MODULE 14: Off-site Transport and Storage of Healthcare Waste
Module Overview

- Define external transport of healthcare waste
- Describe requirements for off-site transport of healthcare wastes including training requirements and PPE
- Describe transport vehicle requirements
- Describe routing
- Describe the consignment system
- Describe the requirements of a storage facility for different kinds of wastes
Learning Objectives

• Explain the legal requirements for off-site transport and storage of healthcare waste
• Evaluate and improve transport equipment and vehicle designs
• Demonstrate the use of PPE
• Develop a routing plan for collection and transport
• Demonstrate cleaning and disinfection of off-site transport equipment and vehicles
• Demonstrate how to fill out a consignment note
Off-site Waste Transport

- Also called external transport
- Refers to the transport of wastes from healthcare facilities to off-site storage areas and to off-site treatment facilities
- Entails the carriage of healthcare waste through public streets
National and International Laws

• Off-site transport should comply with national regulations

• International agreements, such as the Basel Convention, deal with the transport across international boundaries

• If no national laws exist, UN recommendations on the transport of dangerous goods can be followed:

  http://www.unece.org/trans/danger/publi/unrec/rev16/16files_e.html
Typical Requirements for Waste Transporters

- Registered under the country’s regulations for healthcare waste transport
- Licensed to drive the type of vehicle used for off-site transport
- Declared medically fit to drive vehicles
- Certified to have been trained on healthcare waste transport
- Received vaccination against tetanus and hepatitis A+B
Training of Waste Transporters

• Waste transport staff should be trained on the following:
  – Relevant legal regulations
  – Risks of hazardous healthcare waste
  – Waste classifications
  – Safe handling of healthcare waste
  – Labeling and documentation
  – Emergency and spillage procedures
  – Emergency contact numbers and details of emergency services
National Requirements for Waste Transporters
Waste Transport

• Requires the use of proper PPE
Waste Transport

- Requires good body mechanics to protect the body from injury.
- Examples of bad and good body mechanics when lifting

[Images showing examples of bad (WRONG) and good (RIGHT) body mechanics for lifting]
Typical Infectious Waste Trolley

- Hard plastic container with a lid and push bar
- Durable and easy to clean
- Leak-proof
- Wheeled
- Color-coded, marked with the biohazard symbol and text
- Large capacity
Examples of Wheeled Bins to Transport Larger Amounts of Infectious Waste
Cleaning Transport Equipment

- Transport equipment should be cleaned and disinfected daily with an appropriate disinfectant.
Example of a Cart Cleaning Station

This cart cleaning station at a hospital uses sodium hypochlorite solution for disinfection followed by rinsing with a pressure hose to clean infectious waste wheeled bins. The station has a local exhaust vent and sewer drain. It is located next to the central storage area where infectious waste is picked up by an external transporter for treatment at an off-site autoclave treatment plan.
Transport Vehicle Requirements

The waste transport vehicle should:

• be roadworthy
• have a maximum allowable loading greater than the expected payload
• have markings in keeping with national or international laws, including the name and address of the waste carrier
• have an international hazard sign including emergency phone number on the vehicle
• should have a design appropriate for the transport of healthcare waste
Transport Vehicle Requirements

- Design criteria for waste transport vehicles
  - The body of the vehicle should be of a suitable size and designed to retain the load in the event of an accident.
  - There should be a bulkhead between the driver’s cabin and the vehicle body.
  - There should be a suitable system for securing the load during transport.
  - The internal finish of the vehicle should allow it to be steam-cleaned and internal angles should be rounded to eliminate sharp edges to permit more thorough cleaning and prevent damage to waste containers;
  - A separate compartment in the vehicle should have empty plastic bags, suitable personal protective equipment, cleaning equipment, tools and disinfectant, together with special kits for dealing with liquid spills.
Transport Vehicle Requirements

- Vehicle for transporting healthcare waste should not be used for transporting other material.
- Vehicles should be kept locked except when loading and unloading.
- Vehicles should be properly maintained and kept clean.
- Refrigerated containers could be used if the storage time exceeds the recommended limits or transportation times are long.

<table>
<thead>
<tr>
<th>Temperate climate:</th>
<th>Warm climate:</th>
</tr>
</thead>
<tbody>
<tr>
<td>72 hours in winter</td>
<td>48 hours during the cool season</td>
</tr>
<tr>
<td>48 hours in summer</td>
<td>24 hours during the hot season</td>
</tr>
</tbody>
</table>
Labeling of Transport Vehicles

• Under UN 3291
  • No specific vehicle labeling is needed if less than 333 kg of infectious waste is transported although labeling is recommended
  • If more than 333 kg of infectious waste is transported, the vehicle must have warning plates or placards (> 250 mm x 250 mm) located as shown below
National Requirements for Transport Vehicles
Examples of Healthcare Waste
Transport Vehicles
Routing

• The waste transporter’s service territory can be divided into geographical-based collection zones or groupings.

• Collection frequency is determined by each healthcare facility’s waste generation rates and storage limitations.

• Routing and scheduling can be figured out by trial-and-error or by heuristic routing approaches which take into account traffic patterns at different times of day, street configurations, on which side of the road the majority of facilities are situated, ground elevations, etc.

• Once the collection routes have been established, a pick-up schedule can be provided to the healthcare facilities.

• There should be agreement with each facility on the vehicle route inside the premise, access to the storage area, temporary parking permit, contact information for the responsible person, consignment procedure, etc.
Consignment or Manifest System

- Off-site transport of healthcare waste requires a waste tracking system as part of a cradle-to-grave approach to waste management and in keeping with the “duty of care” principle.

- Waste tracking is done through transport documentation known as consignment notes or manifests.
Consignment or Manifest System

A typical consignment note or manifest has the following information:

- Waste class
- Waste source
- Pick-up date
- Destination
- Driver’s name
- Number of containers or volume
- Receipt of load received from responsible person at a pick-up area
Consignment or Manifest System

- A typical consignment or manifest system requires four copies of the consignment note or manifest
- Upon completion of the journey, the transporter keeps a copy of the completed consignment and sends the other copies to the following:
  - The generator of the waste
  - The transporter
  - The treatment or disposal facility
  - The relevant regulatory authority
**Example of a Consignment Note**

### Hazardous Waste Consignment Note

**PART A Notification Details**

1. Consignment note code: ADC123/0001
2. The waste described below is to be removed from:
   - Address and postcode: The Veterinary Practice, High Street, New Town, The Shire, SS12 3YV

3. Premises Code: ADC 123
4. The waste will be taken to:
   - Address and postcode: The Pet Cremator, Low Street, Old Town, The Shire Y12 4XX

5. The waste producer was (if different from 1) (name, address, postcode, telephone, e-mail & fax):

**PART B Description of Waste**

1. The process giving rise to the waste(s): Veterinary activities
2. SIC for the process giving rise to the waste: 85.20
3. WASTE DETAILS: Where more than one waste type is collected all of the information given below must be completed for each WEC identified:

<table>
<thead>
<tr>
<th>Description of Waste</th>
<th>EWC Code</th>
<th>Qty (kg)</th>
<th>Chemical / Biological Components of Waste, Their Concentrations and Physical Form</th>
<th>Hazard (code)</th>
<th>Container type, number &amp; size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical waste: Cytotoxic and Cytostatic wastes, including sharps for incineration only.</td>
<td>18 02 01†</td>
<td>10kg</td>
<td>Dressings, sharps, PPE, waste medication contaminated or containing cytotoxic and cytostatic medicines.</td>
<td>7B, 77, 78, H15, H11</td>
<td>1 x 20 litre purple labelled, Cyto Bin</td>
</tr>
<tr>
<td>Clinical waste: Blood wastes and pharmaceutical waste for incineration only.</td>
<td>18 02 02†</td>
<td>10kg</td>
<td>Sharps, syringes, IV bags, medical inks and disinfectants (not cytotoxic and cytostatic).</td>
<td>7B, 14, 16, H14</td>
<td>1 x 20 litre yellow labelled sharps box</td>
</tr>
<tr>
<td>Clinical waste: Infectious containing anatomical waste and diagnostic chemicals, for incineration only.</td>
<td>18 02 03</td>
<td>50kg</td>
<td>Laboratory waste, infectious waste, animal organs, diagnostic test kits.</td>
<td>4B, 4C, 4D</td>
<td>5 x 14 litre yellow labelled, yellow bins</td>
</tr>
<tr>
<td>Clinical waste: Infectious, suitable for alternative treatment.</td>
<td>18 02 04†</td>
<td>30kg</td>
<td>Dressings, PPE and medical waste, not contaminated with chemicals or medicines.</td>
<td>44</td>
<td>40 orange bags</td>
</tr>
<tr>
<td>X-ray Fixer Solution</td>
<td>00 01 01†</td>
<td>10kg</td>
<td>Iodized Acid 1.5%.</td>
<td>H4</td>
<td>1 x 15 litre drum</td>
</tr>
<tr>
<td>X-Ray Developer Solution</td>
<td>00 01 04†</td>
<td>15kg</td>
<td>Hydrolyste 9.5%, Methylene Glycol 1.5%, Sodium Chloride 1.5%.</td>
<td>H4, H4, H41</td>
<td>1 x 15 litre drum</td>
</tr>
</tbody>
</table>

**ADR information for each EWC identified above:**

<table>
<thead>
<tr>
<th>EWC code</th>
<th>Description of Carriage</th>
<th>Special Handling requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 02 01†</td>
<td>UK5251 Clinical Waste, unspecified, n.o.s E/I</td>
<td>No persons in handling chain to have direct contact. Waste to be disposed of at authorised site.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PART C Carrier’s certificate**

(If more than one carrier is used, please attach a schedule for subsequent carriers. If a schedule of carriers is attached tick here.)

I certify that I have collected the consignment and that the details in A2, A4 and E3 are correct & have been advised of any special handling requirements.

1. Carrier driver name (please PRINT): Tony Diver
2. On behalf of (name, address, postcode, telephone, e-mail & fax): The Pet Cremator, Low Street, Old Town, The Shire, Y12 4XX
3. Carriers registration and exemption reasons: ARDC01/058
4. Vehicle registration no: A867 DOG

**PART D Consignor / Holders certificate**

I certify that the information in A, B & C above is correct, that the carrier is registered or exempted and was advised of the appropriate precautionary measures. All the waste is packed and labelled correctly. The carrier has been advised of any special handling requirements.

1. Consignor / Holder name (please PRINT): Mr Arnold Vet
2. On behalf of (name, address, postcode, telephone, e-mail & fax): The Veterinary Practice, High Street, New Town, The Shire, SS12 3YV
3. Carriers registration and exemption reasons: ARDC01/058
4. Vehicle registration no: A867 DOG

**PART E Consignor’s Certificate**

I certify that the waste management licence / permit / authorised exception note is:

<table>
<thead>
<tr>
<th>Certificate Number</th>
<th>Description of Waste</th>
<th>Quantity (kg)</th>
<th>EWC Code</th>
<th>Waste Treatment Procedure (IS or IS code)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. I received this waste at the address given in A4 on
2. Vehicle registration no or mode of transport of not by road: On behalf of (name, address, postcode, tel, e-mail & fax)
3. Where waste is rejected please provide details:

I certify that the waste management licence / permit / authorised exception note is:

**Signature**: [Signature]

**Date**: 28/02/2008

1. Where waste is rejected please provide details:
2. Where waste is rejected please provide details:
3. Where waste is rejected please provide details:

I certify that the waste management licence / permit / authorised exception note is:

**Signature**: [Signature]

**Date**: 28/02/2008
General Requirements for Storage Areas

The storage area should:

- have an impermeable, hard-standing floor with good drainage
- be easy to clean and disinfect (a tiled floor and walls are recommended)
- have facility to keep general waste separated from infectious and other hazardous waste
- have a water supply for cleaning purposes
- have easy access for staff in charge of handling the waste
- have a lock to prevent access by unauthorized persons
- have easy access for waste-collection vehicles
- be protected from the sun, rain or snow
- be inaccessible to animals, insects, and birds
General Requirements for Central Storage Areas

The storage area should:

• have good lighting and at least passive ventilation
• not be situated near fresh food stores and food preparation areas
• have a supply of cleaning equipment, protective clothing, and waste bags or containers
• have a washing basin with running tap water and soap for the staff
• be cleaned regularly at least once a week
• have a capacity appropriate to the volumes of waste generated
• be labelled in accordance with the hazardous level of the stored waste
Labels for Central Storage Areas

<table>
<thead>
<tr>
<th>No entry for unauthorized persons for all storage areas</th>
<th>Biohazard sign for infectious and sharps waste</th>
<th>Toxic sign for chemical and hazardous pharmaceutical waste</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>No eating or drinking</th>
<th>No smoking</th>
</tr>
</thead>
</table>
Storage of Infectious Waste and Sharps

- The storage area should have a biohazard sign
- Regular inspection and cleanup (at least weekly) of storage areas should be part of HCWM plans
- Workers should be trained in site spillage procedures
- Sharps can be stored without problems, but other infectious wastes must be kept cool if storage times are exceeded, or refrigerated at a temperature of 3°C to 8°C if stored for more than a week
Storage Times for Infectious Waste

- Storage times for infectious waste (e.g. the time gap between generation and treatment) should not exceed the following if the storage area is not cooled:

  **Temperate climate:**
  - 72 hours in winter
  - 48 hours in summer

  **Warm climate:**
  - 48 hours during the cool season
  - 24 hours during the hot season
Pathological Wastes Storage

• Considered as biologically active waste
  – Expect gas formation and pathogen growth

• Storage should be air-conditioned or refrigerated (e.g. in the morgue) and should be stored at a temperature of 3°C to 8°C

• In some cultures, body parts are given to the family for ritual procedures or are buried in designated places
Discussion

• How does your facility store and transport wastes externally? Are there written guidelines for external transport of wastes? Are different types of wastes kept separate during transport and storage?

• What are some alternative methods for dealing with these wastes that may or may not be practiced in your facility? Are safety procedures or practices in place to ensure that staff members and the public are not exposed during the processes?

• Do you know about your country’s or region’s regulations regarding waste transport and storage?

• What are the advantages and disadvantages of different healthcare waste transport systems? Do some seem to be safer and more effective than others? What about storage procedures?

• How does the storage setup in your facility compare with some of the general requirements given in this presentation?

• Any weaknesses or barriers?