# AIDSFree NIGERIA TRAINING MANUAL

## INFECTION PREVENTION AND CONTROL AND HEALTH CARE WASTE MANAGEMENT FOR WASTE HANDLERS

USAID FROM THE AMERICAN PEOPLE

NIGERIANS AND AMERICANS IN PARTNERSHIP TO FIGHT HIV/AIDS

AIDSFree

Strengthening High Impact Interventions for an AIDS-free Generation

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## INFECTION PREVENTION AND CONTROL AND HEALTH CARE WASTE MANAGEMENT FOR WASTE HANDLERS

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## AIDSFree

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# ACRONYMS

| | |
|---|---|
| AIDSFree | Strengthening High Impact Interventions for an AIDS-free Generation |
| HCW | health care waste |
| HCWM | health care waste management |
| IPC | infection prevention and control |
| PEP | post-exposure prevention |
| PPE | personal protective equipment |
| USAID | U.S. Agency for International Development |
| WHO | World Health Organization |

# INTRODUCTION

Health care waste (HCW) poses serious risks to public health and the environment. Thus, its management is a critical issue. Because of limited resources and political will, health care waste management (HCWM) often does not receive sufficient attention. Medical waste is handled, collected, and disposed of along with domestic waste without safeguards, posing a great risk to the health of waste handlers, the public, and the environment, including water sources.

This training manual focuses on HCWM as an infection prevention and control (IPC) measure. It can be used by waste handlers in public and private health care settings to increase appropriate knowledge, skills, and attitudes relevant to best practices in IPC and HCWM.

Capacity building in IPC and proper HCWM is a basic component of safe and effective care, and of the prevention and management of blood-borne diseases. An effective IPC program is fundamental to the delivery of quality health care, this manual addresses key aspects of infection control in everyday practice, and outlines risk assessment and minimization of infection transmission in a variety of settings. Consequently, such a program can help to reduce disease burdens on patients, health institutions, and the nation as a whole. This manual can help facility managers move toward several goals that support achievement of an AIDS-free generation. The manual can be used for new employees, or for continuing education of waste handlers and managers who offer supportive supervision, to ensure effective health care waste management.

# HEALTH CARE WASTE MANAGEMENT

**Health care waste** (HCW) poses risks to patients, facility staff, and adjacent communities. The World Health Organization (WHO) defines HCW as the total waste stream from a health care or research facility—including both potential high-risk waste and non-risk waste materials. Health care waste management (HCWM) is the classification, collection, transportation, treatment, and disposal of waste, including the supervision of such operations and aftercare of disposal, to ensure that HCW does not cause harm or injury to persons or the environment.

## Importance of health care waste management

HCWM is a critical consideration for health care facilities because it:

- Minimizes the effect of waste on public health, such as disease transmission (e.g., HIV, hepatitis B, and hepatitis C) as well as injuries caused by sharps
- Prevents risks and hazards to waste handling staff—including housekeeping staff
- Reduces the environmental impact (pollution) resulting from improper disposal of waste, including contamination of grounds, water, and air
- Reduces the costs resulting from inappropriate waste handling (e.g., environmental clean-up costs, health care costs due to disease transmission)
- Facilitates resource recovery of useful products (supporting the principle "reduce, reuse, and recycle")
- Prevents and controls breeding of insects, rodents, and other pests
- Reduces nuisances (offensive smells, unsightly debris)
- Prevents animal and human scavenging
- Improves aesthetics, pleasing visitors and increasing their confidence in quality of care; and ensures that the facility is a clean environment.

## Classification of health care waste

Table 1 outlines HCW materials and how they are classified.

### Table 1. Categories of Waste

| Categories | Examples |
|---|---|
| **Infectious waste** | Materials or equipment that have been in contact with blood or other body fluids. (e.g., gloves and gauze) |
| **Pathological waste** | Tissues, organs, body parts, blood, infected animals from laboratories, and body fluids. |
| **Sharps** | Needles, hypodermic needles, scalpels, and other blades, knives, infusion sets, saws, and broken glass. |
| **Pharmaceutical waste** | Expired, spilled, and contaminated pharmaceutical products, discarded bottles or boxes with residues, and drug vials. |
| **Radioactive waste** | Solid, liquid, and gaseous materials contaminated with radionuclide |
| **Genotoxic/cytotoxic waste** | Cytotoxic drugs often used in cancer therapy, vomit, urine or feces from patients treated with cytotoxic drugs, chemicals, and radioactive material. |
| **Chemical waste** | Discarded solid, liquid, and gaseous chemicals (e.g., from diagnostic and experimental work and from cleaning, housekeeping, and disinfecting procedures). Waste with heavy metal content includes waste containing mercury, cadmium, lead, and drugs containing arsenic, among others. |
| **Non-infectious / general waste** | All solid waste that does not contain high-risk waste types (e.g., infectious, chemical, radioactive) which includes waste generated from offices, kitchens, packaging material, and from stores. It is considered domestic waste |

## Group Exercise

**Materials:**

- Clean samples of non-infectious waste—paper, syringe wrapping, drink containers
- Unused samples or models of infectious waste—cotton, dressing, gauze, IV fluid lines, blood bags
- Sharps—(unused) needles, infusion sets scalpels, knife blades, lancets, vials
- Disposal containers—yellow and black bin liner bags, safety box.

**One at a time, participants should segregate waste in:**

- Yellow bag if they think it is infectious/risky
- Black bag if it is non-infectious/non-risk general waste
- Safety box if it is sharps waste.

## Discussion Question

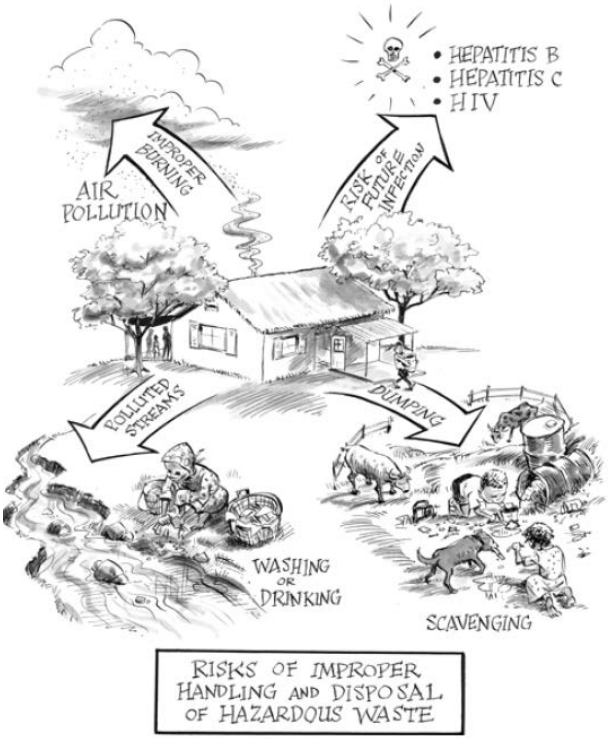
**Discuss what choices participants made, and how they selected where to place waste. What makes waste safe or risky?**

Non-hazardous waste, while relatively safe to handle, still needs to be properly collected, either in trash bins lined with black bin liners or, in the case of reusable material, through recycling services.

## Health care risks and hazards

During handling of waste, waste handlers, health workers, and even the community can come in contact with waste if it has not been disposed of safely. Improperly handled HCW poses a number of immediate and long-term environmental risks. Several of these are illustrated in Figure 1 below.

**Figure 1. Risks of Improper Handling and Disposal of Hazardous Waste**




**Source: USAID | DELIVER PROJECT Guide to Health Care Waste Management for the Community Health Worker.**

## Discussion Question

### When health care waste is not properly disposed of, what do you think are the risks and hazards it can cause?

The risks and hazards of improperly disposed HCW include:

- Needle stick injuries
- Inappropriate reuse of waste, (e.g., syringe and needles)—accidental or intentional

- Transmission of infections or disease (e.g., cholera, dysentery, hepatitis B or C, HIV, Ebola)
- Environmental pollution (e.g., air pollution, contamination of ground water)
- Public nuisance (offensive smells, unsightly debris)
- Exposure to radiation
- Fires.

## Discussion Question

**How can the risks posed by health care waste be reduced?**

### Health Care Waste Management Key Messages

**Sharps waste is the most likely to cause injury or disease if not handled properly**

**Sharps waste represents a very small amount of the waste produced in a health care facility, but must be segregated carefully to avoid risk**

**HCW poses risks to health workers, waste handlers, and the community**

**An unsafe environment affects how patients feel about using the service**

**Waste handlers play a critical role in maintaining a safe health facility.**

# KEY STEPS IN HEALTH CARE WASTE MANAGEMENT

The management of waste must be consistent from the point of generation (cradle) to the point of final disposal (grave)—key steps in HCWM are waste minimization, segregation, handling and storage, collection and transport, treatment, and disposal.

## Minimization

**Waste minimization** is an approach for reducing the amount of waste generated during health care service delivery. It includes strategies for reducing unnecessary injections, as well as recycling materials such as glass.

## Segregation

Each person who generates HCW should always immediately dispose of waste—**segregating** into separate, color-coded containers, according to type of waste. Non-infectious (or general waste), infectious, and highly infectious waste should be separated and placed in the appropriate container (pedal bins or bins with cover), which should be lined with the appropriate color-coded bin liner (see Figure 3). All sharps waste should be immediately placed into a **safety box**.

Waste handlers must maintain the segregation of the different types of waste during collection, storage, and disposal, and should never sort through waste after it has been placed in the bins. This segregation makes handling of health care waste easier, safer, and cheaper.

**Recommended color coding for health care waste**

- Red—Highly infectious waste
- Yellow—Infectious waste
- Brown—Chemical waste
- Black—General waste

**Figure 2. AIDSTAR-One Segregation of Medical Waste Job Aid**

## Discussion Questions

**Who should separate waste in the wards?**

**If a facility does not have the proper color-coded bins/bin liners, how could waste be segregated?**

## Handling and storage

**Handling and storage** refers to steps taken to manage waste during containment and storage while waiting for collection or transportation to a treatment plant or disposal site. Safe handling and storage of health care waste will protect the health worker, waste handlers, clients, and the community from transmission of infection. **For proper storage:**

- Needles and syringes are placed into a safety box which must be ¾ full, then sealed.
- Infectious waste is placed into a yellow/red lined bin which must be ¾ full, then tied.
- Non-infectious waste is placed into a black lined bin which must be ¾ full, then tied.

## Discussion Questions

**What is the difference between waste that goes in a black bin liner bag and waste that goes into a yellow/red bin liner bag?**

**What do you do if you find infectious/risky or sharps waste improperly placed in a black bag?**

**Filled safety boxes must be stored:**

- With their lids closed
- In a dry location
- In a secure location, away from medical supplies and out of reach
- No more than one week, or according to facility guidelines.

### Safe handling of bin liners and safety boxes

- Seal safety box when it is two-thirds full and replace with a new safety box immediately
- Store full and sealed safety boxes in a protected area, out of reach of all except those concerned with handling them
- Use heavy gloves when handling infectious waste. Filled bags should be picked up by the neck only—they should be put down in such a way that they can again be picked up by the neck for further handling
- To avoid puncture or other damage, waste bags should not be thrown or dropped
- Use protective eyewear: such as face masks, eye shields, goggles, visors

- When necessary, use protective shoes or boots.

### Proper storage of waste

- Waste must be disposed of as soon as possible.
- If stored, keep away from reach of children, animals, and the general public.

## Collection and transport

**Collection and transport** refers to an organized system for removing waste from the point of generation or temporary storage to a treatment or disposal site. Waste may be transported within the health facility (on-site) or to an off-site treatment plant and disposal site.

### On-site transport

This refers to moving waste from one point to another **within** the health care facility. During on-site transport:

- Waste should be moved in a designated trolley or wheeled barrel.
- The trolley or wheelie bin should be easy to clean, load, and unload, with a leak-proof body and no sharp edges. It should not be used for anything other than waste transportation.
- The waste transportation route within the facility should be clearly highlighted.

### Off-site transport

Transportation of HCW to an **off-site** treatment facility should be done if there is no on-site disposal of waste. Proper transportation equipment is required (e.g., protected transport means and receptacles) if off-site transportation is necessary.

- Managers of health care facilities should identify opportunities for proper HCW disposal, including availability of incinerators, health care waste pits, and placenta pits.
- When waste is stored for transport outside the health facility, containers and safety boxes must be kept upright, secure, dry (i.e., protected against rain), and out of direct contact with other supplies.
- The person responsible for waste disposal must be aware of the schedule for pick-up and delivery of waste.
- It is preferable that the vehicle should be designated for waste transport only. It is also preferable to have a covered vehicle.
- During transportation, waste should be secure, so that it does not litter streets and highways. The vehicle must be cleaned and sanitized at the end of each day.

## Treatment

Waste **treatment** is the rendering of infectious or hazardous HCW safe for handling and final disposal. Some of the methods used include autoclaves, incinerators, microwaves, and chemical disinfection. Non-infectious waste does not need to be treated and can be disposed of with general domestic waste.

### Incineration

**Incineration** is high-temperature burning to reduce the volume of the waste and eliminate pathogens (see Figure 3). Large-scale incinerators that can reach very high temperatures (800–1000$^0$C) are preferred to small-scale, lower-temperature incinerators such as waste disposal units. Incineration produces fewer pollutants than open-air burning and is preferable, if a good quality incinerator with a well-trained operator is available.

**Figure 3. Examples of an Incinerator and a Waste Disposal Unit**

For an incinerator to be used properly, it must have the following:

- Clear operation procedures posted near the incinerator
- Trained operators
- Reliable segregation system to ensure that only infectious and non-polluting materials are incinerated
- Reliable transport system to get waste to the incinerator
- Ash pit to safely dump the incineration ash
- Regular maintenance and repairs
- Adequate supply of fuel.

**Waste that should *not* be incinerated:**

- Polyvinyl chloride (PVC) plastics such as blood bags and intravenous (IV) lines
- Syringes made of PVC plastics
- Mercury thermometers (must be landfilled only)
- Batteries
- X-rays or photographic materials
- Aerosol cans or gas containers
- Glass vials (they can explode or melt, blocking the incinerator grate).

## Disposal

**Disposal** is the final discharge of waste and residues or by-products from the treatment of waste. It entails releasing treated health care waste into the air, soil, or water. Incineration is not a disposal method, because the ash residue must be disposed of either in a protected ash pit or municipal landfill. Some of the common methods of disposal are:

- Municipal landfill: This is a designated site for controlled disposal of municipal waste to minimize pollution to ground water, land, and air.
- Burial in protected pits:  This can include infectious waste pits, placenta pits, ash pits.

**When building and using a waste burial pit:**

- Choose an appropriate site that is at least 50 meters away from any water source to prevent contamination of the water source.
- Choose a site with proper drainage, located downhill from any wells, free of standing water, and in an area that does not flood—the site should not be located on land that will be used for agriculture or development.
- Keep waste covered—every time waste is added to the pit, cover it with a 10- to 30-cm layer of soil.
- When the level of waste reaches to within 30 to 50 cm of the surface of the ground, fill the pit with soil and dig another pit.
- Ensure that the area where the pit is located is fenced off (see Figure 4).

### Figure 4. Secured Burial Pit


*Source: USAID | DELIVER PROJECT Guide to Health Care Waste Management for the Community Health Worker.*

**Dangers of open burning on ground or pit**

Burning waste in an open pit or on the ground is a form of low-temperature burning and leads to:

- Release of dioxins and furans, which cause cancer
- Release of noxious fumes into the environment
- Incomplete burning of waste
- Leaching of infectious waste into ground water (contaminating the ground water).

#### Key Steps in HCWM Key Messages

**Each person who generates HCW should immediately dispose of waste—segregating into separate, color-coded containers, according to type of waste.**

**Waste handlers must maintain the segregation of the different types of waste during collection, storage, and disposal, and should never sort through waste.**

**Incineration produces fewer pollutants than open-air burning and is preferable.**

# WASTE HANDLER SAFETY

Health care settings must maintain a clean environment and a system to dispose of waste in order to prevent pollution and infection among health workers, patients, and the community. The occupational safety of health care personnel and workers handling waste cannot be overlooked. Clinical waste management and infection control measures are interrelated and both are important for prevention of biohazards because health care providers and waste handlers are at constant risk of exposure to blood borne pathogens such as HIV, HBV, and HCV.

Diseases can be transmitted from:

- **Health worker to patient** via unclean hands, needles, or other sharps
- **Patient to health worker** via needles, other sharps, blood or body fluids on broken skin
- **Health worker to family or community** via unclean hands, dirty clothes/shoes
- **Facility to community** via improper disposal of infectious and sharps waste.

## Discussion Question

**What can waste handlers do to reduce HCW-related risks of disease transmission to themselves, other health facility staff, clients, and the community?**

## Practices to help reduce disease transmission

- Wash hands after handling waste.
- Do not sort through waste.
- While removing waste, hold bags away from your body.
- Keep facility clean inside and out.
- Provide immunization against tetanus and Hepatitis B for waste handlers.
- Report sharps injuries immediately to the appropriate personnel.
- Handle sharps with care.
- Wear appropriate personal protective equipment (PPE), including water-resistant apron, thick gloves, boots or closed-toe shoes, and eye protection.
- Know and follow steps for treating injuries.
- Know and follow steps for cleaning contaminated areas.
- Do not take/wear your work clothes (including PPE) home—leave them at your work place for washing and storage.

Any health worker who handles waste is at risk of accidental injury or exposure to infections. Consequently, waste handlers are at risk of infection with blood-borne viruses, including HIV, hepatitis B, and hepatitis C. They are also at risk of contracting other diseases and respiratory infections.

Risk of infection for waste handlers depends on the prevalence of disease in the patient population, the nature and frequency of exposure, and handlers' vulnerability. To eliminate or minimize the risk of infection, health care facilities must institute good health and safety measures and ensure that all health care workers keep to them. Strategies for protecting health workers, including waste handlers, include the following:

- Implementing standard precautions
- Immunizing all health workers against hepatitis B
- Providing and using PPE
- Managing exposures promptly
- Eliminating unnecessary injections.

**Standard precautions**: Universally accepted practices adopted to promote safety of health workers, including waste handlers, and prevent transmission of infections from person to person, surface to person, or object to person.

**Hand hygiene**: The ***single most recommended*** method of infection prevention. The purpose of hand hygiene is to remove soil, blood, other organic material, and microorganisms from the skin. The main steps (see Figure 5) are:

- Wet hands with water.
- Apply enough soap to cover all hand surfaces.
- Rub all surfaces of hands including fingers, wrists, palms, backs of hands.
- Rinse hands with water.
- Dry thoroughly with a single-use towel.

Alcohol-based hand sanitizers can also be used on clean hands.

## Discussion Question

### When should you practice hand hygiene?

## Figure 5. Hand Hygiene: 12 Steps for Effective Hand Washing

## When to practice hand hygiene

- Before and after touching a patient, patient surroundings, or contaminated surfaces
- After coming in contact with blood or other body fluids
- When hands are visibly soiled/dirty
- After personal functions—using toilet, blowing nose
- Before preparing, handling, or serving food
- After removal of PPE
- At the end of a day's work.

## Personal protective equipment

Protective barriers and clothing—known as **personal protective equipment** or PPE—provide a physical barrier between the wearer and microorganisms, keeping them from contaminating hands, eyes, clothing, hair, and shoes. PPE also keeps microorganisms from being transmitted to other patients and staff. PPE reduces—but does not completely eliminate—the risk of acquiring an infection. PPE must be used effectively, correctly, and consistently when there is a risk of contact with blood and body fluids.

## PPE Demonstration and Discussion

**View PPE and brainstorm with the other participants why each piece is important and how it would protect a waste handler (see Figure 6). Identify specific activities during which each piece should be worn. Discuss how to care for each piece of PPE.**

### PPE for waste handlers

- **Gloves (heavy duty)** protect any cuts on hands and help protect against needle sticks.
- **Boots or closed-toe shoes** protect feet from sharps and accidental spills.
- **Aprons (rubber or plastic)** keep germs off clothing.
- **Overalls** protect the waste handler's clothes from spillages.
- **Goggles (plastic):** protect the eyes from accidental splashes when handling liquids.
- **Nose mask** protects the mouth and nose.

**Figure 6. PPE for Waste Handlers**

## Discussion Questions

- **It's hot and the new gloves you've been given make your hands uncomfortable. Since it's easier to tie waste bin liners without your gloves on, why not take them off while you are collecting waste?**
- **You've been given a nice, new pair of gumboots to wear at work. The rainy season has just started, so what's the harm in wearing them home?**
- **Where can you store your PPE at work when you are not wearing them?**

### PPE for incinerator operators

- **Heat-resistant gloves** protect hands from heat, protect any cuts on hands, and help protect against needle pricks.
- **Boots or closed-toe shoes** protect feet from sharps and accidental spills.
- **Aprons (rubber or plastic)** keep germs off clothes.
- **Respirator/Nose mask** protects from inhalation fumes and particulate matter.
- **Goggles (plastic)** protect the eyes from smoke and ash.
- **Helmet** protects the head from flying debris.
- **Overalls** protect the operator's clothes from spillages.

### PPE for mortuary attendants

- **Boots or closed-toe shoes** protect feet from sharps and accidental spills.
- **Aprons (rubber or plastic)** keep pathogens off clothes.
- **Surgical mask** protects from the aerosols and splashes.
- **Goggles (plastic)** protect the eyes from accidental splashes during mortuary procedures.
- **Overalls** protect the attendant's clothes from spillages.

#### Keep PPE in good condition:

- Always have an extra set of PPE.
- Clean PPE at the facility after each use.
- Leave PPE at facility—do not take home PPE.
- Do not share PPE with others.

#### Post-exposure prophylaxis

Waste handlers are at risk of accidental needle sticks or other injuries from sharps, which require prompt treatment that may include **post-exposure prophylaxis** (PEP) to prevent acquisition of HIV. WHO recommends following the 10 steps below after a needle stick injury:

1. Allow the wound to bleed freely and wash the area with soap under clean running water (do not squeeze).
2. If blood or body fluids get in your eyes, splash eyes with clean water.
3. ***Immediately*** report the incident to a designated person.
4. If possible, retain the item involved in the incident; get details about its source for identification of possible infection.
5. Seek additional medical attention in an emergency health department as soon as possible, including evaluating the exposure for its potential to transmit HIV infection (based on body substance and severity of exposure).
6. Access HIV testing services.
7. Initiate PEP immediately or within no more than 72 hours after the exposure.
8. The incident should be recorded in the PEP register.
9. The incident should be investigated, and remedial action must be identified and implemented to prevent similar incidents in the future.
10. Follow up according to facility guidelines.

### Waste Handler Safety Key Messages

**When handling hazardous health care waste, it is important to wear personal protective equipment such as aprons, heavy duty long gloves, footwear, goggles, and masks.**

**Take PPE off when work with waste is completed.**

**Hands should always be washed with soap and running water after removal of gloves.**

**Immediately report any injuries to your supervisor.**

# HOUSEKEEPING, LINEN, AND LAUNDRY

## Discussion Question

**What is housekeeping—what do housekeepers do and why is it important?**

## Role of housekeeping

Housekeepers in hospitals and health facilities make beds; handle waste; clean up during and after shifts; clean wards, toilets and administrative offices; and clean floors, walls, certain types of equipment, furniture, and other surfaces. Good housekeeping helps to prevent the transmission of diseases. The purpose of general housekeeping is to reduce the number of microorganisms that patients, visitors, staff, and the community may come in contact with, and to provide a clean and pleasant atmosphere for patients and staff. This helps to build confidence in patients and the community.

**Poor housekeeping:**

- Can be the cause of accidents if the environment is not tidy (e.g., wet, slippery floors)
- Can lead to fire outbreaks
- Can lead to outbreak of infections.

## Discussion Question

**How can we practice good housekeeping?**

## General housekeeping principles

- Routine cleaning is necessary to maintain a standard of cleanliness. Schedules and procedures should be consistent and posted.
- Cleaning should always proceed from the least dirty areas to the most dirty areas, and from high to low areas, so that the dirtiest areas and dirt that falls on the floor will be cleaned up last.
- Avoid dry sweeping, dry mopping, and dusting to keep dust, debris, and microorganisms from getting into the air and landing on clean surfaces.
- Follow mixing (dilution) instructions when using disinfectants—too much or too little water may reduce the effectiveness of disinfectants.

# Discussion Question

**Do staff performing housekeeping need to use PPE—why?**

## PPE for cleaning/housekeeping

Housekeeping staff come into contact with dirt, soiled materials, and other materials that expose them to risks of infections and other health hazards. To avoid this hazardous exposure, they have to have access to and use the appropriate PPE including:

- **Gloves (household utility)**
- **Protective shoes**
- **Plastic or rubber aprons**
- **Masks**
- **Protective eyewear.**

**PPE for cleaning/housekeeping should be used when:**

- Handling disinfectant cleaning solutions
- Cleaning patient care areas
- Cleaning heavily contaminated areas
- Handling soiled linens
- Handling soiled items and instruments
- Handling or disposing of waste
- Situations when spills or splashes are expected.

## Cleaning Schedules

A **schedule** is a plan for performing work in or at a given time; it indicates the work to be done and who should do it.

- In health facilities, housekeeping schedules should be planned, written, and closely followed.

- Cleaning schedules should be developed according to the needs of each area.
- Some areas and types of equipment need to be cleaned daily; others periodically, such as when soiled or dirty; while still others require cleaning more than once a day.

## Discussion Question

**What areas and types of equipment need to be cleaned daily?**

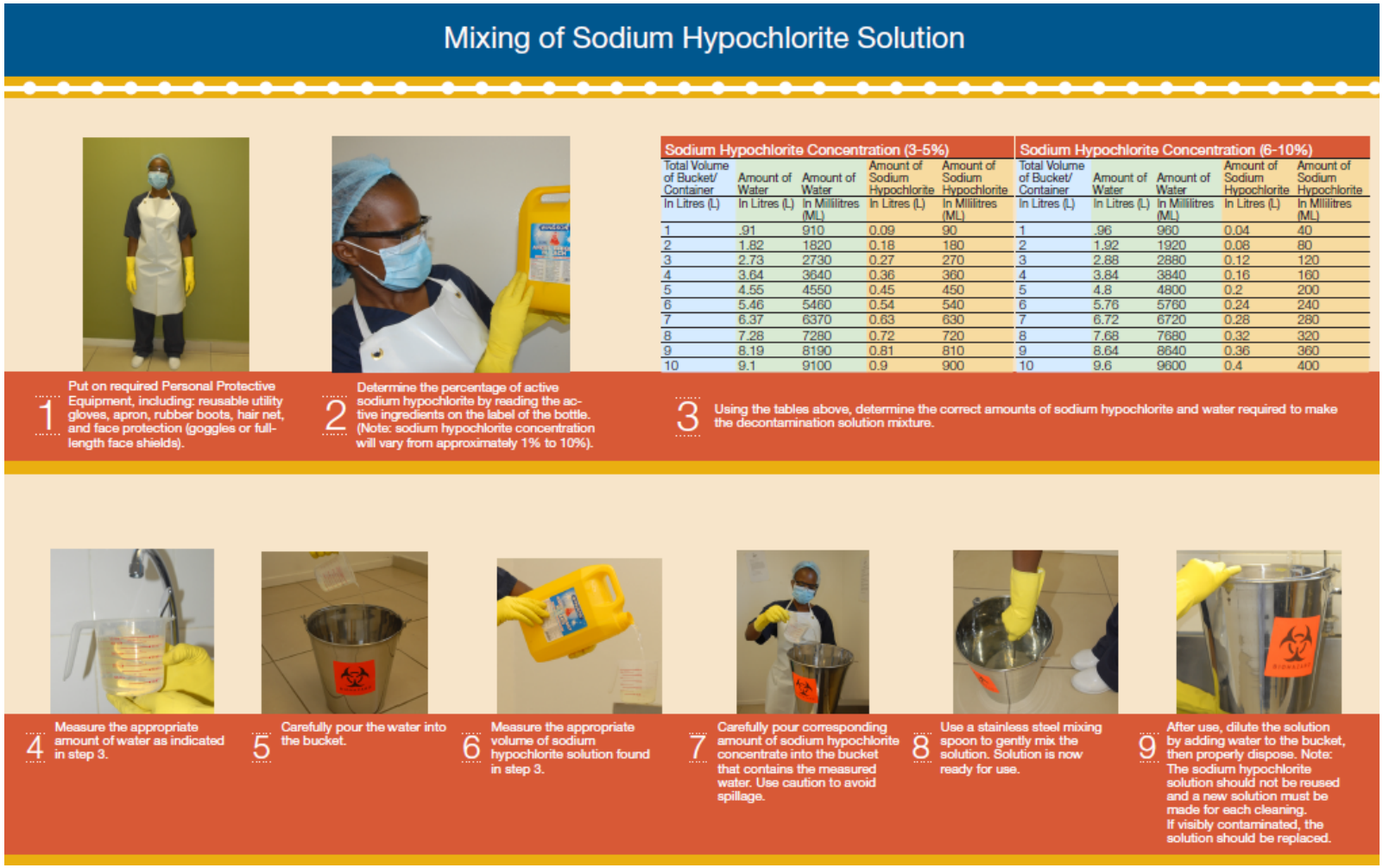
**What areas and types of equipment require cleaning more than once a day?**

**A health facility cleaning schedule should specify:**

- Who is responsible for specific jobs
- Work procedures, including special equipment and supplies (e.g., cleaning and storage of equipment, mop head changing)
- Use of protective clothing/PPE
- Frequency of floor cleaning
- Frequency of solution and mop change
- Frequency of furniture cleaning
- Frequency of toilet and fixture cleaning.

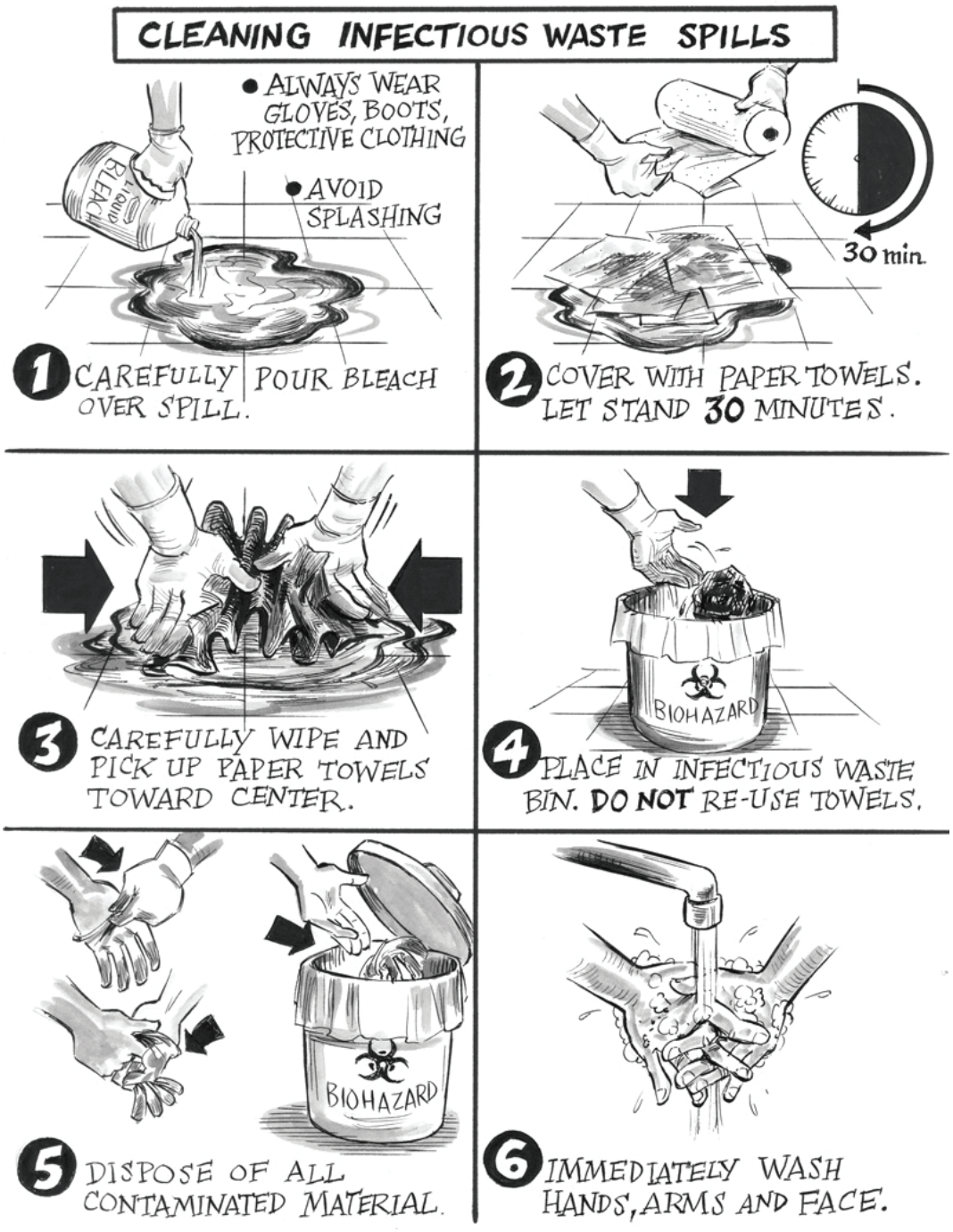
If infectious waste is spilled, housekeeping staff should carefully follow specific procedures: see Figure 7 and Figure 8.

## Figure 7. How to Mix Sodium Hypochlorite Solution (Bleach)




Source: Supply Chain Management System (SCMS)

## Figure 8. Cleaning Infectious Waste Spills




Source: USAID | DELIVER PROJECT Guide to Health Care Waste Management for the Community Health Worker

# Processing linen

**Linen** refers to bed clothing such as bed sheets, pillow cases, cover sheets, and other cloth items used in the hospital, including the operating theatre.

- Used or contaminated linen, if not handled correctly, is a potential source of infection to the susceptible patient and a laundry worker.
- Careful handling and reprocessing of soiled linen prevents the spread of potential pathogens between patients and staff.
- Providing fresh, clean linen helps to make patients comfortable.
- All linen, whether visibly soiled or superficially clean, must be processed to the same high standard.

## Key considerations for processing linen

- Housekeeping and laundry personnel should wear gloves and other PPE as indicated when collecting, handling, transporting, sorting, and washing soiled linen.
- When collecting and transporting soiled linen, handle as little as possible and with minimum contact to avoid accidental injury and spreading of pathogens.
- Consider all cloth items (e.g., surgical drapes, gowns, wrappers) used during a procedure as infectious. Even if there is no visible contamination, the item must be laundered.
- Carefully sort all linen in the laundry area before washing. Do not presort or wash linen at the point of use (e.g. ward, theatre, etc.).
- Be cautious of scalpels, sharp-tipped scissors, and needles when handling linens, in particular during initial collection.
- Soiled linen should be transported in closed, leak-proof bags, in containers with lids, or in covered carts to the processing area daily (or as needed).
- All linen items, including bed sheets, surgical drapes, masks, and gowns, should be thoroughly washed before reuse.
- Wash heavily soiled linen separately from non-visibly soiled linen.
- Presoak heavily soiled lined with soap and bleach (0.5 % chlorine) for 10 minutes.
- Check items for cleanliness—rewash if they are still dirty or stained.
- Rinse linen with clean water after washing.
- Linen can be machine-dried or air-dried, in direct sunlight if possible, keeping the fabric off the ground and away from dust and moisture.
- The linen that is not going to be sterilized should be ironed and folded. Ironing, especially using a steam iron, will destroy germs.
- Wash hands after removing gloves.
- The processing area for soiled linen must be separate from other areas, such as those used for folding and storing clean linen, patient care areas, and food preparation areas.

## Storage and transportation of clean linen

- Keep clean linen in clean, closed storage areas.
- Keep shelves clean—clean linen must be stored at least 4–6 inches off the floor.
- Clean and soiled linen should be transported separately.
- Containers or carts used to transport soiled linen should be thoroughly cleaned before using the carts to transport clean linen.
- Clean linen must be wrapped or covered during transport to avoid contamination.
- Protect clean linen until it is distributed.
- Do not leave extra linen in patient's area.
- Handle clean linen as little as possible.
- Avoid shaking clean linen—it releases dust and lint into the room.
- Clean soiled mattresses before putting clean linen on them.

## PPE for processing linen and laundry

Utility gloves, plastic or rubber aprons, protective eyewear, and closed-toe shoes should be used when collecting, handling, transporting, sorting, and hand washing soiled linen or loading in washing machines.

### Housekeeping Key Messages

**Good housekeeping helps to prevent the transmission of diseases— schedules and procedures should be consistent and posted.**

**Cleaning should always proceed from the least dirty areas to the most dirty areas, and from high to low areas, so that the dirtiest areas and dirt that falls on the floor will be cleaned up last.**

**Used or contaminated linen, if not handled correctly, is a potential source of infection to patients and laundry workers.**

# HCWM AND COMMUNICATION

A **team** is a group of people with a common purpose. In a health care facility all staff has a role in maintaining safe practices for the good of the patients, health workers, and community.

## Discussion Questions

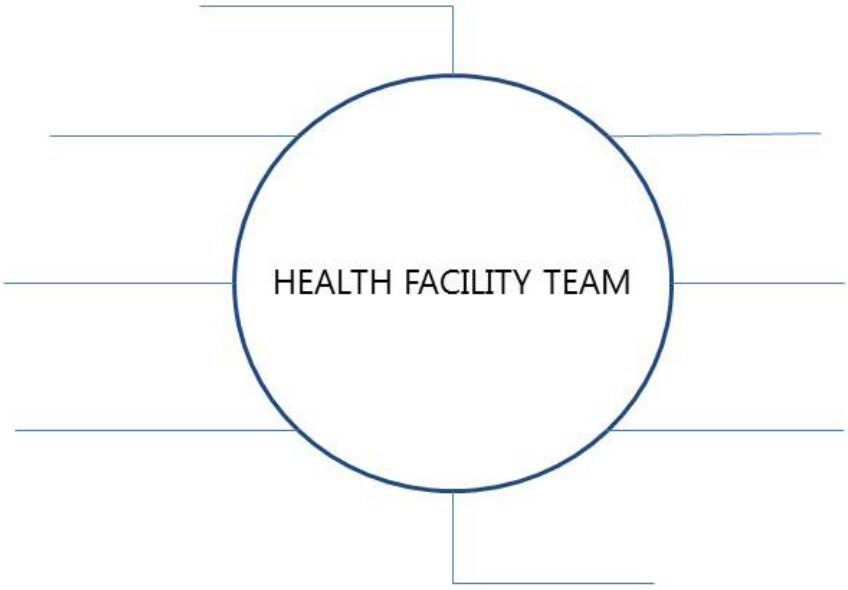
**Who makes up the health care team?**

**What makes a good team?**

**Activity**

Fill in the members of the health facility team.

Figure 9. Health Facility Team Activity




There are many things that make up a good team, some include:

- Active participation by all team members
- Mutual support of all members
- Open communication
- A common goal.

## Communication

**Communication** is sharing information between two or more people, the act of conveying information.

## Discussion Questions

**Why do we communicate?**

**How do we communicate? With colleagues? With superiors?**

We communicate to make connections with others and to share or receive information and to persuade. Our style of communication will be different depending on whom we are talking to and what we want to say. Communication can be verbal and non-verbal. Health facility staff must communicate the importance of proper HCWM to other facility staff as well as patients and visitors—behavior change is not automatic.

## Role play

**Role Play 1:** You are a waste handler at a busy outpatient clinic. You have been trying to improve waste handling practices in your unit, and as far as you know, all maids, porters, and nurses agree that you need to work towards that goal. A new nurse has been employed in your facility. You notice that after the new nurse's shift, there are always loose used syringes and needles found lying on the floor near the safety box. There are no other changes on the ward in terms of patients or equipment, but this new nurse seems to handle the injection equipment differently from others. *Talk to your supervisor to resolve the situation.*

**Role Play 2:** You are the supervisor of waste handlers at a busy outpatient clinic. One morning, a waste handler comes to your office and tells you that the new nurse recently assigned to the outpatient clinic leaves needles scattered on the floor near the safety box. The waste handler is worried that there might be an accidental needle stick injury. *Listen to what waste handler has to say—how would you handle the situation?*

# HCWM FACILITY WALK-THROUGH

As you walk through the health facility, observe the following:

## Health care waste management observations

- ☐ Are there safety boxes available for sharps disposal?
- ☐ Are any sharps loose on ground or on surfaces?
- ☐ Are any safety boxes overfilled?
- ☐ Are bins lined with appropriately colored bin liners?
- ☐ Are there pedal bins? What are they made of?
- ☐ What PPE is available for waste handlers?
- ☐ How is waste transported for collection/storage on-site? Are there trollies? What are they like?
- ☐ Is the storage space for waste secure? Who can enter—only waste handlers, all facility staff, community members?
- ☐ Is the storage area dry and neat?
- ☐ Is there a dump site or burial pit? What is it like? Are there loose sharps or waste littering the site?

## Housekeeping observations

- ☐ Is the facility generally clean and tidy?
- ☐ How are the floors cleaned—what solution, what tools?
- ☐ Are there cleaning schedules posted? How often is cleaning done for each area?
- ☐ What PPE is available for housekeepers/cleaners?

## Linen observations

- ☐ How and where is linen stored? Are the shelves clean and orderly?
- ☐ How and where are linens cleaned?
- ☐ How is linen transported? Are clean and soiled linen transported together?
- ☐ Is PPE available and used for linen cleaning/storage?

# SOURCES AND FURTHER READING

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