

THE UNITED REPUBLIC OF TANZANIA



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

**NATIONAL POLICY GUIDELINES FOR HEALTH CARE
WASTE MANAGEMENT IN TANZANIA**

DECEMBER, 2017

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Table of Contents

ABBREVIATIONS	v
DEFINITION OF TERMS.....	vii
FOREWORD	ix
ACKNOWLEDGEMENT.....	x
CHAPTER ONE: INTRODUCTION TO HEALTH CARE WASTE MANAGEMENT IN TANZANIA	1
1.1 Background information	1
1.2 Health Care Waste Management Situation Analysis	4
1.3 HCFs distribution in Tanzania Mainland by level and type of ownership.....	5
1.4 Justification of the Policy Guidelines	6
1.5 Objectives of the Policy Guidelines.....	7
1.5.1 Broad Objective	7
1.5.2 Specific Objectives.....	7
1.5.3 Scope of the Policy Guidelines.....	7
1.6 Policy Guideline Statement	8
CHAPTER TWO: POLICIES, LEGAL AND INSTITUTION FRAMEWORK.....	9
2.0 Introduction	9
2.1 National Policies and Strategies	9
2.3 International conventions	11
CHAPTER THREE: HEALTHCARE WASTE CLASSIFICATION AND GUIDELINES	13
3.0. Introduction	13
3.1 Classification of Health Care Waste.....	13
3.2 Non-hazardous waste	13
3.3 Hazardous Health Care Waste	13
3.4 Guidelines for HCW Minimization, Re use-and Recycling	14
3.5 Guidelines for Segregation of Healthcare Waste	15
3.6 Guidelines for collection and onsite-transportation of Healthcare Waste	15
3.7 Guidelines for Health Care Waste storage	16
3.8 Guidelines for offsite transportation	16
3.9 Guidelines for HCW treatment.....	16
3.10 Guidelines on disposal methods	17
3.11 Guidelines for Water, sanitation and Hygiene	19
3.12 Guidelines for Waste Water Management	20
3.13 Landscaping, Gardening and Outdoor Spaces	21

CHAPTER FOUR: COORDINATION MECHANISM AND ORGANIZATIONAL STRUCTURE.....	23
4.0 Coordination Mechanism	23
4.2 Organizational Structure	23
4.3 Roles of Stake Holders on Healthcare Waste Management.....	24
4.4 Duties and responsibilities on facility level	26
4.5 Record keeping and Documentation	28
CHAPTER FIVE: RESOURCE MOBILIZATION	29
5.1 Introduction	29
5.2 Human Resources	29
5.3 Financial Resources	29
5.5 Capacity Building and Training	30
CHAPTER SIX: MONITORING, EVALUATION AND OPERATIONAL RESEARCH.....	31
6.0 Introduction	31
6.1 Monitoring and Evaluation (M&E).....	31
6.3 Operational Research	32
6.4 Priority areas for research	32

ABBREVIATIONS

BAT	Best Available Technologies
BEP	Best Environmental Practices
CBOs	Community Based Organizations
CHMTs	Council Health Management Teams
CTF	Central Treatment Facility
DPD	Diethyl-p-phenylenediamine
FBOs	Faith Based Organizations
HBV	Hepatitis B virus
HCF	Health Care Facility
HCRW	Health Care Risk Waste
HCV	Hepatitis C virus
HCW	Health Care Waste
HCWM	Health Care Waste Management
HEV	Hepatitis E virus
HFC	Health Facility Committee
HIV/AIDS	Human Immunodeficiency Virus/Auto-Immune Deficiency Syndrome
HSSP	Health Sector Strategic Plan
ICT	Information Communication Technology
IPPC	Integrated Pollution Prevention and Control
JHPIEGO	Johns Hopkins in Education Gynecology and Obstetric
LGAs	Local Government Authorities
MOHCDGEC	Ministry of Health, Community Development, Gender, Elderly and Children
MSW	Municipal Solid Waste
MWI	Medical Waste Incinerator
NEAP	National Environmental Action Plan
NEMC	National Environment Management Council
NGOs	Non-Governmental Organizations
NSGRP	National Strategy for Growth and Reduction of Poverty
NHWMP	National Healthcare Waste Management Plan
OSHA	Occupational Safety and Health Authority
PCBs	Polychlorinated Biphenyls
PCDD	Polychlorinated Dibenzo Dioxins

PCDF	Polychlorinated Dibenzo Furans
PE	Public Enterprise
PEP	Post-Exposure Prophylaxis
PORALG	President Office- Regional Administration and Local Government
POPs	Persistent Organic Pollutants
PPE	Personal Protective Equipments
PTS	Persistent Toxic Substances
QITs	Quality Improvement Teams
RHMT	Regional Health Management Team
TA	Technical Assistance
TAEC	Tanzania Atomic Energy Commission
TFDA	Tanzania Food and Drugs Authority
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNICEF	United Nations International Children Education Fund
UPOPs	Unintended Persistence Organic Pollutants
VPO - DoE	Vice President's Office – Department of Environment
WHO	World Health Organization

DEFINITION OF TERMS

Chemical waste: Waste containing chemical substances from laboratory; film developing process; used and expired disinfectants that are or no longer needed; solvents; waste with high content of heavy metals, e.g. batteries; broken thermometers and blood pressure gauges.

Contamination: Means the contact with blood, body fluid, or other potentially infectious materials on an item or surface.

Disinfection: A process of reducing or killing micro-organisms by the use of chemicals, heat or UV light.

Environmental Health Practitioner:

Means any officer duly qualified in environmental health sciences and registered under the Environmental Health Practitioners (Registration) Act, 2007

Genotoxic waste: Waste containing cytostatic drugs, vomit, urine or faeces from patients treated with cytostatic drugs, chemicals and radioactive material.

Health care worker: Any healthcare professional working in a health care facility including non-clinical staff.

Healthcare facility: Means a hospital, a health centre, a dispensary, a clinic, a nursing home and a health post.

Healthcare waste: Means waste generated from healthcare facilities, research centers, saloons and veterinary centers, which include infectious waste, pathological waste, sharps, pharmaceutical waste, Genotoxic waste, radioactive waste, coagulated blood waste and expired medicines, drugs and cosmetics.

Highly infectious waste: Means all waste materials containing **viable biological agents** from infected person or artificially cultivated in significant elevated numbers; cultures and stocks; dishes, devices used to transfer, inoculate and mix cultures of infectious agents. This type of waste category is generated mainly in theatre or in diagnostic laboratories.

Human Remain: Means a body of a deceased person in whole or in parts regardless of its stage of composition

Infectious waste: means any waste that contain pathogen in sufficient quantity to pose a serious threat to public health, such as cultures from laboratories, waste from surgeries and autopsies on patients with infectious diseases, waste from patients in isolation wards or undergoing hemodialysis and waste associated with infected animals.

Non-infectious waste: Waste of similar in nature to domestic and office waste like kitchen waste, food remains, office papers and packaging materials and any other items that can be scavenged.

Pharmaceutical waste: These include expired, unused, spilt and contaminated pharmaceutical products, prescribed and proprietary drugs, vaccines and sera that are no longer required, and, due to their chemical or biological nature, need to be disposed of carefully.

Proximity Principle: Means the principle of treating and disposing of waste as close as possible to the point of generation.

Radioactive waste: These are materials contaminated with radionuclides substances produced as a result of procedures such as in vitro analysis of body tissue and fluid, in vivo organ imaging and tumor localization, and various investigative and therapeutic practices.

Saloon: includes a barber shop, hair dressing salon, beauty salon, pedicure and any other premises used for the related purposes;

Sharps: Means objects or devices having sharp points or protuberances or cutting edges capable of piercing the skin or having potential to become sharps

Sterilization: The process of total destruction of all micro-organisms achieved by physical or chemical means.

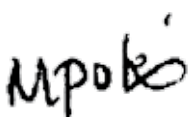
Waste management system: All the activities, administrative and operational, involved in the production, handling, treatment, conditioning, storage, transportation and disposal of waste generated by health-care establishments.

FOREWORD

Healthcare service provision is inevitably associated with health care waste generation. Health care waste carries a higher potential for infection and injury than any other type of waste. Wherever this waste is generated, safe and reliable methods for its management are therefore essential. Inadequate and inappropriate HCWM may result into serious public health consequence and a significant impact on the environment. Public health problems associated with exposure to HCW varies from minor injuries to as serious as getting infections such as HIV and Hepatitis B and other blood-borne infections. According to World Health Organization (WHO), the risk of HIV and HBV due to exposure to sharps is estimated to be 0.3% and 30% respectively. The risk is even high to scavengers who normally do not use any protective gears. In addition to air pollution caused by inappropriate burning of HCW, haphazard disposal of HCW may lead into pollution of water bodies. All these may lead to chronic diseases such as cancer among exposed population. In addition, advancement in technologies in health care delivery system has resulted into generation of HCW that was not addressed by previous policy guidelines.

Proper management of health care wastes has been and continues to be an essential aspect in the prevention of infections among health workers, patients and enhancing public health and protection of the environment. Since 2004, the MoHCDEG has been very active in implementing various activities that are overall, geared towards improving the quality of infection prevention and control (IPC) including the management of health care wastes. Several interventions on HCWM have been carried out in most of the health care facilities in the country which include but not limited to training of health workers on safe management of health care wastes, which include waste segregations, collection, storage, transportation and final treatment and disposal practices. Other interventions, which have been undertaken, include provision of safety boxes for injection safety and disposal, construction of treatment and disposal facilities and construction of placenta pits for immediate disposal of placenta after delivery.

It is in this regard that the Ministry of Health and Social Welfare has taken its position to review policy guidelines that will be used by Local Government Authorities, health care facilities, facilities and other implementers on proper management of health care waste. Implementing effective health care waste management requires multi-sectoral cooperation and interaction at all levels i.e. National, Zonal, Regional, Council and Community. Establishment of national policy guidelines and a legal framework, training of personnel, and raising public awareness are essential elements of successful health care waste management. It is expected that this document will create uniformity in approaches, and restore the state of the art for health care waste management across the country.



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CHIEF MEDICAL OFFICER

CHAPTER ONE: INTRODUCTION TO HEALTH CARE WASTE MANAGEMENT IN TANZANIA

1.1 Background information

Tanzania like other developing countries still faces the problem of healthcare waste management (HCWM) in all facilities providing healthcare services. The multiplication and expansion of healthcare facilities in Tanzania particularly in urban areas as a result of dramatic population growth has resulted into exponential increase in healthcare waste generation. The on-going immunization campaigns, HIV/AIDs have increased the usage of disposable syringes and needles and also increased number of home based care services as a result contributing to the magnitude of the problem/healthcare waste.

The Health care waste management has remains a serious concern due failure to practice segregation at source, collection, improper storage and transportation, treatment and final disposal. This implies that significant proportion of the waste generated ends up in the environment in an unacceptable way which accentuates environmental and public health risks. Recognizing the urgency of this problem, the Ministry responsible for Health, Community Development, Gender, Elderly and Children has taken initial steps to respond to this need which include the establishment of National standards and Procedures, regulatory frameworks, development of national plans, innovative technologies and approaches. However, funding for health-care waste management remains very inadequate, the worse scenario being in healthcare facility set up.

Safe health care waste management is fundamental for the provision of quality, people-centered care, protecting patient and staff safety and safeguarding the environment. As part of broader water, sanitation and hygiene (WASH) and infection prevention and control (IPC) efforts, safe management of health care waste reduces health care-related infections, increases trust and uptake of services, increases efficiency and decreases cost of service delivery. Like healthcare waste management, Landscaping and gardening both promote cleanliness, health and wellbeing to patients, visitors and staff. Gardening, often referred to as ‘healing gardens’ is an important component and should be incorporated in every healthcare facility delivery services.

In line with the UN Sustainable Development Goals (SDG), particularly Goal 3 on health, Goal 6 on safely managed water and sanitation and Goal 12 on sustainable consumption and production, the WHO/UNICEF “Global Action Plan on WASH in health care facilities” aims to ensure that all health care facilities have basic WASH services by 2030 (WHO/UNICEF, 2016). This includes safe health care waste management involving segregation, collection, transportation, treatment and waste disposal.

The WHO/UNICEF Joint Monitoring Programme (JMP)¹ has the official mandate of reporting on progress towards achieving SDG 6 on safely managed water and sanitation. This will involve capturing and reporting data from households, schools and health care facilities. Harmonized monitoring indicators to assess WASH services in health care facilities include one on health care waste and specifically proper segregation and safe treatment and disposal². WHO and UNICEF are working with partners to ensure these indicators are used in national health facility assessments and health monitoring information systems.

This document highlights the key aspects of safe health care waste management in order to guide policy-makers, practitioners and facility managers to improve such services in health care facilities. It is based on the comprehensive and detailed WHO handbook *Safe management of waste from health care activities* (WHO, 2014), and also takes into consideration relevant World Health Assembly (WHA) resolutions, other UN documents and emerging global and national developments on WASH and IPC.

Five guiding principles are widely recognized as the basis for effective and controlled management of waste. These principles have been used in many countries when developing their policies, legislation and guidance: the “polluter pays” principle, the “precautionary” principle, the “duty of care” principle, the “proximity” principle and the “prior informed consent” principle.

Ideally, all health care waste management practices seek to implement environmentally sound management of hazardous waste or other waste (ESM), Best Environmental Practices (BEP) and Best Available Techniques (BAT) in accordance with the Basel and Stockholm Conventions and relevant national regulations and requirements. Nevertheless, changes and improvements to waste.

Organisation of Healthcare Delivery Services

Although Tanzania is experiencing one of the highest rates of urbanisation among the Sub – Saharan countries with an urban population growth rate between 8 and 10%, more than 70% of the Tanzania population still lives in rural communities where the Village Health Posts continue to play an important role providing preventive health through education. Hence, the Health Services and the distribution of the HCFs throughout the country still have a strong rural emphasis.

1. The Public Health Services

Tanzania has created an extensive network of Health –Care Facilities that provides 90% of the population with at least one HCF in a radius of 10km. NGOs and private institutions play a major role in the sustainability of the Tanzania Health Sector.

a) District – level: Primary Health Services

At District level, basic clinical and public health services are provided through three layers of HCFs: the Dispensaries, the Health Centres and the District Hospitals:

The Dispensary is the smallest curative unit. Usually located at the village level and it serves 6000 to 10000 inhabitants. It has an outpatient Department, a reproductive, maternal, new-born and child health (RMNCH) and least two beds, latrines and rooms for the medical staff. It provides health education, treatment of diseases, and delivery services, treatment and immunization. It can be located in urban or rural areas:

The Health Centre is expected to cater for between 50000 and 80000 people, which is approximately the population of one administrative division. The services provided in Health Centres are similar to the ones provided in Dispensaries but short hospitalisations are possible and basic medical analysis can be carried out. In recent time health centre have been upgraded to provide more healthcare services which have resulted into increased generation of healthcare waste.

The District Hospital is the referent health unit at District level. It normally has between 60 and 150 beds and provides OPD and RMNCH, a store for drug and equipment, laboratory and blood banks, X-ray, OT, kitchen, laundry, technical carpenter and tailoring workshop, mortuary and dispensing room. The staff includes graduate and Assistant Medical Officers, Nurses of different qualifications, Pharmacists, Laboratory Technicians, Radiologists and a Health Officer. The government plans to establish one District Hospital per District. The Hospital as a referent point for the district may also serve as a point for treatment of healthcare waste generated by neighbour lower facilities. However experience has shown that there is a burden created by this approaches like increased running and maintenance cost for waste treatment facility.

b) Regional Level: Regional Referral Hospitals (Secondary Health Services)

The Regional Referral Hospital is the secondary referral healthcare facility receiving patients referred from the districts and serves a population of about 1 million people. There are currently 22 Regional Hospitals in the mainland of Tanzania each one having between 200 and 400 beds. The services are similar to the ones provided in the District Hospitals but in addition, various specialized medical services are provided such as surgery gynaecology/obstetrics and paediatrics. The pharmacy and laboratory services are more developed than in a District Hospital. However

c) National – Level: (National and Super Specialized/Consultant Hospitals) Tertiary Health Services

There is One National Hospital, 5 specialized hospitals, 3 Zonal Referral Consultant, (the tertiary referral hospitals) and two specialized in psychiatry and tuberculosis exist throughout the country. With more than 500 beds per hospitals, they provide highly specialised services. The four Hospitals are considered as Teaching Hospitals. With diverse healthcare services such hospitals have huge amount generation of healthcare waste both Infectious waste and non-infectious waste.

2. Private and Faith Based organization Health Services

Private healthcare facilities are major component of the healthcare delivery system which complement government services in the country. Private entity remains limited but has been growing rapidly, particularly in urban areas, since the re-legalization of private practices in 1991. Currently there a total of 1217 and 918 private and faith based organization respectively.

Poor management of health care waste potentially exposes health care workers, waste handlers, patients and the community at large to infection, toxic effects and injuries, and risks of polluting the environment. It is essential therefore that all medical waste materials are segregated at the point of generation, appropriately treated and disposed of safely (WHO, 2011).

The use of medical waste incinerators appears to be rapidly expanding in developing countries where as it discharges hundreds of pollutants into the atmosphere (Stewart-Pinkham, 1989). Many of these chemicals are both toxic and bio accumulative, building up over time in the body in an insidious fashion with the risk of chronic effects at much lower exposures (Takata, 2003). In Tanzania, very little attention has been paid to determine the concentrations of the major chemicals pollutants emitted as an effort to facilitate the prevention of acute local toxic effects.

Waste generated by health care activities includes a broad range of materials from used needles and syringes to soiled dressings, hypodermic needles, intravenous set needles; broken vials and

ampoule, dressings, bandages, gauze, and cotton contaminated with blood or body fluids; and many other including diagnostic samples and chemicals (WHO, 2011 and HCWH, 2012).

Incineration is a waste treatment process that involves the combustion of organic substances contained in waste materials (Batterman, 2004). Incineration of waste materials converts the waste into ash, flue gas, and heat. Emissions of heavy metals and organic pollutants from these facilities cause significant environmental harm (Anamul, 2012)

The exact composition of emissions from incinerators will however vary with the type of waste being burnt at any given time, the efficiency of the installation and the pollution control measures in place (Takata, 2003). The three most important constituents of the emissions, in terms of health effects, are particulates, heavy metals and combustion products of man-made chemicals; the latter two can be adsorbed onto the smaller particulates making them especially hazardous. Surveys in Tanzania have shown that, most hospitals had low incineration capacity, with few of them made of fire brick and other refractory materials incinerators (Manyele and Anicetus, 2006).

In the other hand poor management of health care waste potentially exposes health care workers, waste handlers, patients and the community at large to infection, toxic effects and injuries, and risks polluting the environment. It is essential that all medical waste materials are segregated at the point of generation, appropriately treated and disposed of safely (WHO, 2011).

Persistent air pollutants, such as dioxins, furans and mercury, can be dispersed over large regions well beyond the local areas and even the countries from which the sources first emanate. Food contaminated near an incineration facility might be consumed by people close to the facility or far away from it. Thus, local deposition on food might result in some exposure of populations at great distances, due to transport of food to markets. However, distant populations are likely to be more exposed through long-range transport of pollutants and low-level, widespread deposition on food crops at locations remote from a source incineration facility (Demirezen and Aksoy, 2006).

1.2 Health Care Waste Management Situation Analysis

Tanzania mainland has 30 region with healthcare facilities distributed country wide. National Health Policy requires the establishment of a network of healthcare facilities within a distance of four kilometer or provide a dispensary in every village. While the government is struggling to achieve this goal currently it is estimated that the number of healthcare facilities is now approaching 8163 (<http://hfrportal.ehealth.go.tz/>) country wide.

1.3 HCFs distribution in Tanzania Mainland by level and type of ownership

Level /Type	Ownership				Total
	Government	FBOs	Parastatal	Private	
National Hospital	1	0	0	0	1
Zonal Super Specialized Hospitals	1	2	1	1	5
Referral Hospitals	0	9	0	0	9
Regional Referral Hospitals	22	0	1	0	23
Other Hospitals	3	19	9	29	60
District Hospitals	70	0	0	0	70
Designated District Hospitals	0	36	0	0	36
Health Centers	514	144	18	125	801
Dispensaries	5093	708	295	1062	7158
Total	5704	918	324	1217	8163

Source: <http://hfrportal.ehealth.go.tz/>

In order to understanding the status of healthcare waste management in the country the MoHCDGEC in 2014 conducted a survey in regional and district hospitals in 17 regions in Tanzania mainland. Despite the availability of healthcare waste management national policy guidelines and standards in all regional and district hospitals surveyed, the assessment revealed that 89% of the health facilities had no sufficient color coded waste bins while 80% of the health facilities had no plans for HCWM. 53% of the health facilities had no designated officer for HCWM. Among the health facilities that had a designated officer for HCWM, 95% had no job description for HCWM officer. Furthermore, the study revealed that 47% of the regions visited had no HCWM regional coordinators.

The assessment identified the following major reasons for mismanagement of HCW in the facilities providing healthcare services, inadequate budgetary allocation, insufficient categorization and use of color coding receptacles, inadequate technical personnel, limited awareness and knowledge on HCWM and poor coordination mechanisms. Other challenges include limited training opportunities, weak communication with supportive stakeholders, unavailability of supplies from Medical Stores Department, lack of suitable personal protective equipment, and standard health care waste storage containers, bin liners, and incinerators. Segregation protocols were also not adhered to in some health facilities within the visited regions. Some health facilities also lacked adherence to waste segregation protocol.

Availability of standard HCWM equipment

Availability of standard HCWM equipment in health facilities across the regions leaves much to be desired. Standard health care waste equipment are lacking which include waste bin, bin liners, and transportation facilities, thus posing a great challenge for improving quality of services in health care facilities in the country. Moreover, waste containers are rarely labelled as required, suggesting lack of best practices for HCWM within the respective facilities.

Regional HCWM coordination mechanism

The survey found that 80% of the health facilities had no plans for HCWM and that more than half (53%) of the health facilities had no designated officer for HCWM. Among the health facilities that had a designated officer for HCWM, 90% had no job description for the officer.

Health facilities with HCWM disposal facilities

Distribution of disposal facilities for health facilities in the visited regions. As seen from the figures, variations between regions existed in terms of availability of disposal structures. For example, the average number of incinerators in the region was (39.1%) with a range of 1 to 115 incinerators. Moreover, the average number of placenta pits in the regions was found (58%) with a range of 13 to 184 placenta pits. Likewise, the average number of burying/burning structures in the regions was (37.6%) with a range of 0 to 110. However, there were no differences in terms of availability of waste storage bay/shed between regions. Moreover, the study found that only 3 (about 18%) of the total regions in the study had waste storage/shed.

1.4 Justification of the Policy Guidelines

The National Health Policy (2007), recognizes the importance of healthcare waste management at all levels. The policy realizes the existence of improper management of healthcare waste resulting from the provision of health care services in the country. The increase of population density in Tanzania has called for the construction and establishment of more healthcare facilities that have eventually led to the increase of healthcare waste generation. Improper management of the healthcare waste contributes to increased public health risks as well as environmental pollution. The policy will strengthen safe management of waste resulting from all healthcare services at all levels. The policy emphasizes mainstreaming and integrating healthcare waste management plans into the existing health sector strategic programmes and projects. The advocacy programs should also encourage health care training institutions to include health care waste management into their curricula. There is need for proper training and management regarding awareness and practices of medical waste management to cover all carders of health workers in the country. All efforts should be made to inform and educate key stakeholders in order to achieve unity of purpose and action. Lack of priority setting and poor planning resulted to inadequate budgetary allocation for health care waste management services, insufficient procurement of personal protective equipment and facilities and development of infrastructure for disposal; Limited awareness and knowledge on HCWM, insufficient color coding receptacles; inadequate segregation of health care waste at the point of generations; Improper disposal options and Inadequate technical personnel at all Health care levels, lack of community involvement, insecure of water, environmental sanitation and hygiene and inadequate monitoring and evaluation of HCWM practices.

These policy guidelines is intended to be used by all stakeholders for healthcare service providers at all levels. The document will serve as a main reference material for healthcare facility providers. Specifically, it will provide guidance in: identifying training needs for HCWM at various institutions; compliance and enforcement of HCWM regulations; mobilization and allocation of resources for health care waste management; enhancement of community and stakeholders participation and support in health care waste management and ensure monitoring and evaluation of health care waste management programs in the country.

1.5 Objectives of the Policy Guidelines

1.5.1 Broad Objective

To provide technical guidance on safe healthcare waste management and to ensure compliance with HCWM regulations, standards, procedures and specifications in order to protect public health and safeguard the environment.

1.5.2 Specific Objectives

Specifically this policy guidelines aim to;

- 1) Provide guidance to technical personnel, decision makers and communities on safe health care waste management procedures
- 2) Promote recycling of medical waste as an alternative to avoid and prevent release of UPOPs in the environment
- 3) Promote non burn technologies as an alternative HCWM best practices
- 4) Prevent and phase down use of mercury containing medical devices
- 5) Promote appropriate, safe and sustainable technologies to treat and dispose of health care waste.
- 6) Provide guidance for coordination and inter-sectoral collaboration in HCWM
- 7) Promote Offsite treatment facilities in urban areas to control and maintain safe HCWM practice
- 8) Provide guidance on capacity building for healthcare waste management to key implementers for the better understanding of HCWM
- 9) Promote WASH and gardening in Healthcare facilities
- 10) Provide guidance on monitoring and evaluation of HCWM practices

1.5.3 Scope of the Policy Guidelines

The Policy Guidelines apply to all health care facilities and other health institutions including research institutions, laboratories, radiology, home based care situations and alternative health care providers, (traditional healers and traditional birth attendants). Others include: mortuaries, cosmetic facilities, pharmacies and chemists be it public, private, non-governmental or faith-based, medical training institutions, saloon and beauty centers, funeral homes and waste management service providers that operate in the country at all levels. The guidelines form the linkage with other national policies, legislation and strategies; International Conventions and the Sustainable Development Goals (SDG30).

The policy classifies waste into hazardous and non-hazardous category and provides steps for healthcare waste management stream from point of generation, segregation, storage,

transportation, treatment and final disposal and requires the provision of essential equipment for HCWM. Furthermore, it provides priority areas for capacity building and research in the area of healthcare waste management. It assigns roles and responsibilities to various stakeholders on best practices of HCWM including measures for protection of handlers, resource mobilization processes and further prescribes mechanisms for monitoring and evaluation.

1.6 Policy Guideline Statement

- 1) Every health care facility and other institutions that in the course of their activities generate HCW shall have the responsibility to minimize, segregate, collect, store, label, transport, treat and dispose of all HCW in the manner prescribed in this policy and other laws and regulations regarding HCWM so as to safeguard public health and the environment.
- 2) Provided the “proximity principle” is observed, HCFs in the same vicinity may share treatment and disposal facilities in order to minimize public health risks and the environment.
- 3) The Ministry of Health, Community Development, Gender, Elderly and Children shall collaborate with the VPO-DoE, PO-RALG and other stakeholders to promote centralized bio-medical waste treatment facilities and ensure an effective management of health care waste.
- 4) The Ministry of Health, Community Development, Gender, Elderly and Children shall collaborate with all stakeholder to develop Information, Education and Communication strategies to educate the public on the importance of proper health care waste management and the role of community.
- 5) The Ministry shall facilitate and collaborate with other stakeholder to conduct M&E and operational research on priority areas for health care waste management.

CHAPTER TWO: POLICIES, LEGAL AND INSTITUTION FRAMEWORK

2.0 Introduction

This policy guideline on health care waste management is in line with other national policies and strategies from health sector and other sectors; legislations and international conventions related to the management of HCW. The policy guidelines are structured to operate within the framework of the national development strategies and policies.

2.1 National Policies and Strategies

Tanzania Development Vision 2025

This policy guidelines in line with Tanzania development vision 2025 It contributes the attainment of quality livelihood through reduction of public health risks and environmental pollution associated with improper management of healthcare wastes.

National Strategy for Growth and Reduction of Poverty (NSGRP)/MKUKUTA II:

The MKUKUTA aim to foster a greater collaboration among all sectors and stakeholders. It advocate mainstreaming of waste management into all sector strategies. This policy guidelines address the second cluster, Goals 3 and 4 of the NSGRP 2012-2017, which deals with “Quality of life and social well-being”. This policy guideline addresses best practices for management of waste at healthcare facilities and communities level.

Health Policy, 2007

The health policy underscore the strengthening disposal and safe management of healthcare waste resulting from health services provision including medicines, equipment, medical supplies, expired chemicals and laboratory reagents. This will contribute to the quality of health among personnel working in healthcare facilities and/or community through reduction of the risks involved among healthcare workers such as occupational injuries due to the mismanagement of healthcare waste.

The Public Health Act, 2009

The policy guidelines are in line with Public Health Act, 2009 that calls for proper management of all kind of waste including hazardous waste and healthcare waste. The Act addresses handling, treatment and disposal, transportation and importation of HCW including environmental impact assessment.

National Environment Management Act, 2004

The Guidelines is line with the National Environmental Management Act, 2004. It Stipulate clearly the management of healthcare waste by ensuring that health care wastes are sorted and stored in prescribed coded containers and transported in refuse trucks designed and registered for that purpose and will ensure proper final disposal of healthcare wastes. The outcome of these measures is minimization of environmental and health risks.

The Health Sector Strategic Plan (HSSP) IV 2016 – 2020

The policy guidelines specifically address Strategic Objective 5: which aim at address the social determinants of health, the health and social welfare sector, collaborate with other sectors, and

advocate for the inclusion of health promoting and health protecting measures in other sectors' policies and strategies. Specifically for the health care waste management it targets is By 2020, 80% of health facilities will meet the standards for safe health care waste management, developing guidelines to assist LGAs in the implementation in the Health care facilities and other implementers on proper management of health care waste. Other waste management interventions outside of health facilities will be organized by Local Governments to meet legal requirements for optimal sanitary standards.

The HIV and AIDS (Prevention and Control) Act, 2008

The guidelines are in line with the HIV and AIDS (Prevention and Control) Act, 2008 as it plays a major role in the prevention against the disease. The Act provide for prevention, treatment, care, support and control of people living with HIV –AIDS through reduction of HCW mismanagement and related risks. Furthermore, it requires owners, managers or the in-charge of health care facilities to protect workers against occupational exposures by ensuring the following:- The provision of Post Exposure Prophylaxis; The provision of personal protective equipment (PPE); Appropriate handling and disposition of healthcare waste including used syringes, materials used in blood testing and body fluids or waste of persons known or believed to be infected with HIV. Protection of Healthcare Workers and Traditional Birth Attendants through empower health workers and traditional birth attendants to avoid the risk of infection and use necessary protective gear in accordance with the principles of universal safety precautions against infectious diseases, health care waste handling and substances.

Water Supply and Sanitation Act, 2009

The policy guidelines is geared towards the promotion of clean, safe, adequate and sustainable water supply through provision of guidelines for HCWM which safeguard the environment. Besides, the guidelines promotes proper sanitation by ensuring the adherence of HCWM best practices.

The Occupational Health and Safety Act, 2003

The Occupational Health and Safety Act, 2003 was enacted to make provisions for the safety, health and welfare of persons at work in factories and other places of work; to provide for the protection of persons at work against Hazards to health and safety arising out of or in connection with activities of persons at work; and to provide for the connected matters. The workplace in this case includes all health care institutions and facilities.

The Industrial and Consumer Chemical (Management and Control) Act, 2003

This is Act provides for the management and control of the production, importation, transportation, exploitation, storage, dealing, and disposal of chemicals and for the matters connected there with. In the course of provision of healthcare service, some chemicals and their products need to be managed safely in order to protect public health and the environment.

The Atomic Energy Act, 2002-

This Act provides the, an appropriate system to ensure nuclear safety and physical protection. Furthermore to make rules relating to emergency preparedness and, in particular, the procedure and manner of dealing with radioactive wastes, the accidents involving radiation sources or in connection with the use of sources in any premises including health care facilities or an occurrence of any such class or description as may be prescribed.

Local Government Act, 2006

This policy guideline is inline with this act which is aim at taking measures for the prevention and abatement of nuisances, including such as arising outside the area cause annoyance, danger or injury to health within the area; waste control, inspection, movement and produce for waste management; safeguard and promote public health including the prevention of and the dealing with any outbreak or the prevalence of any disease; build, equip and maintain, or grant sums of money towards the establishment, equipment or maintenance of hospitals, health centres, maternity clinics, dispensaries, asylums for the aged, destitute or infirm or for orphans, or institutions for lepers; establish and operate ambulance services; establish, install, build, maintain and control drains, latrines, public lavatories, baths and wash places; establish, maintain, operate and control drainage and sewerage works;

TFDA Act, 2003

This policy guideline provides measures to ensure food safety at health care facilities in line with Tanzania food and drug act, which aim at control of the sale of food for human consumption; promoting hygiene and safe manufacture, transport, storage, packaging, marking, exposure for sale, service or delivery of food intended for human consumption. It also 'provides for the disposal of stacks by disentitle persons.

2.3 International conventions

Basel Convention

The 'polluter pays' principle implies that all producers of waste are legally and financially responsible for the safe and environmentally sound disposal of the waste they produce. The 'precautionary' principle is a key principle governing health and safety protection. It is defined and adopted under the Rio Declaration, Principle 15, as: 'Where there are threats of serious or irreversible damage to the environment, lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation.' The 'duty of care' principle stipulates that any person producing, handling or managing hazardous substances, or related equipment, is ethically responsible for using the utmost care in that task. The 'proximity' principle recommends that treatment and disposal of hazardous waste takes place at the closest possible location to its source in order to minimize the risks involved in its transport. The 'prior informed consent principle' requires that all parties involved in the production, storage, transport, treatment and final disposal of hazardous and infectious wastes, are to be licensed or registered to produce, receive and handle named categories of waste. In addition, only licensed organizations and sites are allowed to receive and handle the waste.

In addition, there are two important Conventions which the country (when creating its policy) will have to take account of, particularly if they are a signatory to that Convention. They are:

The Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal. The Basel Convention regulates the trans-boundary movements of hazardous and other wastes applying the 'prior informed consent' procedure (shipments made without consent are illegal). This convention is the most comprehensive global environmental treaty on hazardous and other wastes

Stockholm Convention

The Stockholm Convention on Persistent Organic Pollutants (POPs). The Stockholm Convention is a global treaty to protect human health and the environment from POPs. POPs are chemicals which remain intact in the environment for long periods, they become widely distributed geographically, accumulate in the fatty tissue of living organisms, and are toxic to humans and wildlife.

Minamata Convention

Mercury is a toxic compound that causes mercury poisoning, primarily through inhalation and handling work clothes contaminated with mercury and also by consuming mercury contaminated fish. Health care facilities generate mercury wastes in various ways such as dental amalgam and mercury thermometers. Efforts are underway to eliminate use of mercury and mercury products in hospitals because of the effects it has on public health and the environment. It is estimated that incineration of HCW contributes 13% of the total mercury release in the atmosphere.

The Minamata Convention on Mercury is an international [treaty](#) designed to protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds. Article 4 of the Convention addresses the question of mercury-added products and requires each state to take appropriate measures to ban the manufacture, import or export of mercury-added products. Article 8 is concerned with Emissions of Mercury where it addresses controlling and reducing emissions of mercury and mercury compounds.

Sustainable Goals

This guideline is in line with the SDG under the Goal number three (3) . Addressing ensure healthy lives and promote well-being for all at all ages. Specifically under the target number 3.3 and 3.9 which focus on end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases by 2030 and substantially reduce the number of deaths and illnesses from hazardous waste, chemicals, air, water and soil pollution and contamination respectively

CHAPTER THREE: HEALTHCARE WASTE CLASSIFICATION AND GUIDELINES

3.0. Introduction

In practice the classifications of healthcare waste is based on the types of risks associated with waste which can be either hazardous or non-hazardous. Generally, 75-90% of healthcare waste in a health facility are regarded as non- hazardous and 10-25 % are regarded as potentially hazardous waste or waste that is associated with health and environmental. Classifications are useful for deciding treatment approaches, Waste minimization options and Recycling and re-use of valuable materials.

The development of the guidelines is important for the implementation of the national HCWM plan, improve the current management of healthcare waste, and promote HCWM innovation and technologies and set-up standardized procedures for HCWM.

3.1 Classification of Health Care Waste

Healthcare waste is classified mainly into two categories which are - Hazardous and Non hazardous waste.

3.2 Non-hazardous waste

Non-hazardous waste is waste that has not been in contact with infectious agents, hazardous chemicals or radioactive substances and does not pose a sharps hazard. A significant proportion (about 85%) of all waste from health-care facilities is non-hazardous waste and is usually similar in characteristics to municipal solid waste. More than half of all non-hazardous waste from healthcare facility is paper, cardboard and plastics, while the rest comprises discarded food, metal, glass, textiles, plastics and wood.

3.3 Hazardous Health Care Waste

Hazardous waste is a waste that poses potential threat to public health and the environment. They can be in the form of solid, liquid or gaseous. Hazardous waste is classified into the following;

Infectious waste: is material suspected to contain pathogens (bacteria, viruses, parasites or fungi) in sufficient concentration or quantity to cause disease in susceptible hosts. This category includes: Waste contaminated with blood or other body fluids;

highly infectious waste: Means all waste materials containing, blood, fluids with **viable biological agents** from infected person or artificially cultivated in significant elevated numbers; Waste from infected patients in isolation wards, cultures and stocks; dishes, devices used to transfer, inoculate and mix cultures of infectious agents. In case of notifiable highly infectious diseases ie. Viral Hemorrhagic fever, such waste materials should follow extra treatment procedure.

Sharps: These are items that could cause cuts or puncture wounds and infections. Sharps include needles, hypodermic needles, scalpels and other blades, knives, infusion sets, saws, broken glass and pipettes. Whether or not they are infected, such items are usually considered hazardous health-care waste and should be treated as if they were potentially infected.

Pathological waste; These waste consists of tissues, organs, body parts, blood, body fluids and other waste from surgery and autopsies. It also includes human fetuses and infected animal carcasses.

Pharmaceutical waste; These include expired, unused, spilt and contaminated pharmaceutical products, prescribed and proprietary drugs, vaccines and blood sera that are no longer required, and, due to their chemical or biological nature, need to be disposed of carefully. The category also includes discarded items heavily contaminated during the handling of pharmaceuticals, such as bottles, vials and boxes containing pharmaceutical residues, gloves, masks and connecting tubes.

Genotoxic waste; These include certain cytostatic drugs, vomit, urine or faeces from patients treated with cytostatic drugs, chemicals and radioactive material.

Chemical waste: These consist of discarded solid, liquid and gaseous chemicals; for example, from diagnostic and experimental work and from cleaning and disinfecting procedures. Chemical waste from health care is considered to be hazardous if it has at least one of the following properties: toxic (harmful); corrosive (e.g. acids of pH <2 and bases of pH >12); flammable; reactive (explosive, water reactive, shock sensitive) and oxidizing.

Wastes from materials with high heavy-metal contents represent a subcategory of hazardous chemical waste and are usually highly toxic. Mercury and cadmium are examples of highly toxic yet common substance in health-care facilities. Mercury wastes are typically generated by spillage from broken clinical equipment (thermometers and aneroid blood pressure equipments) and dental amalgam while cadmium waste comes mainly from discarded batteries

Radioactive waste: These are materials contaminated with radionuclides. They are produced as a result of procedures such as in vitro analysis of body tissue and fluid, in vivo organ imaging and tumor localization, and various investigative and therapeutic practices. includes liquids, gas and solids contaminated with radionuclides whose ionizing radiations have genotoxic effects. The ionizing radiations of interest in medicine include X-and y-rays as well as cx- and B- particles. An important difference between these types of radiations is that X-rays tubes only when generating equipment is switched on whereas y-rays, cx- and B- particles emit radiations continuously. The type of radioactive material used n HCFs results in low level radioactive waste and concerns mainly therapeutic and imaging investigation activities where Cobalt 60 Co, Technetium 99mTc, iodine 131I and iridium 192Ir are most commonly used;

3.4 Guidelines for HCW Minimization, Re use-and Recycling

Minimization concept

For efficient and effective minimization, of Health Care Waste, authorities, health facilities and other stakeholders shall establish and practice strategies for HCW waste avoidance, reduction, re-use and recycling as follows;

- Minimization of HCW shall include source reduction, use of medical procedures that reduce the volume of waste generated.
- Healthcare facilities should put in place mechanisms to restrict the purchase of supplies that produce a lot of HCW.

Recycling:

- Healthcare facilities should use separate color coded containers placed at the source of waste generation for recyclable materials.
- Healthcare facilities should practice effective waste segregation at the point of generation to facilitate recycling of recyclable materials.
- All recyclable healthcare waste must be properly treated before taken out of the healthcare facilities
- Companies interested with recycling of medical materials must register for the business by the Environmental Health Registration Board.

Re-use

- Surgical equipment and other items which are designed for reuse and are sensitive to heat shall be sterilized by approved procedures.
- Operating and waste treatment costs should be reviewed periodically to evaluate any fluctuations. Data shall be collected to allow comparisons between HCF and to establish benchmarks.

3.5 Guidelines for Segregation of Healthcare Waste

- HCF shall segregate waste to protect personnel from injury and infection by preventing hazardous waste entering inappropriate waste streams.
- All standard operating procedures of HCW segregation, packaging and labeling shall be displayed in each department;
- Segregation of healthcare waste shall be done at the generation point and is the responsibility of the person/institution that generate it.
- Segregation receptacles must be placed close as possible to waste generator as this will avoid cross contamination.
- Standard color coded receptacles for each category of waste shall be provided by HCF.
- Segregation of healthcare waste shall consist of separating different waste materials based on the type, treatment and disposal or recyclable options;
- The mixing of non-hazardous and hazardous waste is not permitted. If mixing occurs, all waste contained together in, shall be classified and treated as hazardous waste.
- Staff engaged in the segregation of HCW shall wear appropriate personal protective equipment.
- SOPs or posters for healthcare waste segregation should be displayed at the point of healthcare generation.

3.6 Guidelines for collection and onsite-transportation of Healthcare Waste

For efficient and effective collection and transportation of Health Care Waste, authorities or health facilities management shall;

- Provide standard equipment for collection and transportation of healthcare waste.
- Provide appropriate personal protective equipment
- Supervise staff to adhere on use of personal protective equipment.
- All infectious waste shall be collected on daily basis
- Hazardous HCW and non-hazardous HCW shall be collected on separate trolleys.
- The collection/transport route shall be the most direct and shortest one from the collection point to the central storage facility or disposal point, and should avoid where food preparation is done and the heavily populated areas.

- HCW should be transported using color coded/labeled transportation equipment that are not used for any other purpose;
- Collection times should be fixed and reliable
- The collected waste shall not be left even temporarily anywhere other than at the designated central storage facility;
- Health-care waste shall not be transported by hands to avoid the risk of accident or injury
- All bin liners and /or containers of waste must be marked to identify the unit/ward where the waste was generated
- Spare trolleys/wheeled bins shall be available in case of breakdowns and maintenance
- The trolleys/ wheeled bins shall be cleaned and disinfected after every use.
- All waste bag seals should be in place and intact at the end of transportation.
- There should be separate, secured, storage rooms to maintain segregation of:
 - Radioactive waste
 - Waste containing Mercury

3.7 Guidelines for Health Care Waste storage

For efficient and effective storage of Health Care Waste, authorities or health facilities shall:

- Provide a secured and fenced HCW storage bay
- The bay should have an impermeable, hard-standing floor with good drainage system, easy to clean and disinfect in line with standards and procedures for HCWM
- Ensure separate labeled storage compartment for various types of HCW
- Provide a separate compartment for radioactive waste storage
- Infectious waste must be stored not more than 48 hours from the time of generation.

3.8 Guidelines for offsite transportation

For efficient and effective off site transportation of Health Care Waste, authorities or health facilities shall comply the following:

- Before transportation of the waste, dispatch documents should be completed
- All arrangements should be made between consignor, carrier, and consignee
- In case of trans-boundary movement, the consignee should have confirmed with the relevant competent authorities that the waste can be legally transported
- Transport on public roads should only be conducted by licensed companies
- Transport vehicles and drivers must meet legal requirements for the transport of hazardous waste

3.9 Guidelines for HCW treatment

HCW should be treated before disposal. Methods for treatment depend on the waste characteristics, technology, environmental and safety factors. There are five processes for the treatment of hazardous health-care waste that include thermal, chemical, irradiation, biological and mechanical. The choice of treatment system depends on local conditions and involves consideration of:

- Available resources including technical expertise
- Waste characteristics and volume
- Technical requirements for installation, operation and maintenance of the treatment system
- Safety and environmental factors
- Cost considerations

With respect to special waste which include waste containing radioactive materials and mercury shall require special treatment methods and receive special supervision with technical expertise. Radioactive waste materials should be managed under the supervision and recommendation by the Tanzania Atomic Energy Commission. Mercury containing medical devices should be stored and collected centrally for further disposal using internationally acceptable disposal option

3.10 Guidelines on disposal methods

General non-hazardous and hazardous waste that require direct disposal must be known by the healthcare facilities. The Ministry recommend the following disposal option for non-hazardous waste and hazardous waste that require direct disposal.

Non-hazardous waste

- Non – hazardous waste shall be disposed of in public designated disposal sites.
- In case there is no public disposal site the authority shall establish a designated disposal site for non-hazardous that meet public health and environmental requirement.
- Open burning is strictly not allowed for all types of waste
- The designated disposal site should be secured for unauthorised access and fenced.

Hazardous waste disposal options

Hazardous waste must be treated before final disposal. The Ministry recommend the following disposal option for various types of hazardous waste:-

Pathological waste disposal:

- Every healthcare facility should have a standard designated placenta pit within the facility premises.
- Other pathological waste must be treated, incinerated or buried.
- In case of human remain must be cremated or buried in public cemetery

Disposal of hazardous ash:

Fly ash and bottom ash from incineration is generally considered to be hazardous, because of the possibility of having heavy metal content and containing dioxins and furans.

- Hazardous ashes should be disposed of in sites centralized designed for hazardous wastes,
- In the absence of designated disposal sites, the HCF should construct a standard ash pit within or offsite the facility premises.

Sharp waste disposal

Even after sterilization, sharp waste may still pose physical risks. The HCF should do the following;

- Sterilized sharp waste can be disposed of in safe sharp pits on the health care facility premises or encapsulated by mixing waste with immobilizing material like cement before disposal.
- In case recycling opportunity exist sharp waste should be sterilized and taken for recycling with licenced companies.
- Where high technology for smelting and incineration exist sharp waste can be disposed of by burial method.

Disposal options in emergency situations

- The authority should take appropriate healthcare waste management practices in line with the type of waste generated.
- Appropriate disposal options and procedures must be followed including interim minimal disposal practices.
- Open dumping of boxes/bagged waste should be avoided.
- Pharmaceutical waste and chemical waste should be stored until a safe disposal option has been identified.

Guidelines for special waste classes

Description of Chemical Wastes Containing Heavy Metals

Mercury Management

Mercury is a known highly hazardous chemical compound. Organic compounds of mercury, such as methyl mercury, are considered the most toxic forms of the element. Inhalation of elemental mercury vapour is the most common route of exposure. When mercury is spilled or allowed to come into contact with air, it evaporates. These policy guidelines covers all aspects of procurement, use, safe handling, storage, treatment, and environmentally sound disposal of both mercury-containing and mercury free devices. The HCF should;

- Promote the use of alternative mercury free medical devices.
- Reduce the use of other medical devices containing heavy metals.
- Provide procedures for safe clean-up of mercury spills and the safe handling and environmentally sound disposal of broken devices;
- Provide safe interim and long term storage of mercury devices and waste from mercury devices and within the health care facilities;
- Use standard for segregation, collection ,storage transport, labeling, of waste containing heavy metals;
- Use proper personal protective equipment (PPE) when handling waste containing heavy metals.
- Create awareness and training of health care workers for safe handling and disposal of all mercury related wastes.
- Conduct close monitoring and evaluation on the effectiveness of phasing out mercury including safe handling and disposal of all mercury related products in health care facilities.
- Promote use alternative use of non-mercury devices such as Low-mercury or energy efficient lamps, Digital thermostats, and Rechargeable batteries, Lithium or alkaline batteries, Mercury-free switches and batteries.

Policy guidelines for UPOPs

Unintended Persistent Organic Pollutants (UPOPs) are chemicals that negatively affect health and the environment when released into the air, water and soil. These are synthetic chemicals which are released as a result of incineration of healthcare waste. POPs are likely to accumulate, persist and bio-concentrate and could, eventually, achieve high-level toxicity. Environmentally sound disposal related waste taking into account relevant provisions of the Basel Convention, the Stockholm Convention on Persistent Organic Pollutants and their respective implementation guidelines should be emphasized. The Authority or Healthcare Facilities should;

- Promote green procurement, use, safe handling, storage, treatment, and environmentally sound

disposal of POPs and UPOPs.

- Promote use of best available techniques and promote non-burn environmental practices
- Promote adequate segregation, labeling, and safe handling of PVC materials.
- Promote Standard and procedures related to reduce, reuse or recycling of PVC material from medical measuring devices.
- Promote the use of proper personal protective equipment (PPE) used when handling waste containing POPs.
- Create awareness and training of health care workers safe handling and disposal of all POPs related wastes.
- Institute monitoring and evaluation mechanisms for safe handling and disposal of all POPs related products in health care facilities.

Guidelines for chemical waste disinfectants

Chemical disinfectants are often hazardous and toxic and are routinely used in healthcare services to reduce and kill microorganisms on medical equipment and surfaces. Chemical disinfection is most suitable for treating liquid waste such as spills of blood, urine, stools, contaminated linen or hospital sewage. The healthcare facilities should;

- Promote appropriate use of chemical disinfectants for hospital purpose.
- Monitor effectiveness of the disinfectant in line to material safety data sheet.
- Ensure availability and proper use of personal protective equipment (PPE).
- Conduct training and awareness of health care workers on safe handling of chemical disinfectant.
- Use alternative chemical disinfectant which are less toxic and environmental friendly
- Use of best available techniques for disposal of chemical disinfectant.
- Disinfectants as waste whether solid or liquid should be disposed of either by dilution or ion exchange or by immobilization method prior to final disposal.

Guidelines for pharmaceutical and cosmetic waste

There are disposal methods of pharmaceutical waste which involve minimal risks to public health and the environment, suitable for countries with limited resources and equipment. The adopted methods contribute to the safe and economical elimination of stockpiles of unusable pharmaceuticals. The authorities should;

- Use the best available environmental option for pharmaceutical destruction such as purpose-built high temperature incineration with adequate flue gas cleaning, encapsulation, immobilization by inertization, dilution method for moderate amount of pharmaceuticals and disposal in a sanitary land fill.
- Use registered and licenced company or environmental Health Practitioner, to supervise the disposal of pharmaceuticals.

3.11 Guidelines for Water, sanitation and Hygiene

Operations and maintenance of sanitation facilities

Sanitation infrastructure and facilities requires careful organization and actions to ensure smooth operations, and provision of maintenance services in case of structural or functional changes. Routine operational and periodic maintenance services are prerequisite for sustaining sanitation facilities in health care settings.

- (i) There should be clear identification and description of staff roles on management of sanitation infrastructure and services. There should be a committee consisting of a manager, supervisors(s), and attendant(s) with assigned the responsibility of maintaining sanitation infrastructure depending on facility level.
- (ii) Toilets should be cleaned whenever they are dirty, and at least twice a day with a disinfectant used on all exposed surfaces and a brush to remove visible soiling. Strong disinfectants are unnecessary and should not be used in large quantities (reference: Essential environmental health standards in HCF, 2008).
- (iii) There should be weekly and daily cleaning schedule that specify when sanitation facilities should be cleaned and supplied with cleaning and hygiene agents. Cleaning schedule should identify persons or groups responsible for undertaking the cleaning tasks and their supervisors. The schedules should be on display for easy access and be shared with responsible managers.
- (iv) Orientation, training, and education of users is an important aspect of operations that must be implemented. Orientation materials, personnel and time should be dedicated to help new comers, regular visitors, and staff members.
- (v) Operation and maintenance plan must be put in place to cover for the running and repairs of sanitation infrastructure and services. This should include regular or incidental repairs and scheduled maintenance activities.
- (vi) Monitoring tools for sanitation in healthcare facilities will be developed centrally. It will be the responsibility of each individual facility to obtain tools for monitoring and evaluation exercise, and to make sure that they are being implemented on time.
- (vii) Feecal sludge management should be emptied when the septic tank is $\frac{3}{4}$ full.
- (viii) Each HCF should ensure adequate supply of water within the facility

3.12 Guidelines for Waste Water Management

Healthcare facilities inevitably generate waste water during provision of healthcare services. Waste water generated may contain micro-organisms, heavy metals, toxic chemicals and radioactive materials. In this endeavor proper wastewater treatment, is important to minimize health and environmental risks that may emanate as a result of pollution by liquid waste from healthcare facilities. Every healthcare facility should;

- Construct and maintain standard onsite waste water infrastructure within the HCF
- Every healthcare facility must treat its waste water generated from the facility before discharge into public sewer or receiving body.
- Ensure the quality of effluent discharge meet national standards. (BOD, COD, TDS, etc)
- Ensure Planned Preventive and Maintenance of waste water infrastructure.
- Conduct monitoring of waste water infrastructure and quality of effluent discharged
- Waste water cesspit emptier should meet standards and be licensed

3.13 Landscaping, Gardening and Outdoor Spaces

Outdoor spaces play a critical role in the creation of dignified environments for treatment, as well as a key role in infection control. Landscape should be considered and integrated into any facility design to produce a well-planned exterior environment. Durable and appropriate furnishing can be easily integrated into the landscape approach to create comfortable and low cost outdoor gathering areas that contribute to infection control as well as staff and patient comfort.

For the purpose of these guidelines landscaping on one hand, refers to activities that aim at modifying or altering the visible features of land within and around the HCF so that it may become more attractive by adding ornamental features and/or planting trees. On the other hand, gardening refers to the act or craft of growing plants, flowers or special shrubs with a purpose of creating a beautiful environment within the HCF landscape. Attractive outdoor environment in healthcare settings is said to have psychological and social positive impacts on both HCWs and their patients as well as patients' relatives.

Outdoor Spaces, Waiting Areas and Paths (Walk ways)

HCFs should provide adequate outdoor space as waiting areas, gathering spaces and parking as one of the simplest and most cost efficient steps to the reduction of airborne disease, avoiding the challenges of properly ventilating indoor spaces and environmental squalor caused by lack of parking area for motor vehicles, bicycles as well as out of order hospital equipment and furniture

- Landscape should be designed in conjunction with covered waiting areas, taking into account proximity of waiting areas to check-in and diagnostic consultation rooms
- Each HCF should designate special room for storing out of order hospital equipment and furniture
- Play Areas for recovering children or those accompanying sick parents—especially long-term patients should have access to the outdoors, sunshine, and opportunities for play to support improvements in health. Care should be taken to ensure that play areas are safe and comfortable for both children and their caregivers.
- Planting should be used as strategy for providing shade, air purification, dust control, and noise pollution buffering. In each case design strategy should adhere to basic design principles for instance consider wind direction, sun rise and sun set directions as well as noise barriers,
- HCF management team should consult Agricultural Officer for selection of appropriate planting and flowers for gardening and other purposes. Use of local climate friendly, allergy free and native trees is highly encouraged
- HCFs should allocate and mark a space for parking transport facilities e.g. bicycles, motorcycles and vehicles. The design should consider proper traffic or circulation patterns for vessels and pedestrians. Directing traffic patterns e.g. KEEP LEFT or DO NOT HOOT etc should be clearly marked.
- All boundaries of the healthcare facilities should be known and secured by fencing.
- Cleaning of gardens including drainage should be done on daily basis.
- HCFs should be fenced for security, keeping out stray dogs and cats as well as limit trespassers who could otherwise damage the landscaping and ruin efforts made to improve outdoor environment and amenity.

Walk ways

Design of outdoor environment should ensure provision of appropriate walk ways to facilitate ease access and movement for patients and clinicians. Durable and appropriate furnishing can be integrated into the landscape approach to create comfortable and low cost outdoor gathering areas that contribute to infection control as well as staff and patient comfort. Design and construction of walk ways should adhere Ministry's guideline for Design of HCFs infrastructure. The following are General considerations for designing of walk ways;

- Walk ways should be appropriate for each area of a facility and the expected patient load in that area. The recommended path size are 3', 4' and 8' for tertiary, secondary and primary paths respectively.
- Walk way material should be impermeable where adjacent to buildings or beneath covered verandas, and permeable when there is landscape on both sides.
- All paths must be designed with proper grading to be well drained and handicap accessible, and must have handrails where needed.

HCF management teams should allocate funds for maintenance of land scape and general outdoor environment.

Examples of Photographs showing HFC landscaping and gardening



Wooden seat integrated in the garden



Climate compatible trees and flowers



Climate frindly planting and paved path



Planting for shade and dust control

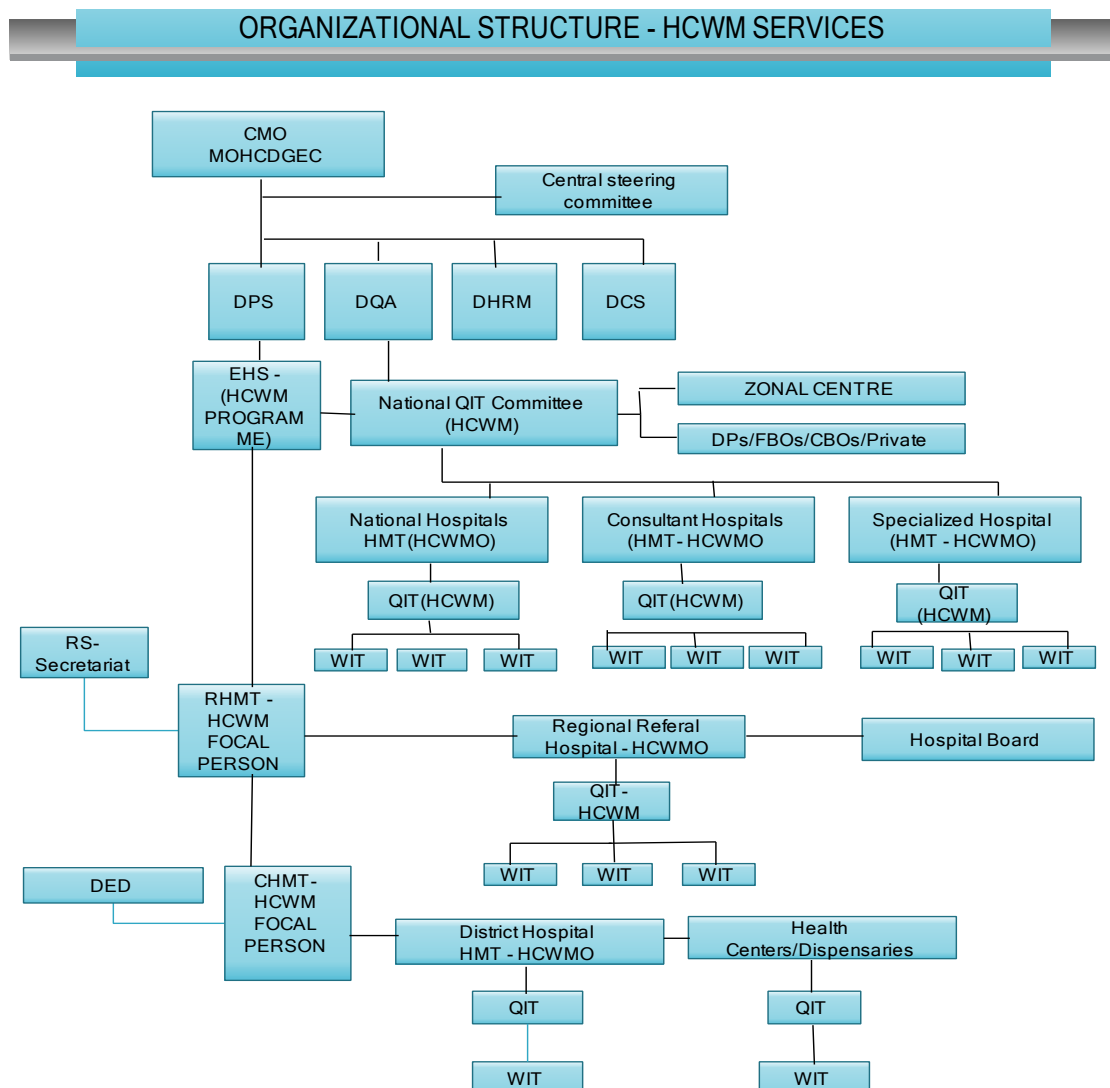
CHAPTER FOUR: COORDINATION MECHANISM AND ORGANIZATIONAL STRUCTURE

4.0 Coordination Mechanism

The management of health care waste at all levels will be done in collaboration with a range of stakeholders including Government Ministries, Agencies, Departments, research and training institutions, development partners, NGOs, FBOs, CBOs and communities. Coordination and collaboration amongst stakeholders is important for the realization of HCWM in the country. Stakeholders will be encouraged to provide both technical and financial support for the management of the health care waste. Stakeholders should be involved during each stage of development, planning, implementation, monitoring and dissemination for HCWM.

The proper management of health-care waste depends largely on good administration, coordination and organization but also requires adequate legislation and financing, as well as active participation by trained and informed staff.

4.2 Organizational Structure



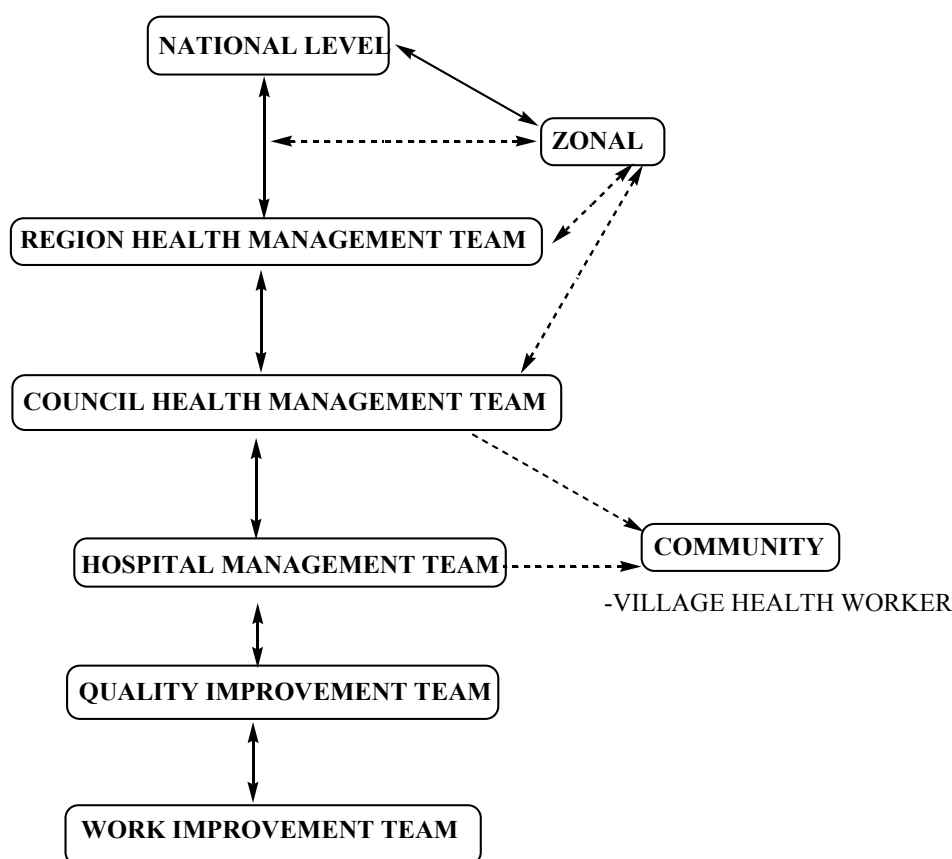


Fig: NO..... National Level Healthcare Waste Organization System

4.3 Roles of Stake Holders on Healthcare Waste Management

Ministry of Health, Community Development, Gender, Elderly and Children

- Development of Policy, regulations, guidelines, SOPs, IEC, for the implementation of HCWM
- Facilitate and support various measure directed towards managing environmental sanitation, hygiene, and contribute to mitigations of environmental impacts
- Capacity building on healthcare waste management
- Supportive supervision of ongoing health care waste activities
- Resource mobilization
- Environmental Health Impact Assessment
- Scrutinize plans for placement of healthcare waste disposal system
- Liaise with other relevant authority for registration of treatment and disposal system
- Registration of companies undertaking waste management services
- Conduct operational research on health and environmental impacts related to hazardous waste

Vice President Office - Department of Environment

- Coordinating other sectors in the implementation of acceptable environmental interventions and technologies.
- Offer Certification of Environmental Impact Assessment

PO RALG – Department of Health social welfare and Nutrition

- Implementation of HCWM guidelines and standards
- Regular supportive supervision to ensure safe management of hazardous waste
- Capacity building on HCWM at all level
- Resource mobilization for health care waste management

National Environment Management Council

- Enforcement of the governing laws related to hazardous waste
- Monitoring of environmental pollution
- Conduct Environmental impact assessment and environmental auditing of Waste disposal systems

Development partners in health sectors

- Support country initiative through technical assistant, financing, materials and project management

Universities and Allied Health institutions

- Design interventions models, research and trainings on health and environmental impacts

NGOs

- Compliment government efforts in managing health care waste management and environmental impacts mitigation

Referral Hospitals

- Provide technical support to lower level facilities
- Act as knowledge transfer hub for other level of health care provision
- Conduct operational research on HCWM
- Coach and mentor Health care provider at low level on health care waste management

Regional Hospitals

- Implementation of HCWM Plans to reduce burden of infectious diseases and environmental impacts
- Provide technical support to lower level facilities
- Act as knowledge transfer hub for other level of health care provision
- Conduct operational research on HCWM
- Coach and mentor Health care provider at low level on health care waste management

Government Chemist

- Provide guidelines, registration of chemicals and their use.
- Monitoring of chemical pollutants in health care settings
- Resolve disputes with regards to impacts related to HCWM

Regional, Council Health Management Teams and Technical Team

- Follow up implementation of health care waste management plan in the lower health care facilities

- Planning and budgeting for managing HCWM and environmental impacts related to health sector activities
- Conduct operational research
- Conduct training, sensitization, communication coaching and mentoring
- Supportive supervision for HCWM

Districts hospitals and lower facilities(Public and Private Health)

- Implementation of HCWM Plans to reduce burden of infectious diseases and environmental impacts

Communities

- Act as a recipients of the plans for HCWM for the higher level
- Report for any incidence of improper health waste disposal

Occupational Safety and Health Agency

- Registration of HCF and Ensure Labour Regulation Compliances by Healthcare Facilities

Public Private Partnership (PPP)

- Implementation of HCW interventions and invest on HCW technologies and services

4.4 Duties and responsibilities on facility level

In order to improve the situation the in-charge of the HCF should form a Quality Improvement Team (QIT) and Work Improvement Team (WIT).

The QIT shall have the following members:

- Head of QIT (selected from team members)
- Heads of HCF Departments
- Infection Control Officer
- Matron (or Senior Nursing Officer)
- HCF Engineer
- Planning and Financial Controller
- Environmental health practitioner (if already designated) for HCWM.

In any healthcare facility establishment the structure shall include environmental health practitioner to address specific healthcare hygienic problems.

Health Care Facility personnels will be responsible for the proper management of the waste that it generates until its final disposal.

Duties and Responsibilities of RHMTs, CHMTs, HMT and HFGC

- Responsible for planning, implementation, supervision, monitoring and evaluation of HCWM
- Sensitization, mentoring and orientation for HCWM

Duties and responsibilities of the Medical Officer in Charge of the Hospital

- The in Charge of the HCF is responsible for the overall implementation of the HCWM plan.

- Facilitate the allocation of sufficient financial and manpower resources for the implementation of the HCWM plan;
- Ensure constant supply of PPE, HCWM supplies and equipment

Duties and Responsibilities of QIT

- Conducts Health care waste management (HCWM) situational analysis and training, supportive supervision,
- Monitoring and evaluation and
- Compilation of report for submission to HMT.

Duties and Responsibilities of WIT at departmental level

- Supervise day to day HCWM activities
- Prepare cleaning schedule
- Assess HCWM performance
- Conduct training, mentoring and coaching of staff on HCWM.
- Conduct monitoring and evaluation on HCWM improvement (internal assessment)
- Prepare report on HCWM and submit to QIT

Duties and responsibilities of the Environmental health Officer for HCWM

- Responsible for the daily implementation and monitoring of the HCWM plan:
- Ensure collection and transportation of HCW from the generation points to the central storage facility;
- Liaise with the procurement Department to ensure that there is adequate supply of HCWM equipment at HCF;
- Ensure that the correct procedures and methods of transportation and disposal of waste are adhered to.
- Keep track on records and review all incidents reported regarding HCWM.

Duties and responsibilities of the Health Secretary/Financial and planning department

- Ensure that all logistics, financial and human resources needed are made available to implement the HCWM plan.

Duties and responsibilities of the Heads of Departments/ Sections/Units

- Responsible for the proper management of the HCW generated in their respective areas.
- Liaise with the HCWM Officer for effective monitoring and reporting of any discrepancies in the implementation of the HCWM plan.

Duties and responsibilities of the Patron/Matron of the HCF

- Responsible for the proper management of the HCW generated in their respective areas.
- Liaise with the HCWM Officer for effective monitoring and reporting of any discrepancies in the implementation of the HCWM plan.

Duties and responsibilities of the Head of operation and maintenance

- Responsible for the installation, maintenance and safe operation of waste storage facilities as well as the equipment for waste handling and treatment.

- Ensure adequate planning for Planned Preventive Maintenance (PPM)

Duties and Responsibilities of the Pharmacist In-charge

- Supervise the collection and its disposal of the hazardous pharmaceutical waste and cytotoxic waste in the health care facility.
- Ensure removal and keep record of all expiring drugs and any other pharmaceuticals according to the regulations.

4.5 Record keeping and Documentation

Each Health facility is required to maintain records of its healthcare waste management.

The following information on health care waste shall be documented by each institution to include:

- The particulars of the HCF or commissioned HCWM contractor (name of company, type of license, registration, site of treatment and / or final disposal);
- The date, type, origin and weight of waste generated/ received from other health care facilities (in cases where facilities are shared);
- The means of transportation, type and volume of health care waste transported;
- Treatment and Disposal method in place
- Amount of waste disposed of per day/week/month/Years.
- Signature

CHAPTER FIVE: RESOURCE MOBILIZATION

5.1 Introduction

Adequate financial materials, human resources, equipment and facilities shall be allocated to ensure safe management of health care waste. Sources of funds include government allocation, health insurances, and user fees or cost sharing, consultancies, research, grants and support from partners. Advocacy should be undertaken to solicit support for the implementation of the policy guidelines from all stakeholders. Measures to achieve this include but not limited to the following:

- All relevant reports of health care waste management practices should be made available to all interested stakeholders.
- To draw attention of the development partners and communities to the existing situation in order to obtain the widest possible support including financial commitment and the development of a legal framework
- To disseminate information regarding HCWM to the general public through radio, print medias, journals, booklets, leaflets, production of documentaries and dramas which could be aired on TV and radio stations; and posting of related information on websites.
- To secure the commitment of private health care facilities, the MoHCDGEC should involve them through their respective Boards. The private health institutions in particular should be encouraged to participate in the training programs that the MoHCDGEC will organise for the health institutions under cost sharing arrangements.

5.2 Human Resources

- HCFs shall ensure allocation of trained and skilled human resource for safe management of Health care waste.
- Every HCF should appoint one Health officer to assume the duty of monitoring healthcare waste management activities within the HCF/HCFs at all levels for public and private facilities.
- All HCFs must employ enough waste handlers to provide day to day cleanliness and waste management services. They should be trained in healthcare waste management, infection prevention and control including occupational health and safety practices.
- Each HCF should establish a comprehensive job description for all healthcare workers responsible for healthcare waste management

5.3 Financial Resources

- The authorities shall solicit fund from different sources to ensure availability of adequate financial resources.
- Every HCF should prepare an annual plan and budget for healthcare waste management
- Every HCF should allocate funds for the management of healthcare waste and sanitation services
- 5.4 Materials and Equipment
- Materials and equipment for health care waste handling and treatment shall be supplied in regular bases without any shortage in stocks.
- Every HCF should have a plan for preventive Maintenance of waste management equipment and infrastructure

5.5 Capacity Building and Training

It is essential that training on safe management of health care waste is provided to all Health care providers and waste handlers. This will help to upgrade their knowledge and skills on safe handling of health care waste. There is a knowledge gap, and the mode of training for health professionals does not include HCWM in their curricular.

- Healthcare Waste Management should be introduced in all health professional curricular including the curriculum of the Community Health Workers Program
- All private company workers at HCF should be trained and provided with a certificate on HCWM and infection prevention control including occupational health and safety provided by the Environmental Health School.
- In services workers in healthcare facilities should be trained on health care waste management procedures.
- Developed standards operating manuals which will be distributed to all HCWM personnel and their supervisors
- Contractors and their personnel assigned for health care waste management be oriented before starting work of waste handling, and then on a routine basis (e.g. annually) to update their knowledge of prevention and control measures.

CHAPTER SIX: MONITORING, EVALUATION AND OPERATIONAL RESEARCH

6.0 Introduction

Healthcare waste management is a continual task demanding permanent efforts of managers in each health care facility. The monitoring, evaluation and operational research on HCWM is part of the overall quality management and improvement system. To measure the efficiency of the implementation of HCWM plan, the monitoring, evaluation and operational research should be undertaken for generation of evidences and enhance planning and implementation of quality improvement measures. The monitoring, evaluation and operational research aspects categorically focus on HCWM key steps, namely:

- Identification of relevant categories of HCW
- Segregation, colour-coded and packaging/containerization of HCW
- Storage of HCW
- Transportation of HCW
- Waste minimization, re-use and recycling
- Treatment/destruction of HCW
- Final disposal of HCW

6.1 Monitoring and Evaluation (M&E)

Monitoring and evaluation (M&E) system is a critical component of any successful HCWM programme. M&E information is needed to assess and guide policy and programme strategy, ensure effective operations, meet internal and external reporting requirements and inform future HCWM programming and improvement initiatives. M&E tool will help to identify problems, their causes and institutionalize practical solutions; and therefore encourages evidence-based decision-making; and also increases the likelihood of replicating good HCWM practices by applying lessons learnt.

External Monitoring

The Ministry of Health Community Development, Gender, Elderly and Children (MoHCDGEC) is responsible for the development, capacity building, implementation, administration and maintenance of the M&E tools. To support successful implementation and institutionalization of the M&E processes, it is recommended that HCFs should adhere to the developed M&E plan. The M&E tools will be used to collect data and information on how health care facilities are implementing their HCWM programmes and activities in Tanzania. The national HCWM, Monitoring & Evaluation tool will be administered annually across all health care facilities and biohazard waste handlers and transporters. The national M&E tool monitors HCWM programme compliance and performance from point of generation to point of ultimate treatment or disposal. In addition, the tool provides information of facility compliance with HCWM policy, guidelines, and occupational health and safety requirements. M&E will be conducted in the health facilities on weekly and monthly basis by using the Health Care Facility Checklists.

Internal Monitoring

The Work Improvement Team (WIT) shall conduct day to day monitoring of HCWM in a health care facility. Data will be analyzed, interpreted and used by health facilities. Reports will be

provided on monthly basis. The Quality Improvement Team (QIT) carries out weekly monitoring of HCWM in the health facility. QIT also carries out quarterly evaluation of HCWM in the facility. The districts will submit their quarterly HCWM reports to the regions. HCWM performance data will be routinely compiled and analyzed by the regions and zonal Hospitals and submit reports to MoHCDGEC on quarterly basis. This process will enable the MoHCDGEC and HCWM stakeholders to get key information of facility compliance with HCWM policy, guidelines, and occupational health and safety requirements. Higher levels will provide supervision and feedback to lower levels.

6.3 Operational Research

Operational research need to be undertaken periodically to identify HCWM operational problems, gaps in knowledge, attitude and practice among the healthcare workers for the generation of evidence needed to improve HCWM. In addition, research will help to identify technological innovations in HCWM. MoHCDGEC in collaboration with HCWM stakeholders such as research and training institutions will strengthen and facilitate more operational researches in the area of HCWM for future improvement initiatives. Operational researches should be developed at all levels.

6.4 Priority areas for research

- Efficiency of HCW Management procedures
- Air pollution as linked to HCWM
- Waste water Management
- Chemical waste management
- Occupational health and safety
- Technologies for HCWM
- Health care Waste Associated infection
- WASH in healthcare waste management
- Quality of training