



*Empowered lives.
Resilient nations.*



GLOBAL ENVIRONMENT FACILITY
INVESTING IN OUR PLANET

GLOBAL HEALTHCARE WASTE PROJECT

MODULE 22: Contingency Planning and Emergency Response to Healthcare Waste Spills

Module Overview

- Present examples of contingencies related to HCWM
- Describe steps in developing a contingency plan
- Describe procedures for dealing with spills
- Describe procedures for dealing with injuries and exposures
- Discuss contingency measures in the event of an epidemic, major emergency or disaster in the community

Learning Objectives

- Discuss how to develop plans for contingencies related to HCWM
- Define and create procedures for dealing with infectious waste or chemical waste spills, including the use of PPE
- Describe post-exposure prophylaxis (PEP) procedures for waste-related injuries and procedures related to needle-stick injuries, in particular
- Reproduce a response to a simulated emergency spill or waste-related exposure

Examples of Contingencies Related to Healthcare Waste

- Contingencies related to waste handling
 - Lack of color-coded bags, bins or sharps containers
 - Lack of PPE (gloves, face masks, etc.)
- Contingencies related to waste storage
 - Overfilled storage; lack of capacity
 - Flooding or fire in the waste storage area
- Contingencies related to waste treatment/disposal
 - Breakdown of waste treatment autoclave or incinerator
 - Downtime due to maintenance or repair of treatment technology or lack of spare parts
 - Temporary closure of the landfill

Examples of Contingencies Related to Healthcare Waste

- Contingencies related to spills
 - Spills of blood, breakage or leaks of infectious waste bags or containers, breakage of mercury-containing devices, spills of chemicals (e.g., laboratory solvent, cytotoxic agent or pharmaceuticals)
- Contingencies related to labor
 - Lack of human resources, impact of strikes or illness among waste workers or waste collectors, illness of waste supervisor
- Exposure incidents
 - Needle-stick injuries, exposure to blood splashes, exposure to pathogenic aerosols from infectious waste, acid burns

Contingency Planning

- A systematic approach to identify what could go wrong and make preparations in response to those events
- Contingencies should be prioritized since it is not possible to plan for all possible contingencies
- Contingency planning is also an opportunity to identify activities or resources that minimize the risks or avoid contingencies

Steps in Contingency Planning

- Identify events or scenarios that could disrupt the normal function of healthcare waste management in the facility
- Assess the likelihood of those events or scenarios and the risks they pose
- Prioritize the contingencies based on their probabilities and risk impact
- Prepare contingency plans

Steps in Contingency Planning

- When developing contingency plans:
 - Identify the trigger that would start implementation of the plan
 - Obtain input from staff and other stakeholders
 - Break down the plan according to time frame (e.g., actions to take during the first hour, actions for the first day, first week, etc.)
 - Write down the plan in clear terms
 - Communicate the plan and provide training
 - Review the plan on a regular basis

Examples of Possible Responses to Some Contingencies

- Lack of color-coded bags, bins or sharps containers
 - Use markings or labels as a temporary substitute for color-coding; use make-shift containers that provide a similar level of safety (e.g., labeled bleach bottles as sharps containers)
- Overfilled storage area
 - Designate an unused space for backup storage; modify the space to prevent public access
- Breakdown of the on-site waste treatment system
 - Make prior arrangements with another hospital or waste treatment plant to treat the facility's waste in the event of a breakdown
- Temporary closure of the landfill
 - Make prior arrangements with another landfill as a backup to accept the facility's waste

Examples of Possible Responses to Some Contingencies

- Contingencies related to spills
 - Prepare spill clean-up procedures, conduct training including practice clean-up of simulated spills
- Illness among waste workers
 - Train other employees or part-time workers in healthcare waste handling and collection as backup
- Exposure incidents
 - Develop clear procedures for exposure incidents

Response to Spills

- Small spills
 - Can be handled by a small group of trained employees and when spills are not immediately hazardous
- Large spills
 - Remove personnel from immediate danger and bring in properly trained first responders to clean spill up

Infectious Waste Spills

- To reduce the number of employees at risk of exposure:
 - Restrict access to the spill area
 - Provide warnings of hazards and advice about special requirements
 - Ensure staff is trained to respond to these spills
- You may clean up small spills if you:
 - Have the supplies to absorb and bag the spilled material
 - Are familiar with the properties of the spilled material
 - Have the proper personal protective equipment
 - Are trained to respond to a biohazard spill



What To Do When There Is An Infectious Waste Spill

- Workers should wear :
 - eye protectors or face shields
 - gloves
 - coveralls
 - respirators or face masks depending on the risks of exposure
- Residues should be recovered using hand tools and then packed safely
- The floor should be cleaned and disinfected after most of the waste has been recovered



Face shield

What To Do When There Is An Infectious Waste Spill

- Cover spilled area with absorbent pad or paper towels
- Decontamination - use bleach, diluted to 1:10 with water:
 - to decontaminate the spill area
 - to clean/decontaminate equipment used in spill response
 - pour diluted bleach over towels, let stand for 30 minutes



Spill Clean-Up Kit

CONTENTS:

- ☐ Disposable gloves, face mask and safety glasses
- ☐ Small scoop or dust pan and brush, shovel
- ☐ Absorbent pads or powders for liquid spills
- ☐ Cleaning rags or paper towel
- ☐ Chlorine disinfectant (1:10 chlorine)
- ☐ Germicidal wipes
- ☐ Extra color-coded infectious waste bags
- ☐ First-Aid kit
- ☐ Biohazard labels
- ☐ Aspirator bottle, spatula or mercury amalgam powder for mercury spills



Mercury Spills

- Can you tell me what steps are taken if you have a broken thermometer in your facility?
 - Who do you call
 - Who cleans or responds first
 - Do you receive any training
 - Is there a spill response kit
 - What does the kit contain
 - Do you have a protocol for safe disposal
 - Any medical monitoring
 - Any incidents in the past?

Examples of Personal Protective Equipment (PPE)

- Helmets
- Face masks
- Eye protectors (safety goggles)
- Overalls (coveralls)
- Industrial aprons
- Leg protectors and/or industrial boots
- Disposable gloves (medical staff) or heavy-duty gloves (waste workers)



Simulation

- Conduct a clean-up of a simulated infectious waste spill or chemical waste spill



Response to Injury and Exposure

All staff should be knowledgeable about procedures, first line of response and WHOM TO CALL



What to do in Emergency Injury or Exposure

- Self-protection with appropriate PPE
- Immediately assist victim with first-aid measures:
 - Bleed the wound (needle-stick injury)
 - Wash area under clean running water
 - Clean wounds and skin
 - Splash eyes with clean water (e.g., for eye exposure to biohazard)
 - Splash the body (e.g., for chemical exposure)
- Seek prompt medical attention

What to do in Emergency Injury or Exposure

- Report the incident to a designated person
- Retain the item involved in the incident
- Identify source of possible infection
- Seek additional medical attention in emergency
- Maintain medical surveillance
- Record and investigate incident
- Identify causes and implement action to prevent similar incidents in the future

Incident Reporting

- All incidents including near misses (or no injuries), must be reported to the OHS committee or a specific representative
- A report should be filed and kept on record
 - review to make work place or practice changes



Incident Report

- Name(s)
- Date
- Time
- Where
- Type of injury
- How
- Any witnesses
- Hospital visit
- Contributing factors
- Contact info
- Recommendations

Post-Exposure Prophylaxis

- Ensure all staff have access to post-exposure information, education, and communication
- Required by WHO
- Initiate PEP as soon as possible within first few hours of exposure and no later than 72 hours after exposure

Post-Exposure Prophylaxis

- Post-exposure prophylaxis protocol must include:
 - Who to contact
 - Check patient status (HIV positive or not)
 - Check immediate health status of worker
 - Pregnant, hypertensive
 - Provide necessary medications as soon as possible
 - Provide support & counseling to those exposed
 - Maintain confidentiality
 - Analyze reported cases of exposure to improve practices

Medical Surveillance

- Mercury
- Needle stick injuries (NSI)
- Blood-borne pathogens
- TB surveillance
 - MDR TB
- Noise and radiation
 - May be an issue with loud equipment
- Chemical
 - Formaldehyde, benzene
 - Very rare in hospitals



Questions You Should be Able to Answer

- What are the guidelines or protocols to respond to a waste spill?
- How should you respond to a patient who has a needle-stick injury?
- What should you do if you have a needle-stick injury?

Training

- Outline all emergency, spill and injury response procedures
- PPE use
- Annual refreshers



Fire Safety

- What is the protocol for fire in your facility?
- Is there a plan related to hazardous equipment, chemicals and wastes?
- Is there regular training related to fire safety?

Contingency Planning for Epidemics, Disasters and Other Major Emergencies in the Community



Contingency Measures for Major Emergencies in the Community

- Preparation for emergencies should be made at health care facility and regional/central government levels.
- Healthcare facility level
 - action plans on healthcare waste management should include emergency measures to apply during emergency situations (e.g., epidemics in the community could lead to significant increases in the amounts of healthcare waste generated)
- Regional/national level or disaster prone area
 - prepared by a responsible cluster (inter-agency cluster composed of national or international agencies/organizations).

Questions to Ask?

- What standards will be used to guide the response?
- What are the current capacities of the agencies/organizations to respond?
- What initial assessment arrangements are needed?
- What actions will be taken as an immediate response to the situation? Who does what and when? And who is coordinating and leading?
- What resources would be needed?
- How will information flow between the various levels (local and national and vice versa)?
- Have specific preparedness actions been agreed on?
- What follow-up actions are required?

Planning as an Ongoing Process

- Regularly reviewed and updated to ensure:
 - all partners are familiarized with their various roles and responsibilities and preparedness actions are undertaken.
 - plans should be in line with existing national policies, strategies and legislations on healthcare waste management
 - Updated when there is a change in process, equipment, construction, etc.

Contingency Measures for Major Emergencies in the Community

- Rapid Initial Assessment
 - Inform personnel in charge or emergency responders about critical and immediate needs
 - Secure the area
 - Collect data
 - Area affected, number of people affected, any injuries that need immediate attention, types of hazards and their locations
 - Should be improved as more time and data become available

Contingency Measures for Emergencies in the Community

- Emergency Response
 - Based on rapid assessment, emergency response should be pre-planned with clear roles and responsibilities
 - Plans for the management of larger than usual quantities of healthcare waste should be implemented
- Recovery
 - Return to normal situation prior to the emergency
 - Lessons learned

Treatment and Disposal Options During Major Emergencies

- If resources are available, infectious and sharp wastes could be disinfected in a small autoclave. Non-sharp disinfected wastes then join the general waste stream.
- On-site burial in pits or trenches, or disposal in special controlled cells in municipal dumping sites are other options.
- Sharps wastes or small quantities of pharmaceuticals can be encapsulated followed by on-site burial or burial in special cells in municipal dumping sites.
- Incineration in high-temperature industrial incinerators or cement kilns with air pollution control is an option if there is a safe means of transportation.
- Incineration in a double-chamber incinerator or, if necessary, burning in a pit could be used during emergencies.

Treatment and Disposal Options During Major Emergencies

- Mercury thermometers → collect for mercury recovery
- Pressurized containers → safe burial in pits
- PVC plastics such as IV sets, catheters and PVC containers for sharps → safe burial in pits
- Vials of vaccines → safe burial in pits
- Anatomical wastes/body parts → safe burial in pits

Discussion

- What are some healthcare waste-related contingencies that might occur in your facility?
- Discuss your facility's spill response plans for chemicals and infectious agents.
- Are spill clean-up kits available in your facility? For what specific chemicals?
- What are the strengths and weaknesses of your facility's emergency injury or exposure procedures?
- What are the strengths and weaknesses of your facility's incident reporting system?
- Discuss your facility's plans for major emergencies in the community?
- Have you received any training in emergency response? What training is needed?