

Healthcare Waste Management

Estate Management Department, GHS

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Why Need for HCWM

- **10% to 25 % of hospital waste is hazardous and requires special arrangements for management due to their potential for creating a variety of health risks**
 - pathological waste such as tissues and body fluid
 - pharmaceuticals e.g. expired or unused drugs
 - sharps (syringes, disposable scalpels, blades, etc.)
 - non sharps (swabs, bandages, disposable medical devices, etc)
 - chemicals (solvents, disinfectants, etc.).
- **Need for regular disposal of non-hazardous waste (75% to 90%) by Hospitals and Assemblies**
 - paper, fabrics, glass, food residues and containers

- **Waste management practices were below acceptable standards and posed risk to staff and communities if infectious, toxic, radioactive, etc.**
- **There is no sector-wide waste management system in place, with the result that individual health institutions devise their own methods and systems, some of which are ineffective**
 - **burying of placentas in shallow pits, etc.**

- **Non-segregation of infectious and non-infectious waste thereby exposing personnel handling healthcare waste to high risk of disease infection**
- **Poor handling of healthcare waste due to inadequate equipment, materials and transport**
- **Storage sites for waste within the facilities are open, accessible to unauthorised persons and animals, breeding grounds for flies, rodents and other insects**

- **Final disposal of waste unacceptable; burying, open burning, in some cases infectious waste is dumped on open grounds**
- **Emission of dioxins and furans from incinerator use on ascendancy, gases that pose health risk through environmental contamination.**
- **Absence of valid monitoring mechanism to verify compliance to agreed standards and practices.**

Policy and Legal Context

- **Waste management is a multi-sectoral effort with the Ministry of Local Government and the Environmental Protection Agency (EPA) playing key roles as implementer and regulator respectively**
- **This responsibility is discharged through the Assemblies under the Ministry of Local Government on the one hand and the offices of the EPA on the other.**
- **Ultimate responsibility for ensuring the disposal of waste lies with the person or institution that generates the waste in line with the principle of 'the polluter pays'.**

Laws on Waste Management

- **The Constitution of the Republic of Ghana, 1992**
- **The Environmental Protection Agency Act, 1994 (Act 490)**
- **Environmental Assessment Regulations, 1999 (LI 1652)**
- **The Local Government Act, 1993 (Act 462)**
- **National Building Regulations, 1996 (LI 1630)**
- **Vaccination Ordinance Cap 76**
- **Quarantine Ordinance Cap 77**

- **Mosquito Ordinance Cap 75**
- **Infectious Disease Ordinance**
- **Food and Drugs Law 305b (1992)**
- **Mortuaries and Funeral Facilities Act, 1998 (Act 563)**
- **The Criminal Code, 1960 (Act 29)**
- **Town and Country Planning Ordinances, 1944 (Cap 84)**

MoH HCWM Policy for Health Institutions

- All hazardous wastes shall be considered as such and be treated in conformity with all legal requirements in force**
- Health care institutions are responsible for the waste that is generated by their activities and are required to take practical steps to ensure their separation, labelling, storage, treatment and safe disposal in the prescribed manner under the laws and regulations regarding Health Care Waste Management so as to safeguard the safety of its workers, clients and the environment.**
- In undertaking this responsibility, healthcare institutions shall collaborate with relevant stakeholder ministries and agencies**

Steps in HCWM

- **Step 1: Waste Generation**
- **Step 2: Waste Segregation**
- **Step 3: Containerization**
- **Step 4: Internal Storage**
- **Step 5: Internal Collection & Transport**
- **Step 6: External Storage**
- **Step 7: External Transport**
- **Step 8: Treatment**
- **Step 9: Collection of Residues**
- **Step 10: Disposal**

HCWM is most effective when proper methods are employed at each step – nature of waste & quantity, cost/budget, technology, legal, sustainability, safety.

Guidelines for Implementation of Policy

Step 1: Waste Generation


- Each facility should estimate the waste it generates. This includes all wastes generated during clinical care (including surgery), routine and mass immunization.**
- The DHMTs & RHMTs would collate the estimates to obtain the district and regional waste generated. Each region should then submit returns on these levels quarterly to GHS headquarters.**
- Teaching hospitals and GHS should submit their returns to the MOH or its designated department, for further collation into a composite estimate of the national health care waste.**

Step 2: Waste Segregation

- Segregate wastes into the various sub-categories for safety reasons and to facilitate appropriate methods of handling, treatment & disposal**
- Segregation should be at source; that is it should take place as close as possible to the point of generation of the waste and should always be the responsibility of the waste producer**
- Instruction posters regarding the procedure for waste segregation should be pasted in all areas where segregation takes place and other vantage points**

Step 3: Containerization & Colour Coding

- **Acquire the specified waste containers and accessories (plastic bags, hand gloves, protective clothing, metal bins, puncture resistant packages, etc)**
- **Colour codes should be used for waste containers and plastic bags to facilitate efficient segregation of waste.**
- **Colour coding for the plastic bags should always correspond or match with the waste containers**

- The recommended colour coding scheme for Ghana (adapted from WHO) is as follows:
 - **BLACK** - General waste (e.g. kitchen waste, paper, cardboard, sweeping etc)
 - **YELLOW** - Infectious waste (e.g. sharps, patient waste, human/animal tissue and cultures/specimens) with the biohazard label 
 - Radioactive waste with the radioactive symbol.
 - **BROWN** - Hazardous waste (e.g. expired drugs, vaccines, chemicals etc). Where only small amounts of chemical wastes are generated, these may be added to the infectious waste.

- **Containers used must be appropriate for the type of waste being handled. They must be robust and resistant to corrosion**
- **After use, containers must be well sealed to prevent spillage during handling and transportation**
- **Label waste containers permanently and legibly to identify source and contents. Under no circumstance should the label detach from the container till final disposal**

Step 4: Internal Storage

- **Internal storage is the temporary placement of waste at the point of generation (e.g. ward, OPD) before transfer to external storage points within the hospital**
- **To ensure safe management of waste at the points of generation, internal storage should not exceed 24 hours due to potential risk of infection to healthcare workers and waste disposal staff. Multiple daily removal of the waste is recommended**
- **Containers used for internal storage as well as the storage sites should be cleaned, disinfected and fumigated frequently**


Step 5: Internal Collection & Transport

- **Waste must be handled correctly to prevent its spillage or loss of any kind during convey from waste generation points to the external storage point within the hospital**
- **Only persons authorized to handle waste should do so**
- **Equipment (trolleys, etc) used for transporting waste from internal to external storage sites should be in good condition and easy to clean and disinfect**

Step 6: External Storage

- **Facilities for external storage should be built away from service delivery areas but be within the precincts of the health facility and shall be easily accessible to collection vehicles**
- **The facility shall be roofed, enclosed and surrounded by solid fence wall of appropriate height and provided with a gate and lock to protect bins from rain, wind, animals and pests such as rodents, cockroaches, etc and scavengers**
- **Larger volume waste bins – 240 litres and above – should be available at the external storage facility to receive waste containers from the internal storage points. These bins shall be marked for ease of identification of content and the markings must correspond with the colour code used for polythene bags in internal storage**

- **Waste should be described in sufficient detail that subsequent carriers and disposers can deal with it safely so that liability for negligence on the part of the institution or its officers is avoided**
- **Radioactive waste containers must be brightly coloured (normally yellow), should be marked “Radioactive Waste” and should bear the international radioactive symbol to distinguish it from containers meant to receive other types of waste**
- **Labels should be completed and signed by the officer in charge of waste management in the organization firmly attached to the containers or packages and not become detached during transportation and handling.**

- **External storage facilities must meet certain basic standards for the type of waste stored**
 - e.g. refrigerators for storing organic tissues should be considered and provided in facilities. This will ensure that the temperature of body and body parts will be such as to prevent further decomposition or multiplication of pathogens.
- **Where refrigeration is not available, these materials should be disposed of without delay.**
- **Bio-hazard marks  and other warning signs shall be conspicuously posted on doors leading to storage sites to prevent people from unnecessarily gaining access to the area**

Step 7: External Transport

- Where a health facility is not equipped to carry out on site treatment and disposal of health care waste, collection, transportation and disposal of the health care waste shall only be done by the District Assembly or their accredited Waste Management Contractors**
- Health Facilities should necessarily work in collaboration with the relevant departments of the District Assemblies in this regard**
- Potentially hazardous healthcare waste must be transported directly to the disposal or treatment site within the shortest possible time**

- **Vehicles used for transportation of this waste must be so constructed as to prevent the scattering of packaged wastes, odour nuisance, and must be leak proof**
- **Waste must not be compacted or subjected to any other treatment that could cause bags or containers to rupture**
- **All vehicles used for the transportation of health care waste shall carry the bio-hazard mark on all sides**
- **Labels should be firmly attached to containers so that they do not become detached during transportation and handling.**
- **Radioactive waste should be adequately packaged for transport to ensure safety of everyone in accordance with the International Atomic Energy Agency (IAEA) Regulations for the Safe Transport of Radioactive Material**

Step 8: Treatment & Disposal

- **Waste water from healthcare facilities contain various potentially hazardous components such as**
 - **Bacteria, viruses and helminths discharged from wards treating patients with infectious diseases**
 - **Hazardous chemicals from cleaning and disinfection operations**
 - **Pharmaceuticals from pharmacies and various wards**
 - **Radioactive isotopes**
- **Waste water from wards, etc and other general liquid effluents should be connected to the sewerage system if available. However, during epidemics or where highly infectious patients are involved, high risk type wastes should be pre-treated by chemical disinfection before disposal**
- **Water containing radioactive, pharmaceutical and chemical waste must be segregated and treated appropriately**

- **Bio-digester is an option for treatment of waste water from toilets and latrines. Waste water from kitchens and biodegradable potentially infectious waste can also be handled via this means. The biogas (methane) produced may be used in kitchen appliances (stoves and refrigerators).**
- **It is however not advisable to treat other infectious waste by this method**
- **Places of final disposal of treated waste shall be identified and acquired**
- **Treatment of solid waste is on the [table 1](#).**

Sharing Waste Management Cost

- Provided the “proximity principle” (the principle of treating and disposing of waste as close as possible to the point of generation) is observed, health institutions in the same vicinity may share facilities in order to minimize costs. **How?**

Implementation of HCWM Policy

Role of Health Institutions

- At the institutional level, each facility shall establish a HCWM Committee led by the head of the institution to supervise, advice and manage healthcare waste**
- Membership of Committee shall comprise the head of the institution, the Environmental Health Officer and three other senior officers. Their duties include the following**
- Each facility should develop a waste management plan which should specify written procedures for handling health care waste. A checklist for such a waste management plan or procedures is available.**
- Ensure strict adherence to various steps in the management of health care waste**

- **Provide resources for the acquisition of inputs in sufficient quantities for implementation of waste management activities on a sustainable basis**
- **Insist/ensure that personal protection equipment such as gloves, masks, safety glasses and Wellington boots, etc are worn by staff handling healthcare waste**
- **Containers procured are durable and appropriate to hold the waste**
 - **For instance, sharps shall be stored in puncture-resistant containers made of thick cardboard, plywood or strong plastic/metal**
 - **Place puncture resistant containers as close as possible to the area where sharp items are used**
 - **Waste bags do not rupture easily during transfer from service points to the external storage area**

- **Waste bins shall be washed and disinfected after each collection**
 - **Detail washing and disinfection procedures for reusable collection equipment , storage containers as well as equipment used for internal transport (trolleys, wheelbarrows, bins etc.) should be in place in all health facilities**
 - **An appropriate site should be selected for this activity to take place**
 - **Necessary tools (brushes, detergents and soaps, appropriate disinfectants) as well as personal protective gear (gloves, etc) for carrying out this activity should be provided.**

- **Staff are trained to understand the principles of segregation and to follow procedures for colour coding, storage and documentation**
- **Keep accurate records on waste generated and processed including the type of waste, volumes and/or weight, and the persons who processed them at the various stages**
- **Engage a Health Care Waste Management Contractor, if need be, based on EPA guidelines**
 - **contractors must be licensed by the District Assembly to collect and transport health care wastes to a designated site for treatment and disposal if the hospital is not equipped to carry out on-site treatment and disposal of health care waste**

Implementation of HCWM Policy

Role of DHMT

- **At the district level, DHMT will have responsibility for co-ordination and supervision**

Implementation of HCWM Policy Role of RHMT & Teaching Hospitals

- **At the regional and teaching hospital, clinical care units will have the overall responsibility for ensuring the implementation of the policy.**

HCWM Implementation Arrangement at National Level

- The MOH has ultimate responsibility for the implementation and monitoring of this policy which is meant to provide guidance for the health sector as a whole**
- The Ghana Health Service and other Agencies have direct responsibility for implementation**
- Institutional Care Directorate (ICD) under GHS has direct responsibility for implementation healthcare waste programme**

- **Estate Management Department (EMD) has responsibility for day to day co-ordinating of waste management activities on behalf of the ICD, ensuring that treatment and other related facilities are in functioning order and in the monitoring and supervision of the estate units within health facilities**
- **This role will be performed in close co-operation with the ICD.**

HCWM Policy Implementation

Role of MoH & GHS

- Work collaboratively with Parliament and the Ministry of Local Government, Rural Development and Environment to review legislation on healthcare waste from time to time for effective implementation of the policy**
- Review policies on healthcare waste management consistent with existing legislation**
- Mobilise and allocate resources for healthcare waste management activities**
- Establishment of standards for healthcare waste management**
- Formulate and disseminate guidelines on healthcare waste management**

- **Introduction of environmentally friendly waste treatment options such as micro wave systems and waste autoclaves alongside state of the art incinerators**
- **Employment of environmental health officers as full time employees for the GHS and deploy them to work in health facilities. Will this be approved in view of the already blotted PE budget?**
- **Education of the public on the importance of health care waste management and their role in ensuring its effective implementation.**
- **Provide appropriate formats for the keeping of records on health care waste**
- **Improve the operation of existing structures and technologies such as the De Monfort and other locally made brick incinerators for waste management**
- **Monitoring and evaluation of healthcare waste management activities to ensure conformity to established standards.**

Where are we now?

- **3 bio-digesters built at Tamale, Koforidua and Accra Psychiatric hospitals**
- **Incinerator construction in progress at 50 sites in 9 regions except Greater Accra**
- **Piloting the implementation of new HCWM policy in three facilities in the Central Region**
 - **Inputs for waste segregation, labeling, etc have been acquired for distribution**
 - **Staff training planned and would start soon**
- **Programme to be rolled out to all regions, districts and institutions after the pilot phase**

Epilogue

- **Waste is a higher risk when it is hazardous and should be handled with care**
- **Yet waste is a resource if harnessed for the benefit of institutions and communities.**

Thanks for your attention.