8.0 OBJECTIVES

After studying this unit, you should be able to:

- describe the responsibilities for handling health care waste
- enumerate the hazards of mismanaging health care waste
- plan the handling of health care waste so as to manage it properly

8.1 INTRODUCTION

In the previous units you have learned about the various types of waste and health care waste. You have also read about the sources of generation of health care waste in the different health care institutions, and by now must be well aware that since this waste could be infectious and hazardous, it can pose a grave threat to the environment and human health, if not managed in an environment sound manner. It is therefore imperative that the health care waste generated from the health care facility is properly handled and
managed. Now, who do you think is to be entrusted with the job of handling health care waste? You may answer that all the health care staff are responsible for ensuring a successful health care waste management programme. Well yes, of course! But, the onus of laying down the guidelines and making the programme work has to be entrusted to relevant authorities and personnel. This ensures a method to the activities and a direction to achieve the goals. This unit will address these aspects of identifying who is responsible for handling health care waste.

At a National level, a proper legislation, rules and guidelines should be in place so that there is uniformity and accountability in implementation. The different states and districts need to ensure that the various health care institutions in their jurisdiction follow these guidelines stringently. Regulatory authorities like the Central and State Pollution Control Board help the state governments in this function. Each health care institution is required to draw out a plan for the management of the health care in its institution and appoint and train the required health care professionals, para-medical professionals and support staff. It is equally important to assign responsibilities to all concerned. When responsibilities are assigned, every person is made accountable for the work allocated to him/her. Also, by assigning responsibilities, it can be ensured that all aspects are covered thoroughly, for a satisfactory completion of the programme.

The other important area concerned with the proper management of the health care waste is creating an awareness and changing the attitude of people concerned. It is required to acquaint them with the best management practices. Knowledge coupled with a change in attitude will go a long way in compliance of the HCWM Rules in the respective countries or regions.

Check Your Progress 1

Case Scenario

The clinician goes on his morning rounds in the ward, stopping by each bed to enquire about the patient’s status, the medicines he/she is receiving and going over the nurse’s notes. He then prescribes an injection to a patient and instructs the nurse to do the needful. After the rounds, the nurse dutifully gives the patient, the prescribed injection. Just then she receives a call and so, she leaves the used needle and syringe on the patient’s bed and goes away. The syringe with needle attached, gets hidden in the folds of the patient’s bed sheet. The nursing attendant comes in and prepares to change the patient’s bedsheet and covers. During the course of his duty, he receives a needle stick injury.

Now answer the following questions-

a. Is there any adverse event in the above case study?

b. Was this adverse event preventable?
c. Who was responsible for this adverse event?

........................................................................................................

........................................................................................................

d. Is the nurse justified in saying that she was only performing her duty when she went to receive the call?

........................................................................................................

........................................................................................................

e. Is the nurse justified in saying that it is not her duty to dispose of waste, it is the duty of nursing attendant?

........................................................................................................

........................................................................................................

f. Who, in your opinion, behaved irresponsibly- the nurse or the nursing attendant?

........................................................................................................

........................................................................................................

g. Do you agree that waste must be segregated at the point of generation and discarded appropriately?

........................................................................................................

........................................................................................................

h. How should the needle and syringe have been disposed of?

........................................................................................................

........................................................................................................

While we certainly need to know how to manage health care waste properly, it is equally important to know the hazards of improper Health Care Waste Management. Why so? You may ask. Let me give you an example. If you tell a child, “Do not play with that knife”, the child will invariably turn around and ask you, “Why should I not play with a knife? What will happen if I play with a knife?” You then, will not only have to satisfy the child’s curiosity, but also make the child understand the perils of the activity, so that it becomes a lesson for life.

8.2 HAZARDS OF IMPROPER MANAGEMENT OF HEALTH CARE WASTE

You read about the hazards of improper management of the different kinds of waste, including health care waste in general.

Health care waste causes harm not only to humans, but also to the flora and fauna, thus affecting life and the environment. These adverse effects may pertain to air, water or solid matter, in the form of air pollution, waste water hazards and infections, respectively.
Are we not aware of the dangers faced by rag pickers, mostly small children, who are made to rummage through openly dumped garbage? It is therefore required that the waste is managed properly.

Improperly managed health care waste can result in the treated waste to still contain infectious agents or toxic substances that could be harmful. You have learnt about the various steps of waste management in Unit 6. Improper management of health care waste entails a combination of one or more of the various stages involved in health care waste management. The adverse effects may pertain to the stage of waste collection, segregation, transport, storage or disposal. The hazards of improper management of health care waste at various steps is explained in Box 8.1.

### Box 8.1: Improper management of health care wastes

#### Check Your Progress 2
Can you point out the risk or danger involved in each of the following activities in a health care institution?

1. Discarding the soiled dressing in the wrong colour coded bag/container.
2. Not wearing gloves, while performing patient/clinical procedures.
3. Transporting the infectious waste in open wheel barrows within the hospital premises.
4. Open storage of health care waste in the corridors of the hospital, till they are collected by common treatment facility.
5. Draining out blood samples in the sinks.

As you go through the various units, you will learn more about the improper management of waste. You will learn about the impact of the health care waste on health in the units of BHME-101 and its impact on the environment in the Unit 9, Block 3, BHM-101. While you go through the various burn and non-burn technologies used in the management of health care waste, in
the units of Block 2 BHM-102, you will learn which method of treatment to choose for a particular waste and the precautions to be taken during the treatment so that the waste can be managed properly and rendered safe, non-infectious and non-hazardous.

8.3 GUIDING PRINCIPLES

Let us familiarise ourselves with some key guiding principles of health care waste management.

Five principles (Fig. 8.1) are widely recognised as underlying the effective and controlled management of wastes. These principles have been used by many countries when developing their policies, legislation and guidelines.

Fig. 8.1: Five guiding principles for HCWM

The five principles have been elaborated in Box 8.2.

**Think and reflect**

Explain how the “prior informed consent principle” is used in health care facilities.

---

**Box 8.2: Guiding principles for HCWM**

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. This principle also attempts to assign liability to the party that causes damage.

The “precautionary” principle is a persuasive principle governing health and safety protection. It was defined and adopted under the Rio Declaration on Environment and Development (UNEP, 1972) as Principle 15: “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 handling or managing hazardous substances or wastes or related equipment is ethically responsible for using the utmost care in that task. This principle is best achieved when all parties involved in the production, storage, transport, treatment and final disposal of hazardous wastes (including health-care waste) are appropriately registered or licensed to produce, receive and handle named categories of waste.

The “proximity” principle recommends that treatment and disposal of hazardous waste take place at the closest possible location to its source to minimize the risks involved in its transport. Similarly, every community should be encouraged to recycle or dispose of the waste it produces, inside its own territorial limits, unless it is unsafe to do so.

The “Prior informed consent principle” as embodied in various international treaties is designed to protect public health and the environment from hazardous waste. It requires that affected communities and other stakeholders be apprised of the hazards and risks, and that their consent be obtained. In the context of health care waste, the principle could apply to the transport of waste and the sitting and operation of waste-treatment and disposal facilities.
Can you point out the risk or danger involved in each of the following?

Match the following to the statements below: polluter pays, precautionary principle, duty of care, proximity principle and prior informed consent principle.

a. Stipulates that any person handling or managing hazardous substances or wastes or related equipment is ethically responsible for using the utmost care in that task.

b. Treatment and disposal of hazardous waste take place at the closest possible location to its source to minimise the risks involved in its transport.

c. Producers of waste are legally and financially responsible for the safe and environmentally sound disposal of waste they produce.


e. Affected communities and other stakeholders be apprised of the hazards and risks, and that their consent be obtained.

8.4 RESPONSIBILITIES FOR HANDLING HEALTH CARE WASTE

There are various organisations and authorities, at every level, that have been set up either solely with the responsibility of handling health care waste issues, or which have health care waste management as one of their defined responsibilities.

8.4.1 At the Global Level

On a global level WHO recommends the responsibilities of governments, donors and partners which have been listed in the Box 8.3.

<table>
<thead>
<tr>
<th>Governments should</th>
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<tr>
<td>i. allocate a budget to cover the costs of establishment and maintenance of sound health care waste management systems</td>
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<tr>
<td>ii. request donors, partners and other sources of external financing to include an adequate contribution towards the management of waste associated with their interventions</td>
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<tr>
<td>iii. implement and monitor sound health care waste management systems, support capacity building, and ensure worker and community health</td>
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<table>
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<th>Donors and partners should</th>
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<tr>
<td>i. include a provision in their health programme assistance to cover the costs of sound health care waste management systems</td>
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Box 8.3: Responsibilities of the governments and donors at the Global level
The organisational set up at the global level has been described in Fig. 8.2.

Fig. 8.2: Responsibilities of handling health care waste at global level

Some of these global players include-

i. World Health Organisation (WHO)

This is one of the foremost organisations dealing with appropriate management of health care waste at the global level. The WHO contributes in many ways –

i. By laying down rules/guidelines/standards
ii. by releasing training materials
iii. providing inputs on planning
iv. organising and implementing health care waste management policies. Realising the importance of injection safety and patient safety both of which are integral to health care waste management, WHO set up separate secretariats to address both these issues. In its 2014 edition on Safe management of wastes from health-care activities, it gives the guidelines for managing the different kinds of health care waste.

ii. United Nations Environment Programme (UNEP)

Many international environmental laws made under the aegis of UNEP are directly or indirectly concerned with sound management of health care waste. An example is the Stockholm Convention which aims at reducing the releases of Persistent Organic Pollutants (POP). Dioxins and furans which are released during incineration of medical waste have been one of the major focal areas in implementation of this convention. Similarly, other Conventions like Basel Convention on Control of Transboundary Movement of waste stresses on management of clinical waste as near the source of generation as possible. Minamata convention on mercury pollution prevention aims at a global phase out of mercury measuring instruments and dental amalgams in a phased manner. You will read in detail about these conventions in the Unit 26 Block 3 BHM-102.

iii. The Global Environment Facility (GEF)

This Fund was established on the eve of the 1992 Rio Earth Summit, to help tackle our planet’s most pressing environmental problems. GEF funding to support the projects is contributed by donor countries. Various UN agencies like United Nations Industrial Development Organisation (UNIDO), United Nations Development Programme (UNDP) are implementing the GEF funded projects which aim to improve compliance of medical waste management globally. You will read more about these conventions in Unit 26, Block 3, BHM-102.
Several non-governmental organisations (NGO) have got together to work on medical waste management. They have raised the concerns about the various important environmental consequences of improper management of waste. These networks have successfully influenced the policy on waste management, including the use of non-polluting technologies. Some of the NGOs working in this area have been described below.

a. **Health Care without Harm** - This is an international coalition of hospitals and health care systems, medical professionals, community groups, health-affected constituencies, labour unions, environmental health organisations. All these groups have come together with the objective of promoting health care that is safe and does not harm in any way. They started with health care waste management and now work with hospitals on sustainability with increased focus on climate change, chemical management, green purchasing etc. They have valuable and informative literature and tools to help health care institutes.

b. **Global Alliance for Incinerator Alternative (GAIA)** - This is a worldwide alliance of more than 600 grassroots groups, NGOs, and individuals in over 82 countries whose ultimate vision is a just, toxic free world without incineration. It works both against incinerators and for safe, sustainable and just alternatives.

c. **International Solid Waste Association (ISWA)** - This is an international organisation that was conceived and established with the goal of promoting and developing sustainable and professional waste management all over the world. ISWA achieves its mission through:

   i. Promoting resource efficiency through sustainable production and consumption, Support to developing and emerging economies, Advancement of waste management through education and training,

   ii. Promoting appropriate and best available technologies and practices.

d. **Global Partnership on Waste Management (GPWM)** - It is a global organisation for co-operation between countries, industry, businesses, institutions and non-governmental organisations, to enhance international cooperation among stakeholders, identify and fill information gaps, share information and strengthen awareness, political will, and capacity to promote resource conservation and resource efficiency.

You will read more about these conventions in Unit 26, Block 3, BHM-102.
1. Solve the crossword. All the answers are abbreviation!

Across
1. Aims for promoting resource conservation and resource efficiency
3. Funding projects which aim to improve compliance of medical waste management globally

Down
2. Laying down rules/guidelines/standards
3. Many international environmental laws made under its aegis
4. Goal of promoting and developing sustainable and professional waste management
2. Match the following:

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<tr>
<td>2. Basel Convention</td>
<td>b. phase out of mercury</td>
</tr>
<tr>
<td>3. Health Care Without Harm</td>
<td>c. against incinerators</td>
</tr>
<tr>
<td>4. Global Environment Facility (GEF)</td>
<td>d. funding projects to improve compliance of medical waste management globally</td>
</tr>
<tr>
<td>5. Minamata convention</td>
<td>e. promoting health care that is safe</td>
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8.4.2 At the National Level

A national management plan should be based on an assessment of the health care waste management options available and then reach consensus on the related actions to be implemented across the country. A legal framework need to be available to guide districts and institutions on safe and environmental friendly HCWM.
In India, as in other countries, there are ministries in the Government as well as Central Pollution Control Board (CPCB) that are dedicated to the issues of environmental sustenance, appropriate health care waste management and disposal methods. We shall discuss here the responsibilities of these different levels and the functionaries in context of the Bio-Medical Waste Management Rules, 2016, Govt of India. (Box 8.4).

a. The Ministry of Environment, Forests and Climate Change (MoEF&CC) is responsible for notifying the health care waste management guidelines, rules and its legislative aspects. You will learn more about these guidelines and legislative aspects in units 13-16. For further information, you can visit the website (https://envfor.nic.in).

b. The Central Pollution Control Board (https://cpcb.nic.in/) CPCB is the Technical arm of the Ministry of Environment, Forests and Climate Change (MoEF&CC), which coordinates and enforces the BMW rules and regulations.

c. At the national level, it is not just one Ministry that brings about changes or formulates rules and guidelines, authorities responsible for enforcement of the BMWM Rules, 2016 are involved, including-

1. Ministry of Health and Family Welfare (MoH&FW),
2. Directorate General of Armed Forces Medical Services (DGAFMS),
3. All these indulge in brainstorming sessions on various aspects of BMW management at various times and levels.

Box 8.4: Responsibilities of the different functionaries under the BMWM Rules, 2016, as amended

8.4.3 At the State/District Level

Based on the national HCWM plan and the related legal framework, the health authority of the districts should elaborate a realistic District level plan to reduce improper disposal of waste from injection activities. In India, the responsibility for implementing the Bio-Medical Management Waste Rules has been delegated to individual states and territories, with State Pollution Control Boards (SPCBs) in states and Pollution Control Committees in territories designated as the authorities. The national rules require that each state constitutes a committee to advise the state government and the SPCBs about implementation of the rules. For such an advisory committee to function effectively, there must be close coordination and participation among different stakeholders—in particular, state environmental and health agencies, local authorities, health care facility representatives, academia, and NGOs. State health departments also have provided assistance to government hospitals for BMW management in the form of personnel training, waste management auditing, preparation of hospital-specific plans, procurement of materials and supplies, and construction of on-site disposal facilities. Private hospitals in India have had to comply with the requirements of the Bio-Medical Waste Management Rules using their own resources.
To oversee the implementation of the rules in the respective state and to advise any improvements, Advisory Committee is constituted by State Government comprising of representatives from the Departments of Health, Environment, Urban Development, Animal Husbandry and Veterinary Sciences of that State Government or Union territory Administration, State Pollution Control Board or Pollution Control Committee, urban local bodies or local bodies or Municipal Corporation, representatives from Indian Medical Association, common bio-medical waste treatment facility and non-governmental organisation.

Also, the State Governments are required to constitute district level monitoring committees under the chairmanship of District Magistrate or District Collector to monitor the compliance of the provisions of these rules in the health care facilities generating bio-medical waste and in the Common Bio-Medical Waste Treatment and Disposal facilities, where the bio-medical waste is treated and disposed of. The district level monitoring committee comprises of the District Medical Officer or District Health Officer, representatives from State Pollution Control Board or Pollution Control Committee, Public Health Engineering Department, local bodies or municipal corporation, Indian Medical Association, common bio-medical waste treatment facility and registered non-governmental organisations working in the field of bio-medical waste management.

8.4.4 At the Institutional Level

The effective management of health care waste is one aspect of the continuous need to control infections. Health care waste management should be viewed as part of infection control, and an institutional waste-management plan could be developed by infection-control staff where they are present (Box 8.5).

In accordance to WHO, all concerned institutions and organisations should:

a. Promote sound health care waste management

b. Develop innovative solutions to reduce the volume and toxicity of the waste they produce and associated with their products

c. Ensure that global health strategies and programmes take into account health care waste management

Box 8.5: Institutional responsibilities as per WHO

In India every health care institution, be it a large hospital, a nursing home, a stand-alone clinic or a diagnostic laboratory, should plan and implement its strategies for bio-medical waste management. A HCF having 30 or more beds, should have a bio-medical waste management committee. This committee should review bio-medical waste management scenario at the institutional level once in every six months and necessary measures are required to be taken to comply with the BMWM Rules, 2016, as amended.

The BMWM responsibilities at the institutional level are given in Fig. 8.3.
The first step towards this end is to organize a working Bio-Medical Waste (BMW) management committee (BMWMC), consisting of members from all relevant departments, with the head of the Institution (Medical Superintendent/Director), as Chairperson of the committee.

This committee should meet at regular intervals and chart out its programmes and policies in following the BMW rules laid down by the MoEF and CPCB.

The committee should allocate responsibilities to qualified persons in the training and implementation of rules and guidelines.

Some of the important members in this regard include:
- hospital waste management nodal officer;
- infection control nodal officer;
- radiation nodal officer;
- pharmacologist nodal officer;
- microbiology nodal officer;
- nursing superintendent;
- CPWD engineer, and
- administrative officer.

The administration should allocate adequate finances and manpower for the successful implementation of the programme.

**Fig. 8.3:** BMWM responsibilities at institutional level (in line with the BMWM Rules, 2016, as amended)

### 8.4.5 At the Department Level

Every department in a hospital is a mini-institution into itself. The department head should take charge of implementing the policies and programmes of BMW management in his/her own department, because they know best as to what are the unique types of wastes generated in their departments. Also, only if every department follows the rules and guidelines of BMW management appropriately, will this go a long way in ensuring that the programme is a success at the institutional level.

### 8.4.6 At the Individual Level

This is the grass root level of health care waste management programme. The contribution of each individual in a health care facility can never be underestimated. The ultimate success of any programme rests on the shoulders of the individuals concerned. The responsibilities at the institutional level have been listed in the Box 8.6.

Every individual in the departments whatever be his/her designation,

1. Should be made to understand the implications of the programme and their role in implementing it
2. Should be trained periodically and motivated to follow and contribute to the success of the BMW management programme
3. Their Knowledge, Attitude and Practice (KAP) should be assessed periodically by way of questionnaires, observation etc.

**Box 8.6: Responsibilities at the individual level**

Individuals of a typical hospital waste-management structure is shown in Fig. 8.4, with line-management responsibilities and liaison paths between key personnel involved in handling health care waste. This structure may be adjusted to the particular needs of each hospital. Key personnel in large hospitals can share duties (as described in the following paragraphs), while
one person can fulfil two or more sets of responsibilities in smaller health care facilities. In the centre of the system the position of Waste Management Officer should be established. The waste-management officer is responsible for the day-to-day operation and monitoring of the waste-management system and is usually established as a separate post at larger hospitals. It is therefore important that the waste management officer has direct access to all members of the hospital staff. The role should be held by a senior member of staff and should be responsible to the head of hospital. The waste-management officer should liaise with the infection-control officer, the chief pharmacist and the radiation officer so that they become familiar with the correct procedures for handling and disposing of pathological, pharmaceutical, chemical and radioactive wastes.

**Source:** Safe management of wastes from health-care activities WHO, 2014

![Fig. 8.4: BMWM responsibilities at individual level](image)

*Source:* Safe management of wastes from health-care activities WHO, 2014

It must be emphasised that unless there is a change in attitude for the better in every individual, the programme cannot succeed. Rather than considering waste simply as residue to be thrown away, it should be recognised as resource materials for the production of energy, compost and fuel depending upon the techno-economical viability, local condition and sustainability of the project on long term basis, before discarding.

Relationship mapping showing the hierarchy of responsibilities in the management of bio-medical waste has been depicted in **Fig. 8.5**.

![Fig. 8.5: Relationship mapping showing the hierarchy of responsibilities in the management of health care waste](image)
From the above, it is very clear that there are several levels of responsibilities in managing health care waste. One such important post from the institution point of view, is the Waste Management Nodal Officer (WMNO). Every health care institution should appoint a WMNO, who will shoulder the responsibility of the programme.

**Check Your Progress 5**

Given below are some activities of health care waste management. For each activity, give the level of responsibility by choosing from the above pyramid-

1. Throwing the soiled dressing in yellow bag/container.
2. Ensuring that every ward in the hospital has the appropriate waste bin and colour coded bags in place.
3. Laying down the health care waste management rules for all health care institutions in the country.
4. Taking up issues of air, water and soil pollution by organising conventions with participation from several nations.
5. Organising training classes on health care waste management among staff members of the unit.

**8.4.7 Waste Management Nodal Officer**

Let us enumerate the duties and responsibilities of the Waste Management Nodal Officer, who is a key player in the BMW management programme (Box 8.7).

**Duties of waste management officer**

- Ensure proper collection of waste of various categories from within the hospital premises.
- Ensure correct and appropriate storage of the waste collected.
- Monitor the on-site transportation of waste in the hospital.
- Liaise with heads of various departments for proper waste segregation.
- Liaise with heads of various departments for proper training of health care workers.
- Coordinate the waste disposal operations.
- Monitor the waste disposal costs.
- Take responsibility and care in handling mishaps. Eg. Spills, needle-stick injuries etc.

**Box 8.7: Duties and responsibilities of waste management nodal officer**

**Check Your Progress 6**

Mention how the following is to be achieved

1. Ensure proper collection of waste of various categories from within the hospital premises.

...............................................................
...............................................................
.............................................................
2. Ensure correct and appropriate storage of the waste collected.

3. Monitor the on-site transportation of waste in the hospital.

4. Liaise with heads of various departments for proper waste segregation.

5. Liaise with heads of various departments for proper training of health care workers. How?

6. Coordinate the waste disposal operations. How?

7. Monitor the waste disposal costs. How?

8. Take responsibility and care in handling mishaps. E.g. Spills, needle-stick injuries etc. How?

9. Which of the following constitute duties of a WMNO?
   
a. Accompany the common waste management team with the waste to the sanitary landfill site.

b. Contact the department head if segregation is not being done properly in that unit.

c. Personally train every staff member of the hospital on health care waste management.

d. Attend all meetings on health care waste management and contribute ideas and solutions.

e. Keep a tab of costs in health care waste management.
8.5 LET US SUM UP

The various concepts dealt with in this unit have been summarised in the Fig. 8.6. The source identification of health care waste and types of waste generated in specialised units, have been explained to you in this unit. We are sure that you must have recapitulated the concepts taught to you in the unit 5 also regarding the same.

Another vital aspect explained in this unit, includes the hazards of improper management of health care waste.

Through the later sections and sub-sections, you have familiarised yourself with some key issues about responsibilities of managing health care waste at various levels, including global, national, state, institutional, departmental and individual levels. The role of a waste management nodal officer, who is a key individual, has also been explained to you. A short introduction to the various stakeholders and NGOs working in the field of health care waste management and preserving the environment - such as, GAIA, ISWA and GPWM - have also been given to you.

![Mind Map]

Fig. 8.6: Mind Map

The concept of planning and handling health care waste has been introduced in this unit, with examples and specimens of a waste management plan and notes on awareness creation, attitudinal change and concept of lean and unclean practices. You will read more about these principles as you move further in your course.

8.6 GLOSSARY

WHO : World Health Organisation
UNEP : United Nations Environment Programme
GEF : Global Environment Facility
Answers to Check Your Progress

Check Your Progress 1

a. Yes. There is an adverse event in the above case study. A needle-stick injury has occurred.

b. Yes. This adverse event was preventable. If the nurse had not left the needle lying on the patient’s bed, the adverse event would not have occurred.

c. The nurse was responsible for this adverse event.

d. No. The nurse is not justified in saying that she was only performing her duty when she went to receive the call. Because she is also bound by duty not to leave a used syringe and needle carelessly on the patient’s bed.

e. No. The nurse is not justified in saying that it is not her duty to dispose of the waste. As per BMW Rules, 2016, it is the duty of any person who is generating the waste, to ensure proper segregation of the waste and immediate discarding in the right colour coded bin/container. So, in this case, the nurse was the generator of the waste, and hence it was her duty to discard the waste appropriately after segregation.

f. It is the nurse in this case, who behaved irresponsibly.

g. Yes. All waste must be segregated at the point of generation and discarded appropriately. Herein lies the success of any waste management programme.

h. The needle tip should have been cut using a needle cutter/destroyer and then it should have been discarded in a sharps container which is puncture proof container. The syringe should have been discarded in the red bag.

Check Your Progress 2

1. Risk: The soiled dressing contains infectious material. Hence, discarding it in the wrong colour coded bag/container would make other items in that container also infectious. This is a hazard to waste handlers and others.

2. Risk: While performing patient/clinical procedures (E.g. Dressing a wound), if one does not wear gloves and other personal protective material as required, there is a risk of the health care worker’s hands getting contaminated by infectious material. This is hazardous not only
to the health care worker, but also to others, because he/she may touch several other objects and contaminate them, thus spreading the infectious material to others (E.g. Touching door handles, phones, pens etc).

3. **Risk**: If infectious waste is transported in open wheel barrows within the hospital premises there are several hazards that can occur-
   a. The infectious material may overflow and fall out all along the way, thus contaminating hospital premises.
   b. Birds and animals straying in the area can have access to the infectious material.
   c. If the wheel barrow encounters some obstacle on the way and over turns, all the infectious waste contents will spill out and contaminate the area.

4. **Risk**: Open storage of health care waste in the corridors of the hospital has the following hazards-
   a. Open storage of health care waste will give access to rag pickers and other miscreants to handle the hazardous waste.
   b. Passers-by will be exposed to the openly stored health care waste, which can be hazardous.
   c. The whole area will stink with malodour.
   d. Animals straying in the area can have access to the infectious material.

5. **Risk**: Blood samples are infectious. So, if they are drained out in sinks without disinfecting them, there is a hazard of infectious material going out in the drain and causing infection to waste handlers and cleaners of sewers.

**Check Your Progress 3**

1. The five guiding principles are
   a. Polluter pays
   b. Precautionary
   c. Duty of care
   d. Proximity
   e. Prior informed consent principle

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<tr>
<td>1.</td>
<td><strong>Polluter pays</strong> - Producers of waste are legally and financially responsible for the safe and environmentally sound disposal of waste they produce.</td>
</tr>
<tr>
<td>3.</td>
<td><strong>Duty of care</strong> - Stipulates that any person handling or managing hazardous substances or wastes or related</td>
</tr>
</tbody>
</table>
equipment is ethically responsible for using the utmost care in that task.

4. Proximity Treatment and disposal of hazardous waste take place at the closest possible location to its source to minimise the risks involved in its transport.

5. Prior informed consent principle. Affected communities and other stakeholders be apprised of the hazards and risks, and that their consent be obtained.

Check Your Progress 4

1. Answers to crossword

Across
1. GPWM
3. UNIDO

Down
2. WHO
3. UNEP
4. ISWA

2. 1. f 2. a 3. e 4. d 5. b 6. c

Check Your Progress 5

1. Individual, 2. Institution, 3. National
4. Global 5. Department

Check Your Progress 6

1. By making frequent rounds and visits (or appointing staff to make the rounds), to various areas in the premises and training staff and faculty about their individual responsibilities. Supervising the waste collection and transport from various areas.

2. By procuring the various colour coded bags/containers. By allocating specific, common storage area in the premises, where the waste can be stored safely before disposing of.

3. By appointing specific staff members who will transport the collected waste appropriately and safely. By ensuring appropriate covered trolleys and other transport modes for safe transport of waste.

4. By regular meetings with heads of departments and units, to ensure that their staff members are cooperating in Bio-Medical Waste Management.

5. By regular meetings with heads of departments and units, to ensure that they are training their staff members in Bio-Medical Waste Management.

6. The WMNO is responsible for being in touch with the facility responsible for taking away the waste to dispose of at a common
disposal site. Also, he/she should ensure regular visits by Municipal waste disposal squad for daily collection of waste.

7. The WMNO attends all meetings with Service providers and keeps tab of the costs involved in Waste management.

8. The WMNO allocates duties to relevant staff or takes it upon himself to design protocols for needle stick injuries and maintain incident registers to record events such as spills. These are regularly referred to and checked for compliance and information and preventive action.

9. b, d, e

8.8 REFERENCES AND FURTHER READINGS


