.25	123
Mt. Meru-Arusha	500	175	205.00	5.25	210
Dodoma Regional Hospital	420	250	172.20	7.50	180
Sekou-Toure-Mwanza	350	300	143.50	9.00	153
Maweni-Kigoma	300	85	123.00	2.55	126
Muhimbili National Hospital	1500	9500	615	285	900
Mwananymala Hospital	400-600	1200-1500	-	-	78
Temeke	3OO	800-1500	-	-	290
Amana Hospital	-	1000-1200	-	-	300

Source: Auditors analysis based on the statistics collected from HCFs

Appendix 6: Categories of Healthcare Waste

Waste category	Description and Examples
Infectious waste	Waste suspected to contain pathogens e.g. laboratory cultures; waste from isolation wards; tissues (swabs), materials, or equipment that have been in contact with infected patients; excreta
Pathological waste	Human tissues or fluids e.g. body parts; blood and other body fluids; fetuses
Sharps	Sharp waste e.g. needles; infusion sets; scalpels; knives; blades; broken glass
Pharmaceutical waste	Waste containing pharmaceuticals e.g. pharmaceuticals that are expired or no longer needed; items contaminated by or containing pharmaceuticals (bottles, boxes)
Genotoxic waste	Waste containing substances with genotoxic properties e.g. waste containing cytostatic drugs (often used in cancer therapy); genotoxic chemicals
Chemical waste	Waste containing chemical substances e.g. laboratory reagents; film developer; disinfectants that are expired or no longer needed; solvents
Wastes with high content of heavy metals	Batteries; broken thermometers; blood-pressure gauges; etc.
Pressurized containers	Gas cylinders; gas cartridges; aerosol cans
Radioactive waste	Waste containing radioactive substances e.g. unused liquids from radiotherapy or laboratory research; contaminated glassware, packages, or absorbent paper; urine and excreta from patients treated or tested with unsealed radionuclides; sealed sources

Source: WHO, Definition and characterization of health-care waste.

Appendix 7: Healthcare Facility visited during the audit

Referral Hospitals	Regional Hospital
1. Ocean Road Cancer Institute 2. Bugando Medical Centre 3. Mbeya Referral Hospital 4. Muhimbili National Hospital	1. Dodoma 2. Mbeya 3. Kigoma 4. Mwanza 5. Arusha
District Hospitals	
1. Amana 2. Temeke 3. Mwananyamala 4. Mpwapwa 5. Mbarali 6. Mbozi 7. Kasulu 8. Kibondo	9. Magu, 10. Misungwi 11. Meru, 12. Longido 13. Igawilo, 14. Ngarenaro 15. St.Elizabeth
Health Centers and other Hospitals	
1. Agakhani Mbeya, 2. Sinza Health Centre, 3. Magomeni, 4. Mbagala Rangitatu 5. Uyole Hospital,	6. Mwafrika Hospital, 7. Nyamagana 8. Vijibweni Hospital 9. Mnazi Mmoja

Appendix 8: List of Recommendations and Response

Overall comment:
Both MoHSW and PMO-RALG agreed with the recommendations. In addition PMO - RALG intents to send the recommendations that conserns to LGAs and HCFs in form of directives to the LGAs and supervise their implementation.

It is recommended to the :

S/N	Recommendations	Response/Action taken
1.	Develop and implement a plan for monitoring of the implementation of healthcare waste management activities at all the levels (i.e. Regions, LGAs and HCFs). The plans have to include the long term milestones and targets for supportive supervision and inspections to the health facilities on issues concerning healthcare waste management.	MoHSW is planning to conduct a on developing facility mini-plans for HCWM. PMORALG will update the checklist that will be used for supportive supervision.
2.	Establish financing mechanism for healthcare waste management activities.	PMO - RALG will direct the LGAs to include issues of HWCM in their plans
3.	Provide a link in the HMIS that will accommodate collection of healthcare waste management data in order to improve the healthcare waste management monitoring and reporting system.	HCWM programs will link with HMIS for incorporating the HCWM issues
4.	Introduce healthcare waste management issues into the curriculum of the training institutes that conduct courses on healthcare issues so as to equip them with healthcare waste management knowledge before they become healthcare practitioners.	• HCWM will be incorporated to all health/medical professional • Tailor made short courses are being prepared

S/N	Recommendations	Response/Action Taken
5.	Include healthcare waste management equipment/tool in the catalogue of essential items that MSD should procure to ease the availability of healthcare equipment for the health facilities.	Discussions are ongoing on, for the MSD to include HCWM Equipment in their catalogue

Recommendations on the actions of the RS and LGAs

To improve the situation at the health facilities and LGAs, the MoHSW in collaboration with PMO-RALG should ensure that:

S/N	Recommendations	Response /Action taken
1.	LGAs include the healthcare waste management issues in the reports submitted to Region Secretariat in order to improve the Monitoring functions of the RS.	PMO - RALG will direct the LGAs
2.	Based on reports from LGAs, RSs should conduct monitoring of HCWM activities.	- do -
3.	The Supportive supervision done by LGAs to health facilities should be well planned and include issues of healthcare waste management.	- do -
4.	LGAs to give adequate priority to healthcare waste management activities in allocation of resources.	- do -
5.	LGAs facilitate safe disposal of incinerator ash and residues by all HCFs.	- do -

Recommendations on the actions of the HCFs

To improve management of HCW stream i.e. (segregation, collection, transportation, treatment and disposal) at the health facilities, the MoHSW in collaboration with PMO-RALG should ensure that health facilities:

S/N	Recommendations	Response / Action taken
1.	Pursue more opportunities to reduce, reuse and recycle materials that enter the healthcare waste stream in order to minimize the waste generation.	PMO - RALG and MoHSW will direct LGAs and HCFs
2.	Establish a close supervision and follow up to ensure that, standard operating procedures which describe the working procedures are complied with.	
3.	Designate a specific health officer to oversee all healthcare waste management issues in each health facilities.	HCWM programs will liaise with HMIS for developing or incorporating HCWM issues
4.	Conduct training programs on waste sorting as well as training needs assessment to identify training gaps and assign priority on those staff that will require specific training.	HCWM will be incorporated to all health/medical professional training institutions. A tailor made short courses are being prepared
5.	Establish a system of recording and documenting various information and statistics of waste generated at each facility.	Discussion is ongoing, for the MSD to include HCWM Equipments in their catalogue
6.	Regularly maintain their incinerators so that treatment of healthcare waste is done efficiently.	
7.	Integrate healthcare waste management activities in their strategic and operational plans; the plans should provide detailed description of objectives, activities and resources to be used, types of waste generated, the way they are segregated, time and place of handover, storing and final handling/ disposal.	

NATIONAL AUDIT OFFICE
NAOT

NATIONAL AUDIT OFFICE
NAOT

Controller & Auditor General
National Audit Office
Samora Avenue / Ohio Street
P.O.Box 9080,
Dar Es Salaam
Tanzania
Telephone: +255 22 2115157/8
Fax: +255 22 2117527
E-mail: ocag@nao.go.tz
Website: http://www.nao.go.tz