

4 Health Care Waste Management

Introduction

Health care waste (HW) generated by medical institutions could transmit infectious diseases to people who are exposed to them. Improper disposal can have harmful effects on the environment as well. Every health care facility (HCF) is responsible for the proper management of waste it generates until its final disposal.

Why a Clinical Practice Guideline?

Health care waste generated by the institutions is on the increase. As sources of infections this waste has to be properly managed. Therefore a guideline on this aspect is very essential. It would help all concerned to develop plans and implement them to manage this problem effectively.

For whom is this guideline intended?

It is intended to guide all the health care providers. Although it is targeted for the institutions under the Ministry of Health, these guidelines are encouraged to be used in any private health facility.

Objectives

Provide evidence based recommendation to clinicians and other categories of staff to manage hospital generated waste with minimum harm to the environment.

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Health Care Waste Management

4.1 Categorization of waste

HW can be broadly categorized into hazardous and non-hazardous (General) waste.

4.1.1 Non-hazardous (General) waste

Non-hazardous waste includes all waste that has not been contaminated with infectious or hazardous substances such as blood, body fluids and chemicals eg. paper, left over food, fabric. General waste can be managed by the local authority.

4.1.2 Hazardous waste

There are several categories of hazardous waste:

- A. Infectious waste
 - Blood
 - Body fluids or items contaminated with them
 - Microbiological waste
 - Waste from isolation wards
- B. Pathological waste
 - Human body parts, foetuses
 - Similar waste from surgery and autopsies
 - Animal carcasses, organs and tissues infected with human pathogens.
- C. Sharps
 - Syringes with needles
 - Scalpel blades, razors, infusion sets
 - Contaminated broken glass
 - Blood tubing and other similar materials

- D. Chemical waste
 - could be in the form of solid, liquid and gaseous chemicals
 - is generated in the laboratory by the use of solvents, reagents, disinfectants and other chemicals
 - may be toxic, corrosive, flammable, explosive or carcinogenic.
- E. Pharmaceutical waste
 - are outdated or residual medications of all kinds.
- F. Radioactive waste can be
 - solid, liquid or pathological waste contaminated with radioactive isotopes of any kind.
 - faeces, vomitus and urine from patients treated with radioactive substances.

4.2 HW Management Procedures

Safe HW management procedures aim at containing infections and reducing public health risks both within and outside the HCF.

The procedures include the following measures:

- Waste minimization and segregation.
- Waste collection and onsite transportation.
- Waste storage.
- Waste treatment.

A. Waste Minimization and Segregation

iii. Waste minimization:

Recycling procedures should be implemented to minimize the quantity of HW generated.

- All non contaminated plastic items should be collected separately to be picked up by local contractors capable of recycling them. **Y**
- All non-contaminated and unbroken glassware which are not reused should be segregated and sent for recycling. **Y**
- Broken glassware should follow the stream of sharp waste. **X**

iv. Segregation:

Segregation consists of separating different types of waste based on the type of treatment and disposal practices.

- It should take place at the point of generation of waste. **X**
- Different colour coded containers should be used. **X** (Refer Figure 1)








Infectious waste – Yellow	
Sharp waste – Yellow with a red stripe	
General waste – Black	
Biodegradable waste – Green	
Glass waste – Red	
Paper waste – Blue	
Plastic waste – Orange	

Figure-1. Colour code used in health waste management

B. Waste collection and on site transportation

i. Waste collection

a) Hazardous waste:

- Should be collected in yellow polythene bags of minimum 300µm gauge with the international biohazard symbol **placed in yellow bins.** **Y**

b) Sharps:

- Sharps should be placed in specific cardboard or plastic boxes which are puncture proof and leak proof. **X**
- Sharps boxes should be designed with a small opening so that items can be dropped in but no item can be removed. **X**
- **Box should be of yellow colour with red stripes** and have the biohazard symbol on it. **Y**

c) General waste:

- Should be placed in black polythene bags of minimum 200µ gauge. **Y**
- For recyclable non hazardous waste refer DGHS circular of 01/12/2006. **X**

ii. Onsite transportation

- Waste should be collected from each ward on a regular schedule. **X**
- When handling waste for transportation sanitary staff should wear protective clothing at all times including face masks,

aprons, boots and heavy duty gloves. **Y**

- All yellow bags should be sealed with appropriate adhesive tape, and removed from the bins. **X**
- The sharps boxes should be closed when $\frac{3}{4}$ full. **X**
- Waste should be collected in a trolley or cart which is easy to load and clean. **Grade X**
- The trolley should not be used for any other purpose. **X**
- The collection route should be direct from the point of collection to the central waste storage facility. **X**

C. Waste storage

- A separate central storage facility should be provided for storage. **X**
- Non hazardous waste which is to be taken away by local government authorities should be stored separately from hazardous waste. **X**
- The central storage facility should be totally enclosed and sealed from unauthorized access. **X**
- It should be inaccessible to animals, insects and birds. **X**
- It should be easy to clean and disinfect. **X**
- It should have a good water supply, drainage and ventilation systems. **Y**

D. Waste Treatment

Different types of hazardous HW should be treated appropriately.

i. Pharmaceuticals:

- Should be returned to the regional offices of the Medical Supplies Division (MSD) for proper disposal. **X**
- If return to MSD is not possible a process **to inert** them should be carried out under supervision of the authorized person, i.e. to mix with cement and lime before burying. **X**

ii. Chemical Waste:

- Appropriate advice should be requested at the regional representative of the Central Environmental Authority before any disposal of chemical. **X**
- Large quantities of chemical should be returned to the supplier. **X**

iii. Effluents:

- All liquid infectious waste shall be discharged into the sewerage system only after being properly treated. **X**
- Effluents of all diagnostic medical laboratories, operating theatres, etc. shall always be neutralized in a buffer tank of concentrated hypochlorite (10% hypochlorite) before discarding into the sewerage. **X**
- Radioactive effluents of in ward patients shall be discharged into the sewerage or into a septic tank only after it has decayed to

adequate background level in retention tanks.
X

iv. Placentas and Anatomical waste

- All anatomical waste should be identified as infectious waste and packed in yellow bags and transported to a crematorium for incineration. Y
- Alternatively it can be put into a designated pit of a sufficient depth (>1m) in a location at least 100m away from any source of underground water. X
- Anatomical waste should be stored at a temperature between 1°C to 5°C in the mortuary until transported. X

v. Blood

- Samples of blood should be autoclaved before being discarded. Y
- Alternatively, samples of blood can be kept overnight in a container of concentrated hypochlorite before discarding. X
- Blood bags should be incinerated. X

vi. Infectious waste

- Infectious solid HW should preferably be incinerated in a double chamber incinerator. Y
- In densely populated areas it can be treated by autoclaving. X
- In minor HCF solid infectious waste can be buried at sufficient depth (>1m). X

vii. Sharps

- Sharps are destroyed together with other infectious waste. X
- The method of choice for destruction is incineration in a double chamber incinerator. Y
- Alternatively, autoclaving and shredding can be used. X
- In rural areas safety boxes can be incinerated in small numbers by open burning. The residues of burning shall be safely buried at sufficient depth (>1m). X

h) Radioactive waste

In disposing radioactive waste the following practices are recommended.

- The Radiation protection officer should be responsible regarding disposal of radioactive waste. X
 - In the process of disposal the instructions provided by the atomic energy authority regarding storage and disposal should be followed. X
 - A written protocol on disposal should be available in the unit. X
- All radioactive waste shall be stored to allow decay to background level. X
 - The radioactive waste should be placed in large containers or drums and labeled with

the radiation symbol and the required period of storage. X

- They should be stored in a specific area preferably in a lead shielded storage room or in a room with concrete walls 25cm thick. X
- When radioactive waste has decayed to background level they can be discarded as Infectious HW. X
- Liquid radioactive waste can be discarded into the sewerage system once certified as free of radioactivity. Y
- Non-infectious radioactive waste which has decayed to the background level can be discarded with general waste. X

i: international symbols to be used for hazardous and radioactive HCW

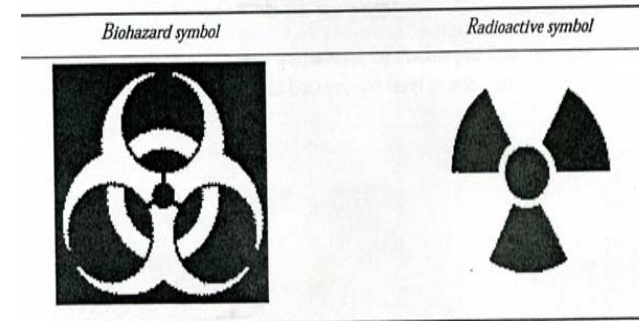


Figure- 2. International symbols used in Health Waste Management

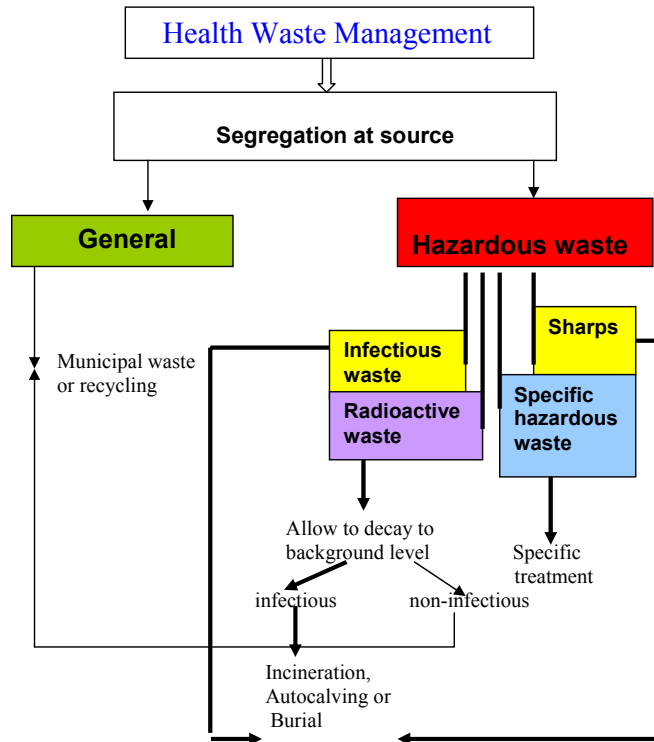


Figure -3. Flow chart on Health Waste Management

4.3 References:

1. Health Care waste Management National Policy – Sri Lanka Ministry of Health and Indigenous Medicine Draft Version- October 2001
2. Hospital Infection Control Manual-The Sri Lanka College of Microbiologists 2005
3. Suggested Guiding Principles and Practices for the sound Management of Hazardous Hospital Waste. World Health Organization, South East Asia 1997