







# Environmental health management

For voluntary medical male circumcision services

Training Guide

Published in 2016

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### **Terms and definitions**

**Alcohol hand rub:** Surgical hand preparation with a waterless, chemical-based hand rub.

**Arm's length:** Distance approximately equal to the length of the human arm (60 cm).

**Autoclave:** A device designed to sterilize equipment/materials by using steam under pressure within a chamber.

**Autoclaving:** The method of sterilizing equipment, such as surgical or laboratory equipment, using an autoclave.

Chemical disinfection: The application of a liquid chemical agent to eliminate the majority of pathogenic microorganisms, with the exception of bacterial spores, on inanimate objects or surfaces.

**Chlorine solution:** Disinfectants widely used for decontaminating surgical instruments and laboratory equipment and for spot-disinfection of countertops and floors in health care facilities (e.g., sodium hypochlorite and calcium hypochlorite).

**Collection:** The act of removing accumulated waste from the point of generation for the purpose of delivering it to its next destination along the way to final disposal.

**Composting:** A biological process making it possible to degrade organic matter by producing biogas which is a renewable energy source and a sludge used as fertilizer.

**Controlled dump:** A planned land disposal site that incorporates covering waste with sand, soil, or any other convenient materials. This site doesn't allow for burning of waste; is access controlled; has basic record-keeping; and has measures in place for waste picking/scavengers.

**Decontamination:** To neutralize or remove dangerous substances, radioactivity, or infectious agents from an area, surface, object, or person.

**Disinfection:** A process by which viable biohazardous agents are reduced to a level unlikely to produce disease in healthy people, plants, or animals.

**Disposal:** The process of getting rid of or removing something especially by systematic destruction.

**Encapsulation:** Immobilizing pharmaceuticals in a solid block within a plastic or steel drum.

**Engineered landfill:** A waste facility in which an engineered method of disposing of solid waste is applied on land in a manner that protects the environment. This is done by spreading the waste in thin layers, compacting it to the smallest practical volume, and covering it with soil by the end of each working day, constructing barriers to collect infiltration, and evacuate the gases produced.

**General/non-hazardous waste:** Waste that does not pose any particular biological, chemical, radioactive, or physical hazard.

**Hand hygiene:** A general term referring to hand cleansing.

**Hand scrub:** Surgical hand preparation with antimicrobial soap and water.

**Hazard:** A danger or risk that has the potential to cause harm.

**Hazardous waste:** Waste that may have a significant adverse effect on public health and/or the environment by circumstances of use, quantity, concentration, or inherent physical, biological, chemical, or toxicological characteristics.

**Health care waste:** All waste generated by health care facilities, including hazardous waste and general waste. Waste that is generated during health care delivery (e.g., during treatment, diagnostics, immunization, or operation) and from patients and visitors.

**High-level disinfection:** The process of killing all microorganisms with the exception of high numbers of bacterial spores.

**High-temperature incineration:** The burning of waste at temperatures greater than 1100 degrees C.

**Inertization:** Rendering a substance chemically inactive.

Infection prevention and control: Placing a physical, mechanical, or chemical barrier between the host and microorganisms to help prevent the spread of these microorganisms from client to client, staff to client, and client to staff.

Infectious waste: Waste contaminated with blood and other bodily fluids (e.g., from discarded diagnostic samples), cultures and stocks of infectious agents from laboratory work (e.g., waste from autopsies and infected animals from laboratories), or waste from patients in isolation wards and equipment (e.g., swabs, bandages, and disposable medical devices).

**Kilopascal (kPa):** The Standard International (SI) unit measuring pressure. It is the SI-derived unit of pressure, internal pressure, stress, Young's modulus, and ultimate tensile strength (kilopascal = 1,000 pascals).

**Landfill:** A waste facility used for the purpose of disposing of general waste by burial.

**Liquid soap:** Detergent that contains very low concentrations of antimicrobial agents, effective solely as preservatives.

Low-level disinfection: A process able to kill some bacteria, viruses, and fungi but not relied on to kill resistant microorganisms (e.g., mycobacterium tuberculosis or bacterial spores). It should be used only to decontaminate the environment (e.g., surfaces, floors, furniture, and walls). It must not be used for processing instruments and other items.

Low-temperature incineration: The burning of waste at temperatures less than 1100 degrees C.

Occupational health and safety: Techniques designed to eliminate or significantly reduce the risk of infection and injury.

**On-site transportation:** Procedures and processes for transferring health care waste from the point of generation to a storage location or from the storage location to a treatment or disposal site within the health facility.

**Packaging:** Often used interchangeably with the word "containerization." Refers to wrapping and safely containing relevant waste streams to prevent exposure during transport (e.g., rigid plastic containers, flexible plastic bags, or lined fiberboard box sets).

Parts per million (ppm): Used to define the concentration of something in water or soil. One ppm is equivalent to 1 milligram of something per liter of water (mg/l) or 1 milligram of something per kilogram of soil (mg/kg).

**Pathological waste:** Human tissues, organs or fluids, body parts, and contaminated animal carcasses.

Personal protective equipment (PPE): Specialized clothing or equipment worn by employees for protection against hazards (e.g., head protection, goggles/glasses, masks, aprons, gloves, and footwear). This clothing must be taken off and disinfected or disposed of when work with waste is completed.

**Physical barrier:** Any equipment, facility, or device that is designed to achieve containment or exclusion.

**Re-use:** To use articles from the waste stream again for a similar or different purpose without changing the form or properties of the articles.

**Segregation:** Systematic separation of different wastes into designated categories at the point of generation for subsequent containment, transportation, treatment, and disposal.

**Sharps injury:** Injury with any sharp object—such as needles, prickers, blades, or broken glass—that may have the potential to transmit infectious agents, in particular blood-borne viruses.

Sharps pit/concrete vault: A formed or excavated hole or cavity in the ground to dispose of sharps.

**Sharps safety box:** A box designed for disposing of needles with syringes and other sharps.

**Sharps waste:** Waste that poses a potential risk of injury and infection due to its puncture or cutting properties (e.g., needles, blades, or broken glass). For this reason, sharps are considered one of the most hazardous categories of waste generated during medical activities and must be managed with the utmost care.

**Shelf life:** When referring to sterilized medical devices, it is the period of time during which the item is considered safe for use.

**Steam sterilization:** The process that uses saturated steam under pressure—for a specified exposure time and at a specified temperature—as the sterilizing agent.

**Sterilization:** A validated physical or chemical process that completely destroys or removes all microbial life, including bacterial spores. It is usually achieved by using devices that sterilize through steam under pressure (autoclaves), dry heat, ethylene oxide (ETO) and other gases, or liquid chemicals for prolonged soaking times. Items that are sterilized are considered sterile until such time that the packaging is torn, wet, or damaged. Sterility is a function of intact packaging.

Sterile processing area(s): Area(s) of a health care facility in which decontaminated, clean instruments and other medical and surgical supplies are inspected, assembled into sets and trays, and

wrapped, packaged, or placed into rigid sterilization container systems for subsequent sterilization.

**Treatment:** Any method, technique, or process designed to change the physical, biological, or chemical character or composition of waste. Also includes any method used to remove, separate, concentrate, or recover hazardous, toxic, or infectious components of waste to reduce the toxicity or infectiousness of the waste and minimize the impact on the environment.

Waste: Unwanted materials.

**Waste identification:** The process of visually recognizing relevant health care waste streams at the point of generation.

**Waste minimization:** The application of activities such as waste avoidance, reduction, re-use, and recycling to minimize the amount of waste requiring disposal.

**Water bath:** A bucket 3/4 full of cold/room-temperature water. (This definition is specific to this document.)

### Introduction

The Environmental health management for voluntary medical male circumcision services training guide contains information in a binder format. The training guide is designed to support all types of health care facilities in providing environmental and medical male circumcision procedures training for health care personnel.

Health care waste management (HCWM) and basic infection prevention and control (IPC) in health care facilities have four primary objectives:

- Prevent health care related infections
- Prevent occupational health and safety injuries
- Protect the community from infectious diseases
- Prevent environmental contamination

### Purpose of the training guide

For the health care worker, the training guide:

- Is a reference on essential environmental and medical male circumcision content.
- Outlines the knowledge and training objectives.
- Contains scripted messages and open-ended questions to facilitate knowledge and capacity building.

### How to use the training guide

The practices described in this training guide are based on the Environmental health management for voluntary medical male circumcision services site management guide.

You can use this training guide for group or individual training. The pages should be used as a guide to improve knowledge and skills of your health care personnel.

- To become familiar with content, read through the site management guide and training guide before using them.
- When using the training guide, place the entire binder on a table, or if there is no table, hold in your lap.
  Ensure that health care personnel can see each illustration, and you, the facilitator, can see the corresponding discussion points and script.
- Show one illustration at a time, giving personnel a few moments to look at each picture.
- Use the discussion points and probing questions to guide your explanation of each topic.
- Allow time for personnel to provide their responses.

# Occupational health and safety

Hand hygiene

Personal protective equipment

Injection safety and sharps safety

### Hand hygiene

#### **Probing Question**

**Discuss:** First talk about the benefits of good hand hygiene practices.

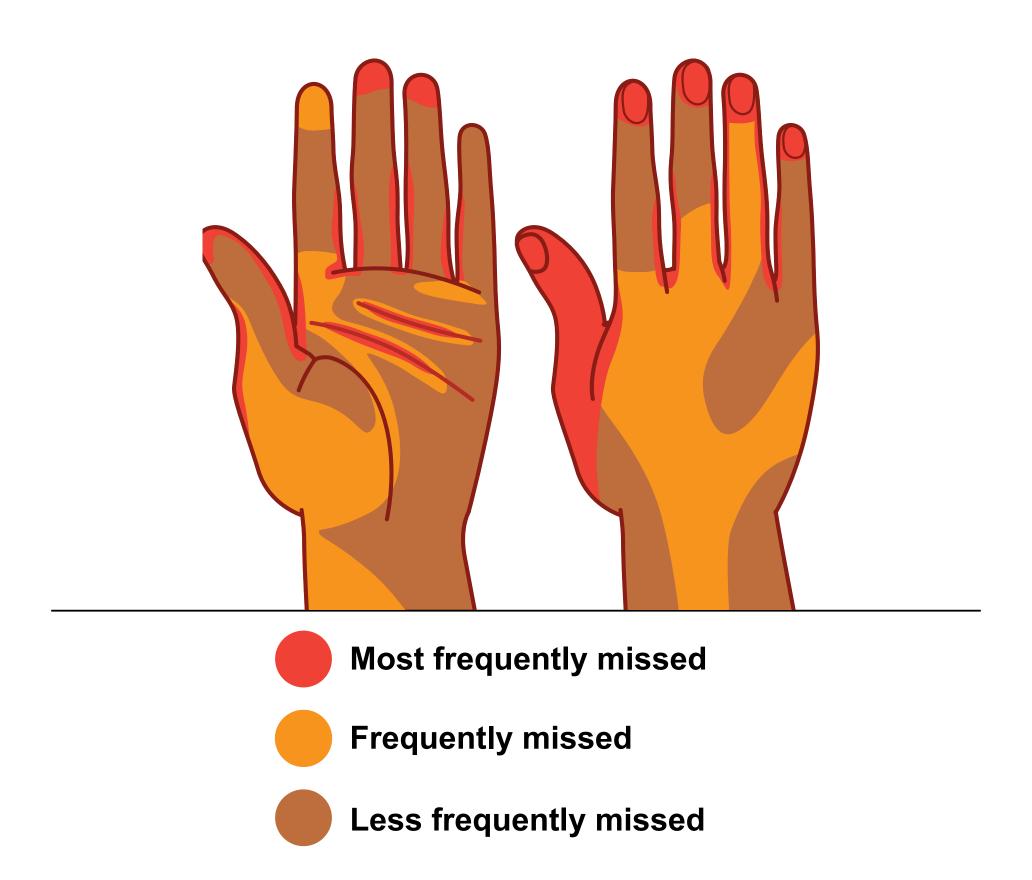
Ask: When do you need to wash your hands?

**State:** Look on page 2 of the site management guide to review and answer this question.

#### Hand washing should be done:

- Before and after eating, after using the toilet, and when soiled.
- Immediately on arrival to and before leaving work.
- Before and after each patient contact.
- After gloves are removed.
- Before putting on gloves for performing clinical and invasive procedures.
- Before preparing, handling, serving, or eating food, and before feeding a patient.
- Before preparing medication.
- Whenever there is a chance of contamination.

### When washing your hands, be careful not to miss these areas:



### Hand hygiene

### **Probing Question**

Ask: When can you use an alcohol rub instead of soap and water to clean your hands?

**State:** Only when your hands are free from visible contamination.

Mention: Alcohol rub should last 20-30 seconds and soap and water should last 40-60 second.

Refer: Have participants look at pages 4 and 5 in the site management guide.

#### Demo

Hand wash demo—Participants should wash their hands using the proper technique and timing.

#### **Observational feedback**

During the hand wash demo provide feedback on how well they performed the steps and refer them to the poster if available.

### Hand hygiene

#### Hand washing with liquid soap and clean water

Washing should last 40-60 seconds.







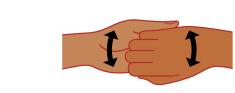
Rotate rubbing hands palm to palm seven times.



Rub right palm over left dorsum with interlaced fingers and vice versa seven times.



Rub palm to palm with fingers interlaced seven times.



Rub back of fingers to opposing palms with fingers and vice versa seven times.

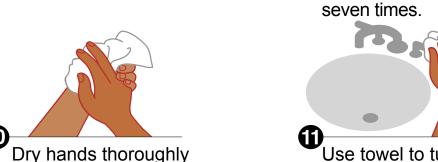


Rinse hands with clean water; keep water running.



with single-use towel.

Rotate rubbing of left thumb clasped in palm and vice versa seven times.





Use towel to turn off faucet and open door, then discard towel into a waste receptacle.

forwards with clasped fingers of

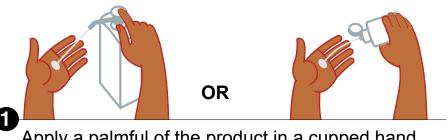
right hand in palm and vice versa



now clean.

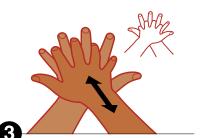
How to use alcohol hand rub\*

Washing should last 20-30 seconds.



Apply a palmful of the product in a cupped hand, covering all surfaces.

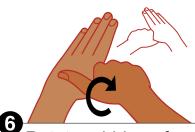




Rub right palm over left dorsum with interlaced fingers and vice versa.



Rub back of fingers to fingers interlaced. opposing palms with fingers interlocked.



Rotate rubbing of left thumb clasped in palm and vice versa.



Rotate rubbing backwards and forwards with clasped fingers of right hand in palm and vice versa.



Once dry, your hands are now clean.

\*Alcohol rub should only be used on visibly clean and dry hands to remove contaminants that cannot be seen.

# Your 5 moments for good hand hygiene

### **Probing Question**

Ask: What 5 health care moments would you use good hand hygiene?

State: Look on page 3 in the site management guide.

Mention: Alcohol rub should last 20-30 seconds and soap and water should last 40-60 second.

Review: Study the 5 points with the participants.

- 1. Before touching a patient
- 2. Before clean/aseptic procedure
- **3.** After body fluid exposure risk
- **4.** After touching a patient
- 5. After touching patient surroundings

# Your 5 moments for good hand hygiene



- **1.** Before touching a patient
- 2. Before clean/aseptic procedure
- **3.** After body fluid exposure risk
- **4.** After touching a patient
- **5.** After touching patient surroundings

### Personal protective equipment

### **Probing Question**

Mention: Before you can handle health care waste, you must use personal protective equipment (PPE) to reduce your risk of exposure.

Ask: What are some of the types of PPE? What purpose do the different types of PPE serve?

Ask: Who handles the waste produced in health care facilities and what PPE do they wear?

Ask: What is the difference between the PPE that an incinerator operator and a waste handler wear?

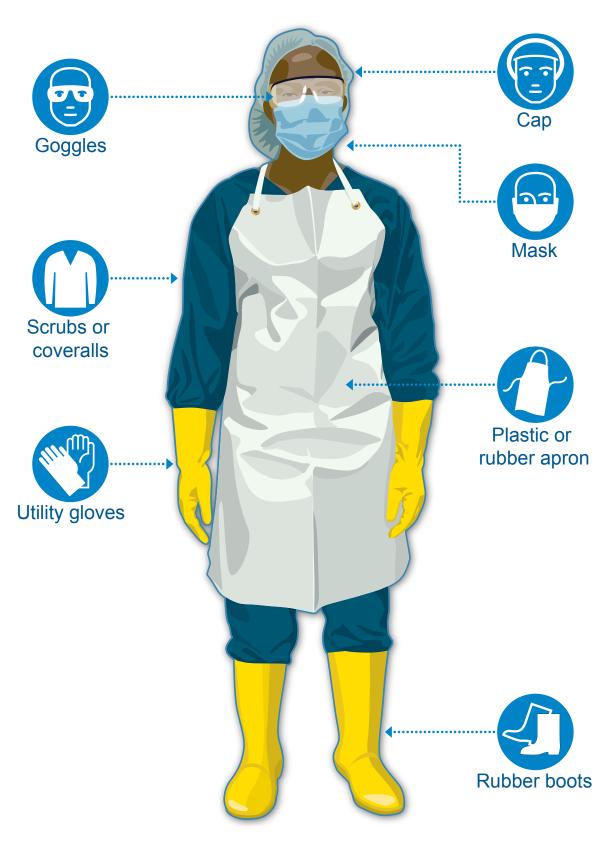
For example: Incinerator operators wear leather rather than plastic aprons for heat protection, thicker masks, and respirators

Respirators block 95% of airborne matter

Review: In the site management guide, have the participants study the pictures of PPE.

### Personal protective equipment

#### **PPE for waste handlers**



#### **PPE** for incinerator operators



### Injection safety and sharps safety

#### **Probing Question**

Ask: What are the key elements of injection and sharps safety?

Minimizing risk of exposure

Creating barriers: wearing gloves, using rigid sharps safety boxes to prevent puncture, maintaining a safe distance

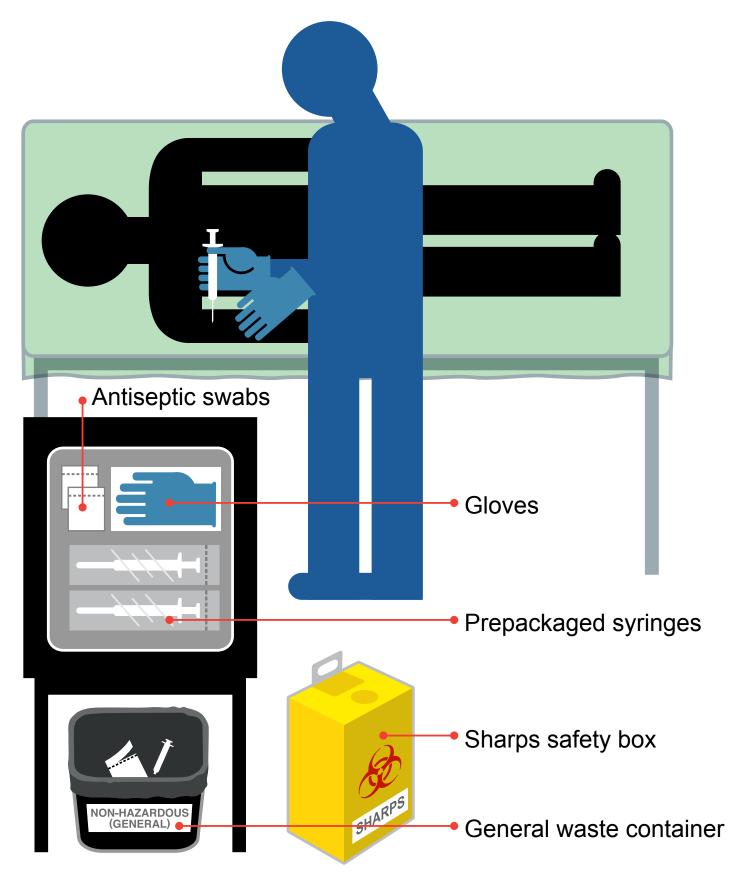
Sharps safety boxes should only be filled to 3/4 full

Sharps should be deposited into safety boxes with the sharp side down

**Demonstrate:** Show participants proper injection and sharps safety procedures, using pages 8 and 9 of the site management guide.

Include a sharps box during this session for use in the demonstration

### Injection safety and sharps safety



# Health care waste management

Waste segregation

Waste collection and storage

Transporting waste

Spill management

Waste treatment

# Waste segregation

### **Probing Question**

Ask: What is waste segregation?

It is the process of separating different categories of waste at the point of generation into appropriate color coded bins.

Ask: Why is it important?

Reduces risk to health care workers, patients, and visitors

**Reduces cost to facility** 

Reduces impact to the environment

Ask: What are the categories of waste?

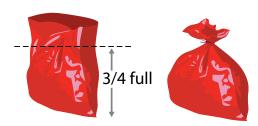
Pathological, Infectious, Sharps, Chemical, Non-hazardous (general)

Review the contents of each waste stream

Ask: Looking at the waste streams, what materials go into the infectious waste stream? How does it differ from sharps waste? Pathological?

Stress: Liners should be securely tied, labeled, and disposed of properly when they are ¾ full.

### Waste segregation



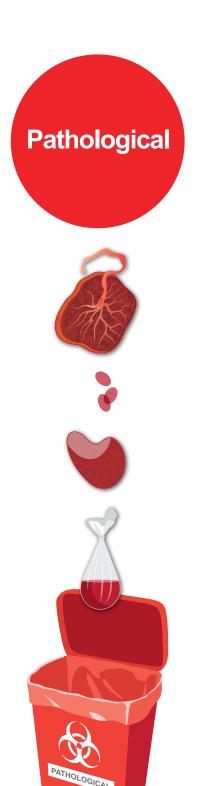
Bin liner should be sealed with a cable-tie when no more than 3/4 full.

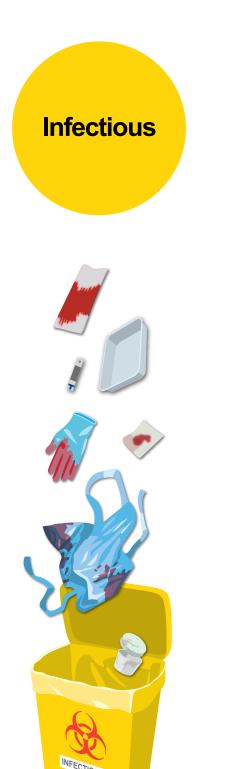


Containers filled with hazardous items should be appropriately labeled.

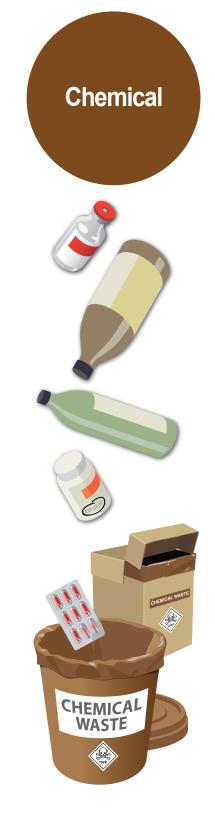


Disposal should follow thereafter according to the recommended disposal procedure for each category.











### Waste collection and storage

### **Probing Question**

Ask: Why is it important to collect waste daily?

To prevent exposure to infectious materials

To eliminate disease vectors in the facility

To maintain basic hygiene

Ask: What features does a storage area need to have?

Instruct participants to refer to page 24 of the site management guide about the storage schedule.

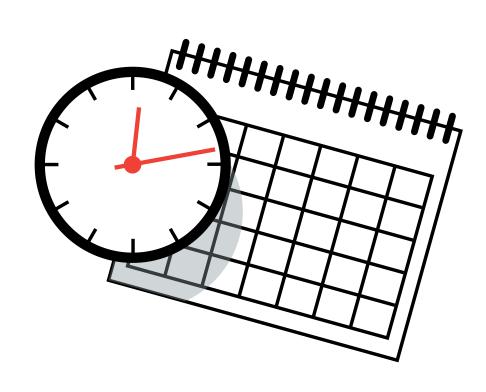
Explain that these recommendations reflect an ideal storage facility. However, your situation may vary based on your local practices, resources, and standards

**State:** All bags must be labeled when removed from the point of generation. Replace the bin liner whenever it is removed. Remove bin liners when ¾ full with waste.

Refer: Have participants review page 19 of the site management guide.

### Waste collection and storage









#### Total storage time until treatment and disposal

Pathological: 24 hours

Infectious: 48 hours

Sharps: 30 days

Chemical: 12 months and/or close of program

Non-hazardous (General): 48 hours



### **Transporting waste**

### **Probing Question**

**Stress:** Look before you touch.

State: Look at page 26 of the site management guide, identify before you touch these materials and see if there is a problem with the waste bins/liners. How would you fix the problem?

**State:** Make sure the waste bag is correctly sealed. Use the site management guide to make your point on the correct steps in preventing exposure and risk (pages 27-29).

**State:** Remember to maintain a distance between yourself and the waste.

**State:** Equipment you use to transport waste, such as wheelie bins should be easy to load, use, and clean.

Should have walls or barriers to keep the waste in.

Should be in good condition (with no sharp edges to tear the bag), clean, and free of debris.

(Continue to state: LOOK BEFORE YOU TOUCH).

### Transporting waste



Properly sealed, with no needles protruding



Overfilled and/or not properly closed



Sealed off securely when no more than 3/4 full



Showing leakage or spill



Correctly sealed



Torn or broken



**Right** Ensure that the bag has been

closed and labeled correctly and is no more than 3/4 full to maintain a stub for carrying.



Do not lift

If you see a bag that has leaks, breaks, tears, or penetrating sharps, refer to the spill management section for how to safely clean up the spill.



Grab the bag by the stub and carry far away from the body only if safe to do so and while wearing the correct PPE.

# Spill management

### **Probing Question**

**Stress:** Attend to spills immediately to control exposure to hazards, such as infection.

Ask: Direct health care waste personnel to look at pages 30-35 in the site management guide and review the 9 steps of spill management.

Ask: Looking at your site management guide, explain the different spill clean up steps and what are the differences?

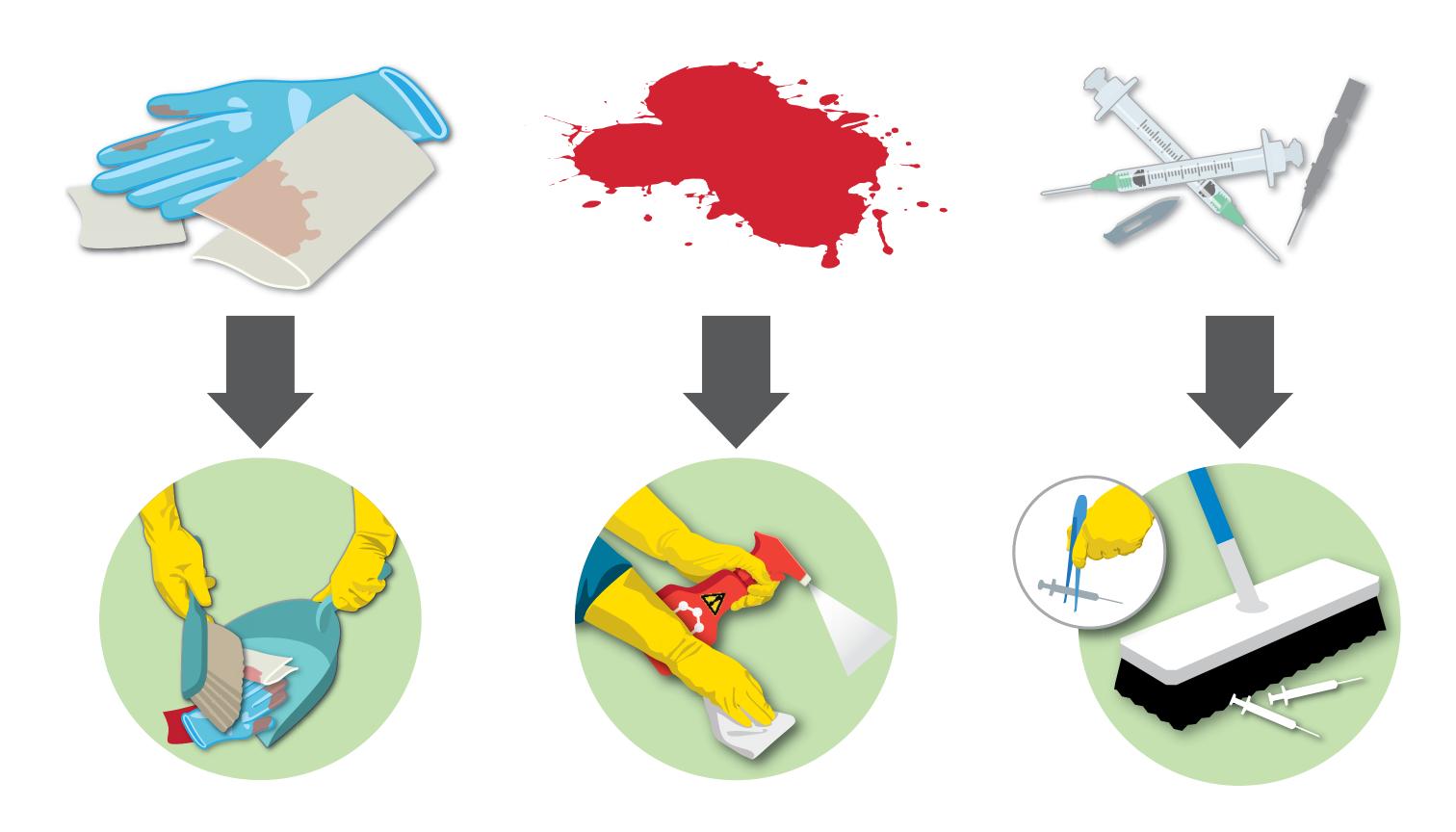
For example, how does cleaning up a dry spill differ from a wet spill?

How is it different from a sharps spill?

Ask: If you are working in the clinic, wearing only a lab jacket, what do you have to do before proceeding to clean up a spill?

All personnel cleaning up spills must first put on proper personal protective equipment.

# Spill management



### Waste treatment

### **Probing Question**

Ask: What types of waste need to be treated before they are disposed?

Pathological, infectious, and sharps waste

State: Non-hazardous (general) waste does not need to be incinerated before being disposed of. Non-hazardous (general) waste is nonhazardous and does not pose a threat of infection.

Stress: Treatment locations should have restricted access to prevent exposure to humans and the environment.

Prevent access to animals, children, waste pickers, etc.

Prevent dumping in environmentally sensitive areas.

### Waste treatment

Treatment technology	Pathological	Infectious	Sharps	Chemical (Including pharmaceutical)	Non-hazardous (General)
High temperature incineration with APC		<b>✓</b>	<b>✓</b>		<b>✓</b>
Low temperature incineration	<b>✓</b>	<b>✓</b>	<b>✓</b>		<b>✓</b>
Chemical disinfection		<b>✓</b>			
Steam sterilization					
Microwave radiation					
Pit or bury			<b>✓</b>		<b>✓</b>
Encapsulation/inertization				<b>✓</b>	
Composting (aerobic, vermiculture)					*
Anaerobic digestion (fermentation)					*
Engineered landfill					<b>✓</b>

<sup>\*</sup>Only to be used for the treatment of non-hazardous/general food waste.

# Infection prevention and control

Treating water for cleaning

Making chlorine solutions

Cleaning surfaces

Cleaning linens

Processing reusable metal instruments

### Treating water for cleaning

#### **Probing Question**

Ask: Why is it important to use clean water for the disinfection and/or cleaning of surfaces, linens, and instruments?

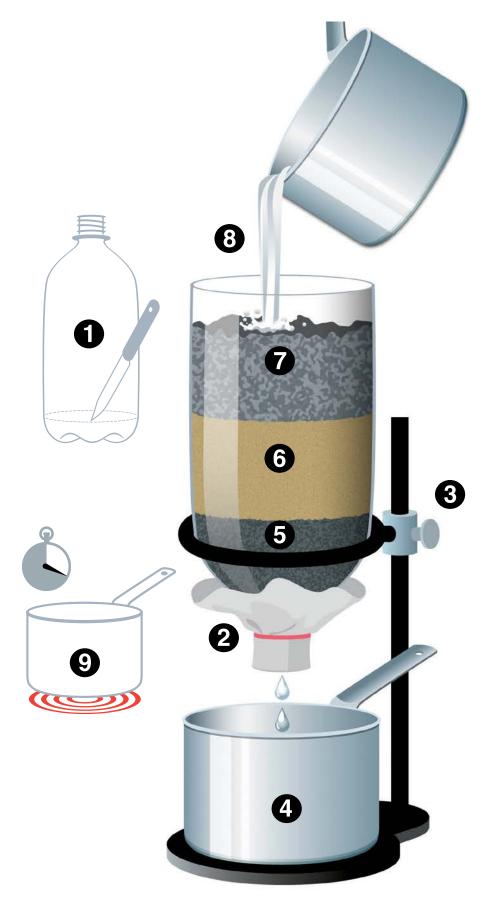
Prevents the spread of infectious diseases.

**State:** Cloudy water should be filtered before boiling to remove dirt/contamination.

**State:** Second, boil the water to make it clean/potable, safe for use.

Ask: You filter and boil water only if you have no access to clean water. How do you get water in your clinic?

### Treating water for cleaning



#### **Filtration method**

- 1 Cut off the base of a plastic bottle just above the curve of the bottle.
- 2 Cover the mouth of the bottle with six or more layers of fine cloth (e.g., cheesecloth) and use a rubber band to secure them.
- 3 Turn the bottle upside down and support the bottle from falling over.
- 4 Place a pan under the bottle. Make sure the mouth of the bottle is not submerged in the pan.
- 6 Add 5 cm to 8 cm of crushed charcoal.
- 6 Add 8 cm to 10 cm of fine sand.
- 7 Add 5 cm to 8 cm of gravel.
- 8 Pour the water into the filter slowly.
- 9 After the water is filtered, immediately boil the water for 20 minutes.

#### **Boiling method\***

- 1 Bring the water to a rolling boil for 20 minutes.
- 2 Let the water cool before using.

\*Do not use the boiling method if the water is cloudy.

### Making chlorine solutions

#### **Probing Question**

**State:** You can use concentrated liquid bleach and powder to create chlorine solutions. Use pages 44 and 46 in the site management guide to make chlorine solutions.

Remind staff: Make and dispose of chlorine solutions daily or when visibly soiled.

Stress: Every time you see the term "disinfectant," it refers to a concentrated chlorine solution.

**Stress:** All staff need to be trained on how to make chlorine solutions.

For example, in case of a spill, all health service providers should be able to make a chlorine solution and clean the spill.

Remember: Chlorine solutions for cleaning are stronger than solutions used for drinking water.

### Making chlorine solutions



### Cleaning surfaces

#### **Probing Question**

Ask: What are the steps you take to clean surfaces properly?

**State:** You must clean, rinse, and then disinfect the surface.

Ask: Why is it important to follow this procedure?

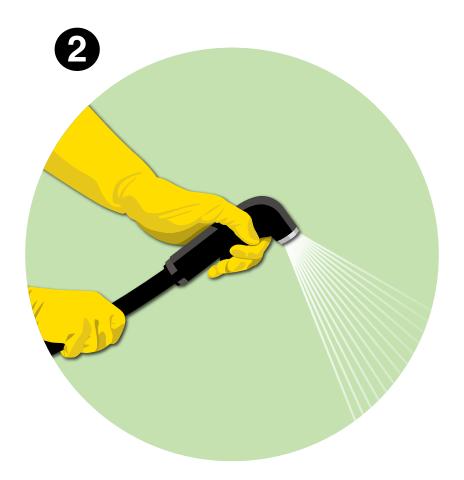
**State:** You must make the surface clean so that the disinfectant can effectively make contact with the surface.

**State:** It is recommended to use three buckets when cleaning in health care facilities. The first bucket contains a chlorine solution, the second bucket contains clean water (used for rinsing the mop), and the third bucket is empty (used for wringing out the mop).

Review: Have participants study pages 48-51 in the site management guide.

# Cleaning surfaces







### Cleaning linens

#### **Probing Question**

Ask: When should you clean linens?

After each procedure

**Daily** 

Or, as needed

Ask: When should you decontaminate linens? How do you do this?

**State:** Take extra caution when sorting linens to prevent injury from sharps.

State: Dirty and clean linens should be stored in separate areas and different containers should be used to transport dirty and clean linens.

**Ask:** Why is this important?

## Cleaning linens



#### **Processing Reusable instruments**

#### **Probing Question**

Ask: What are the steps you take to process reusable metal instruments?

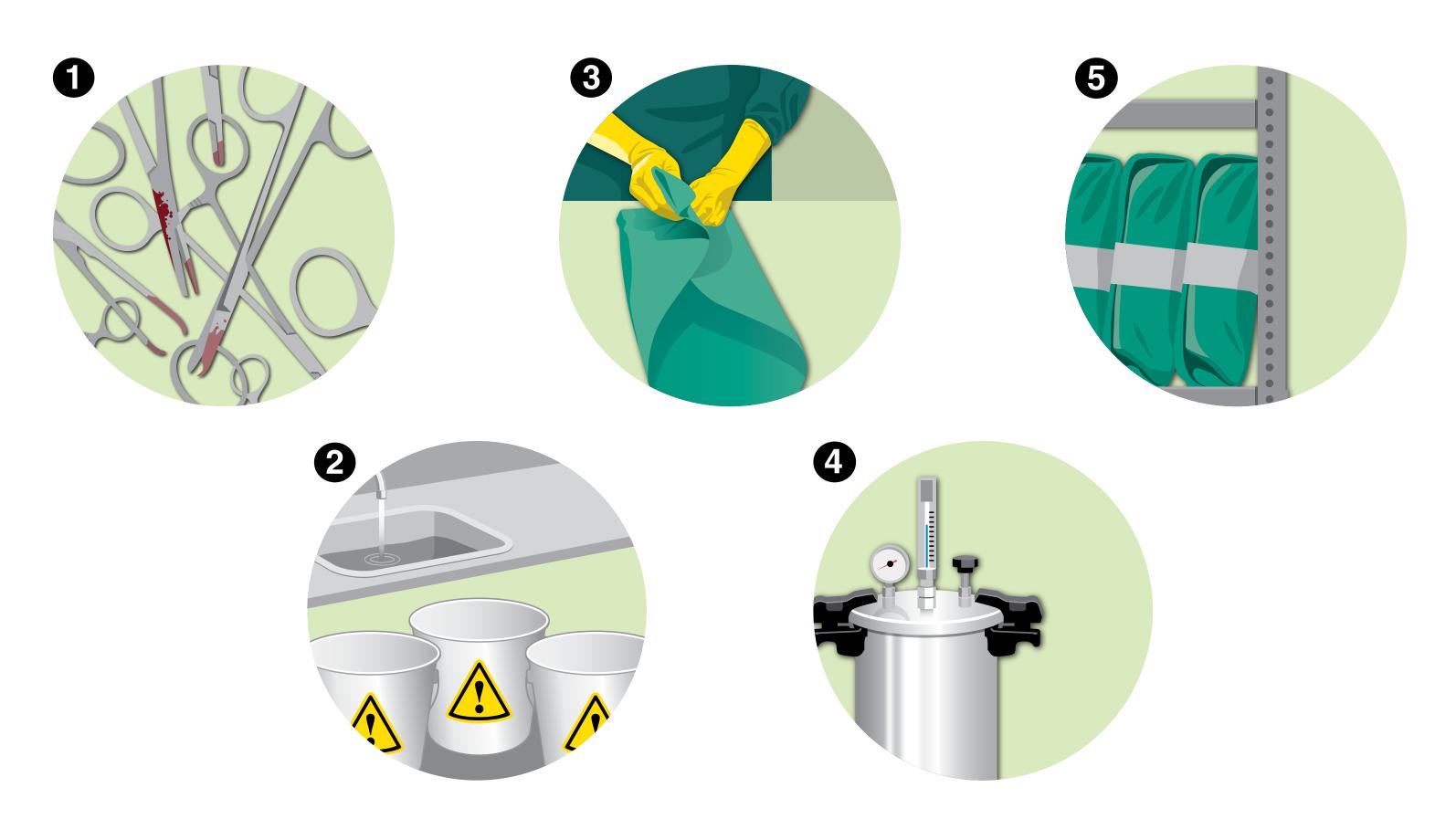
Receive, decontaminate, wrap, sterilize, store

Ask: Where can you find this information in the site management guide? Can you demonstrate the different steps for wrapping instruments?

Ask: Who wraps instruments? Who needs to know how to do this?

**State:** Remember to store instruments for a maximum time of one week.

### **Processing Reusable instruments**



### VMMC single-use instruments

Storing single-use male circumcision kits

Processing single-use metal instruments

### Storing single-use male circumcision kits

#### **Probing Question**

Ask: How should single-use circumcision kits be stored prior to use? (Reference pages 66-67 in the site management guide)

Ask: What safety equipment should be present?

Ask: Can the kits be stored with infectious and pathological waste?

### Storing single-use male circumcision kits



### Processing single-use metal instruments

#### **Probing Question**

**Explain:** Once decontaminated, single-use instruments are no longer hazardous

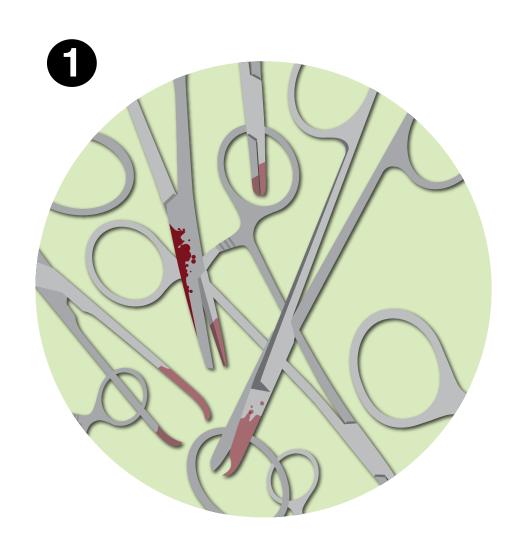
State: The main concern is that single-use instruments do not get reused in the health care setting.

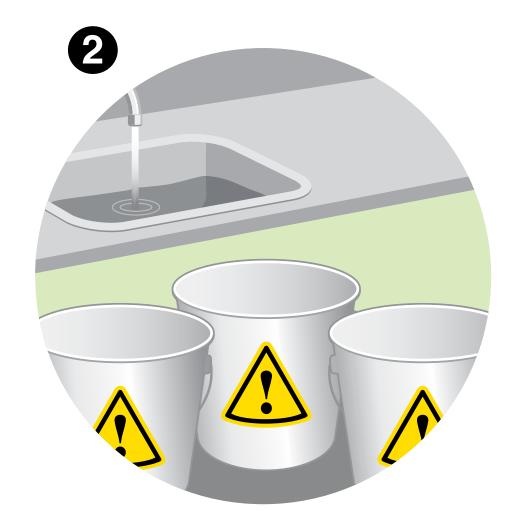
Ask: State and explain the three-steps for processing single-use instruments using the site management guide on page 68.

Ask: Are cardboard boxes a suitable method of metal instrument disposal?

Ask: What label symbol should be placed on the outside of the container?

### Processing single-use metal instruments







## Hazard safety symbols

### Hazard safety symbols

#### **Probing Question**

Ask: What do caution symbols mean? Where do you find these symbols in your health care facility?

Refer: Health care workers should review health safety symbols on pages 78-79 in the site management guide.

**State:** Caution symbols warn people to use caution when handling a material. It is a more general symbol. Caution symbols can be found on containers holding metal instruments.

Ask: What do biohazard symbols denote? Where are they commonly found?

State: Biohazard symbols warn people about the possible infectious nature of a material. They are found on waste bins, bin liners, equipment used to transport and store waste, and on signs for storage facilities.

Point out these objects within the facility.

### Hazard safety symbols





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