**Housekeeping and Waste Disposal**

The general cleanliness and hygiene of a facility are vital to the health and safety of staff, clients, visitors, and the community at large. Good housekeeping and waste disposal practices are the foundation of good infection prevention. Housekeeping and waste disposal staff are at a high risk of infection because they are exposed to blood, other body fluids, used sharps, and other contaminated objects as a routine part of their jobs.

**General housekeeping guidelines**

Although certain areas of the clinic require special housekeeping procedures, the following list applies to all parts of the clinic:

- Develop and post cleaning schedules where all housekeeping staff can see them. Make sure that cleaning schedules are closely maintained.
- Wear gloves (preferably thick utility gloves) when cleaning.
- To reduce the spread of dust and microorganisms, use a damp or wet mop or cloth for walls, floors, and surfaces instead of dry-dusting or sweeping.
- Scrubbing is the most effective way to remove dirt and microorganisms. Scrubbing should be a part of every cleaning procedure.
- Wash surfaces from top to bottom so that debris falls to the floor and is cleaned up last. Clean the highest fixtures first and work downward—for example, clean ceiling lamps, then shelves, then tables, and then the floor.
- Change cleaning solutions whenever they appear to be dirty. A solution is less likely to kill infectious microorganisms if it is heavily soiled.

**Cleaning solutions**

Three types of cleaning solutions are used during housekeeping at a health facility. It is essential that housekeeping staff understand the different types of cleaning agents and how each should be used:

1. **Plain detergent and water**
   This is used for low-risk areas and general cleaning tasks. Detergents remove dirt and organic material and dissolve or suspend grease, oil, and other matter for easy removal by scrubbing.

2. **Disinfectant (0.5% chlorine solution)**
   Disinfectants rapidly kill or inactivate infectious microorganisms during the cleaning process. Disinfectants are used to clean up spills of blood or other body fluids.
3. Disinfectant cleaning solution

This solution, which contains a disinfectant, detergent, and water, is used for cleaning areas that may be contaminated with infectious materials (such as operating theaters, procedure rooms, latrines, and sluice rooms). The solution must contain both a disinfectant and a detergent. Disinfectants rapidly kill or inactivate infectious microorganisms during the cleaning process, while detergents remove dirt and organic material, which cannot be done by water or disinfectants alone.

In most settings, a 0.5% chlorine solution made from locally available bleach is the cheapest disinfectant, but alternatives include commercial disinfectants that contain 5% carbolic acid (such as Phenol or Lysol) or quaternary ammonium compounds. For information about how to make a 0.5% chlorine solution, see pages 26–27.

To make a disinfectant cleaning solution:
Prepare a 0.5% chlorine solution following the instructions on page 27 (or obtain any disinfectant that contains 5% carbolic acid, such as Phenol or Lysol, or quaternary ammonium compounds). Add some detergent and mix. Continue adding detergent until the solution is mildly sudsy.

Cleaning procedures for different clinic areas

Low-risk areas (waiting rooms, administrative areas)
These are the areas that are usually not contaminated with infectious microorganisms, and the risk of infection is minimal. Routine cleaning—the kind of cleaning you would do in your home—is usually good enough for these areas. In general, clean these areas once a week (or whenever they appear to be dirty) with a cloth or mop dampened with detergent and water. Vacuum carpeted areas once a week and shampoo as needed. In unusual circumstances in which contamination occurs in these areas, use the appropriate practices described below.

Caution:
Chlorine solutions should never be mixed with cleaning products that contain ammonia, ammonium chloride, or phosphoric acid. Combining these chemicals will result in the release of a chlorine gas, which can cause nausea, eye irritation, tearing, headache, and shortness of breath. These symptoms may last for several hours. If you are exposed to an unpleasantly strong odor following the mixing of a chlorine solution with a cleaning product, leave the room or area immediately until the fumes have cleared completely.
Toilets, latrines, and sluice rooms
These areas are usually heavily contaminated and should be cleaned daily—or more often if traffic in your facility is high. Use different supplies to clean these areas than the supplies you use for cleaning client-care areas.

Cleaning Schedule: Toilets, Latrines, and Sluice Rooms

<table>
<thead>
<tr>
<th>Task</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean walls</td>
<td>Wipe with a disinfectant cleaning solution each day (or more often, if necessary).</td>
</tr>
<tr>
<td>Clean ceilings</td>
<td>Wipe with a disinfectant solution each week (or more often, if necessary).</td>
</tr>
<tr>
<td>Clean counters and other surfaces</td>
<td>Wipe with a cloth saturated with a disinfectant cleaning solution each day (or more often, if necessary).</td>
</tr>
<tr>
<td>Clean floors</td>
<td>Use a mop and a disinfectant cleaning solution each day (or more often, if necessary).</td>
</tr>
<tr>
<td>Clean sinks and toilets/latrines</td>
<td>Scrub with a disinfectant cleaning solution and rinse with clean water each day (or more often, if necessary).</td>
</tr>
<tr>
<td>Empty waste containers</td>
<td>Each day (or more often, if necessary)</td>
</tr>
<tr>
<td>Clean waste containers</td>
<td>Scrub to remove soil or organic material with a disinfectant cleaning solution each day (or more often, if necessary).</td>
</tr>
</tbody>
</table>

Client-care areas (operating theaters, procedure rooms, laboratories, areas where instruments are cleaned and processed)
These areas must be cleaned with special care using a disinfectant cleaning solution. In these areas, there is a greater potential for contamination with infectious materials and more of a concern about potential infection transmission to both clients and clinic staff.
### Cleaning Schedule: Client-Care Areas

<table>
<thead>
<tr>
<th>At the beginning of each day</th>
<th>Clean horizontal surfaces—operating/procedure tables, examination couches, chairs, trolley tops or Mayo stands, lamps, counters, and office furniture—with a cloth dampened with water, and clean floors with a mop dampened with water to remove dust and lint that have accumulated overnight.</th>
</tr>
</thead>
</table>
| **Between clients**         | • Clean operating/procedure tables, examination couches, trolley tops or Mayo stands, counters, lamps, and any other potentially contaminated surfaces in operating theaters and procedure rooms with a cloth dampened with a disinfectant cleaning solution. Alternatively, spray the solution onto the surfaces, using a spray bottle, and wipe with a cloth dampened with water.  
  • Clean spills of blood or other body fluids with a 0.5% chlorine solution immediately.  
  • Clean visibly soiled areas of the floor, walls, or ceiling with a mop or cloth dampened with a disinfectant cleaning solution.  
  • Put waste in a leakproof container, and empty the container when it is ¾ full. |
| At the end of each clinic session or day | • Wipe down all surfaces—including counters, tables, sinks, lights, door handles/plates, and walls—with a cloth dampened with a disinfectant cleaning solution or spray the solution onto the surface using a spray bottle and wipe them down. Remember to wipe from top to bottom. Pay particular attention to operating/procedure tables, making sure to clean the sides, base, and legs thoroughly. Rinse sinks with clean water after cleaning.  
  • Clean the floors with a mop soaked in a disinfectant cleaning solution.  
  • Check sharps-disposal containers and remove and replace them if they are ¾ full.  
  • Remove medical or hazardous chemical waste, making sure to burn or bury it as soon as possible to limit contact with potentially infectious waste. (This is covered in detail on pages 62–68.)  
  • Wash waste containers with a disinfectant cleaning solution and rinse with water. |
| Each week                   | • Clean ceilings with a mop dampened with a disinfectant cleaning solution. |
**Cleaning up spills**

Clean up spills of potentially infectious fluids immediately. Besides preventing the spread of infection, prompt removal also prevents accidents.

When cleaning up spills:
- Always wear gloves.
- If the spill is small, wipe it with a cloth that has been saturated with a disinfectant (0.5% chlorine) solution.
- If the spill is large, cover (flood) the area with a disinfectant (0.5% chlorine) solution, mop up the solution, and then clean the area with a disinfectant cleaning solution.
- Do not simply place a cloth over the spill for cleaning up later; someone could easily slip and fall on it and be injured.

**Ineffective practices**

Two housekeeping practices—fumigation and the use of ultraviolet (UV) light—are common in many health facilities, particularly in some parts of the developing world, but should be eliminated. These practices are time-consuming, waste valuable resources, and do not decrease the risk of infection in your facility.

1. **Fumigation (also called “disinfectant fogging”)**

   Fumigation with formalin, formaldehyde, or paraformaldehyde is an ineffective method of reducing the risk of infection. It is a perfect example of a practice that is not based on scientific findings.

   Besides being ineffective, these agents are toxic and irritating to the eyes and mucous membranes. Fumigation is time-consuming and makes rooms unavailable for use, often leading to disruption of services or unnecessary inconvenience to clients and staff. Thorough cleaning with a disinfectant cleaning solution and scrubbing should be used instead of fumigation.

Remember:

Contaminated equipment spreads, rather than reduces, microorganisms in the environment. Supplies and equipment used for cleaning also need to be cleaned. Equipment (such as mops, buckets, and cloths) should be decontaminated with a disinfectant (0.5% chlorine) solution, cleaned in detergent and water, rinsed in clean water, and dried before reuse.
2. Ultraviolet (UV) light
In general, this is neither practical nor cost-effective. In the largest and best-designed scientific study on this topic, no decrease was shown in the surgical-site infection rate when UV light was used. Although UV light does have some uses in specialized sites (such as tissue culture laboratories), UV light is unsatisfactory for general use in health care facilities because:

- The killing ability of UV light decreases sharply: 1) if relative humidity is greater than 60%–70%; 2) if dust is present (in the air, on surfaces, or on the bulb itself); and 3) with increasing distance from the lamp.
- UV light does not penetrate most substances (including fluids and organic matter, such as mucous) and will therefore kill only microorganisms directly on the surface that are exposed to the UV light.
- The intensity of UV light needed to effectively kill microorganisms is damaging to humans. Prolonged exposure can lead to eye or skin irritation.
- UV lighting fixtures are expensive to install and maintain. Regular servicing, including removing dust from the bulbs, is required.

Cleaning by scrubbing with a disinfectant cleaning solution is the most efficient and cost-effective way to clean potentially contaminated areas in your facility.

Handling and disposal of medical waste
All staff have a responsibility to dispose of waste in a manner that poses minimal hazard to clients, visitors, other health care workers, and the community. Anyone who handles contaminated waste—from the time it is thrown out by a service provider to even after it reaches the site of final disposal—is at risk of infection or injury.

Proper disposal:
- Minimizes the spread of infections and reduces the risk of accidental injury to staff, clients, visitors, and the local community
- Helps provide an aesthetically pleasing atmosphere
- Reduces odors
- Attracts fewer insects and animals
- Reduces the likelihood of contamination of the soil or ground water with chemicals or microorganisms

A large percentage of staff (including nurses, midwives, nursing aides, and cleaning and maintenance staff) report having experienced waste-related injuries and infections. Sharps pose the greatest risk and can cause injury and transmission of serious infections, including HIV and
hepatitis B. If possible, all staff at risk of waste-related injury should be vaccinated against hepatitis B.

Improper disposal of waste is also one of the greatest threats to members of the community. In many low-resource settings, scavenging of medical waste is a significant problem. Not only are scavengers at risk of injury and infection themselves, but this practice can also put clients and the local community at risk when scavenged waste, such as syringes and needles, is reused.

**Three kinds of waste**

There are three kinds of waste generally found in health facilities: general waste, medical waste, and hazardous chemical waste. It is important to dispose of all kinds of waste properly, but improper disposal of medical and hazardous chemical waste poses the most immediate health risk to the community.

1 **General waste**

Nonhazardous waste that poses no risk of injury or infections. This is similar in nature to household trash. Examples include paper, boxes, packaging materials, bottles, plastic containers, and food-related trash.

2 **Medical waste**

Material generated in the diagnosis, treatment, or immunization of clients, including:

- Blood, blood products, and other body fluids, as well as materials containing fresh or dried blood or body fluids, such as bandages and surgical sponges
- Organic waste such as human tissue, body parts, placentas, and products of conception
- Sharps (used or unused), including hypodermic and suture needles, scalpel blades, blood tubes, pipettes, and other glass items that have been in contact with potentially infectious materials (such as glass slides and coverslips)

3 **Hazardous chemical waste**

Chemical waste that is potentially toxic or poisonous, including cleaning products, disinfectants, cytotoxic drugs, and radioactive compounds.

**Note:** Although both medical and chemical waste pose dangers, the focus of this booklet is on disposal of potentially infectious medical waste.
Disposal of cytotoxic drugs and radioactive waste requires special consideration outside the scope of this booklet: if your facility uses these materials, consult local experts for guidance on appropriate handling and disposal.

**Creating a waste-management plan**

Every health facility—whether a large hospital, a doctor’s office, or a small health post—should develop a medical waste-management plan and should designate a staff member to coordinate the management of medical waste.

There are four components to a waste-management plan:

1. **Sorting**: Separating waste by type at the place where it is generated
2. **Handling**: Collecting and transporting waste within the facility
3. **Interim storage**: Storing waste within the facility until it can be disposed of
4. **Final disposal**: Eliminating solid medical waste, liquid medical waste, sharps, and hazardous chemical waste from the health facility

### 1. Sorting

Only a small percentage of the waste generated by a health care facility is medical waste that must be handled specially to reduce the risk of infections or injury.

Sorting the waste at the point where it is generated can conserve resources by greatly reducing the amount of waste that needs special handling. Poor separation leads to large amounts of trash that must be handled specially—which can overwhelm the disposal system, lead to improper disposal of medical waste, and put everyone at risk.

**Sorting sharps**

Needles and other sharps pose the greatest risk of

**Tips for Sorting Waste:**

Medical and general waste should be put in the appropriate waste containers. To help the staff use containers correctly:

- Always keep separate containers in convenient places wherever both general and medical waste are generated.
- Use colored plastic containers, painted drums, or easily readable labels to help distinguish between general and medical waste containers. For example, paint the containers used for medical waste red or use red plastic bags, if available.
- Place sharps containers in convenient places so that staff do not have to walk across the room (or farther) carrying used sharps.
injury, and should be disposed of in special sharps containers, such as heavy cardboard boxes, tin cans with lids, or plastic bottles. (For more information on the proper handling of sharps, see pages 21–22.)

2. Handling
Staff should handle medical waste as little as possible before storage and disposal. The more waste is handled, the greater the chance for accidents. Special care must be taken when handling used needles and other sharps, which pose the greatest risk of accidental injury and infection.

Emptying waste containers
Waste containers that are too full also present opportunities for accidents. Waste should be removed from operating theaters, procedure rooms, and sluice rooms before the containers become completely full. At the very least, these containers should be emptied once a day. Dispose of sharps containers when they are \( \frac{3}{4} \) full. (When sharps-disposal containers become too full, people may push sharps into the container, causing injury.)

3. Interim storage
If possible, final disposal of waste should take place immediately, but it is often more practical to store waste briefly in your facility before final disposal. Interim storage should be short-term—usually waste should be stored only for a few hours before disposal. Waste should never be stored in your facility for more than one or two days.

If it is necessary to store medical waste on-site before final disposal: place waste in a closed area that is minimally accessible to staff, clients, and visitors. As few people as possible should come into contact with stored medical waste.
4. Final disposal

General waste—like household trash—can be taken to the regular community waste-disposal point for final collection and disposal. This section discusses the final disposal of:

- Solid medical waste
- Liquid medical waste
- Contaminated sharps

**Solid medical waste**

Always wear heavy utility gloves and shoes when handling or transporting medical waste of any kind. Solid medical waste should be disposed of on the premises if at all possible; this allows staff who understand the risks involved to supervise the disposal process. There are three options for the disposal of solid medical waste: burning waste, burying waste, and transporting waste to an off-site disposal site.

**Burning.** Burning is the best option, since high temperatures destroy microorganisms and reduce the amount of waste. Burning in an incinerator or oil drum is recommended. Open burning is not recommended because it causes scattering of waste, is dangerous, and is unattractive. However, if open burning must be done, carry the waste to the site just before burning, and burn it in a small, designated area. Remain with the fire until it is completely out.

**Building a drum incinerator.** In general, a drum incinerator is only useful for small, usually rural, facilities that do not have large quantities of medical waste. If your facility is large, it is more efficient to build or install an incinerator large enough to accommodate all of your facility’s waste-disposal needs.

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**Remember:**

Contaminated medical waste poses serious health threats to the community. Never store medical waste in open containers and never throw waste into an open pile. All containers should have lids to prevent exposure to waste, spillage, or access by insects, rodents, and other animals.
When using your drum incinerator:
- Choose a place that is downwind from the clinic to prevent smoke and odors from coming into the clinic.
- Make sure there are sufficient air inlets on the side of the oil drum and bottom of the fire bed for efficient burning.
- Place the incinerator on hardened earth or a concrete base to prevent grass from catching fire during the burning process.
- Burn only medical waste. Use a regular community disposal site for general waste. This will conserve both time and resources.
- Treat the ash as general waste. Bury or otherwise dispose of it in a designated area.

Medical waste may not burn easily, especially if it is wet. Add kerosene to make the fire hot enough to burn all waste. Be sure to add the kerosene before starting the fire—adding kerosene after the fire has started might cause an explosion.

**Burying.** On-site burial is the next best option. To use burial, you must have space for a pit big enough for all the waste generated at the site. The pit should be surrounded by a fence or wall to limit access to it and to prevent scavenging of waste.

![Diagram of a waste-burial pit](image)

**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. The site should have proper drainage, be located downhill from any wells, be free of standing water, and be in an area that does not flood. The site should not be located on land that will be used for agriculture or development.
- Dig a pit 1 to 2 meters wide and 2 to 5 meters deep. The bottom of the pit should be 1.8 meters above the water table. Consult your local water engineer/water authority for information about the location of the water table.
• Fence in the area to keep out animals, scavengers, and children.
• Keep waste covered. Every time waste is added to the pit, cover it with a 10 to 30 cm layer of soil.
• Seal the pit. When the level of waste reaches to within 30 to 50 cm of the surface of the ground, fill the pit with dirt, seal it with concrete, and dig another pit.

Transporting. If neither burning nor burial on-site is possible, the waste must be transported for off-site disposal. If waste will be handled during transport by nonfacility staff (such as municipal trash removers), they must be educated about the cautions and risks regarding medical waste. Transport to an open community dump is the least desirable alternative. Open dumps increase the community’s risk of exposure to infectious microorganisms because: 1) they facilitate the spread of infections by flies, rodents, and other animals that come in contact with medical waste; 2) people may easily come in contact with waste in open dump sites—for example, local children may play near the dump site; and 3) they encourage scavenging.

Liquid medical waste
Always wear heavy utility gloves and shoes when handling or transporting liquid medical waste of any kind. When carrying or disposing of liquid medical waste, be careful to avoid splashing the waste on yourself, on others, or on the floor and other surfaces.
• Handle cleaning solutions and disinfectants such as glutaraldehyde in the same way as liquid medical waste.
• Carefully pour liquid waste down a sink, drain, flushable toilet, or latrine. If this is not possible, bury it in a pit along with solid medical waste.
• Before pouring liquid waste down a sink, drain, or toilet, consider where the drain empties. It is hazardous for liquid medical waste to run through open gutters that empty onto the grounds of the facility.
• Rinse the sink, drain, or toilet thoroughly with water to remove residual waste—again avoid splashing. Clean these areas with a disinfectant cleaning solution at the end of each day, or more frequently if heavily used or soiled.
• Decontaminate the container that held the liquid waste by filling it with or soaking it for 10 minutes in a 0.5% chlorine solution before washing.
• Wash your gloved hands after handling liquid waste before removing the gloves.
**Sharps**

Needlesticks and punctures involving sharps are the number-one cause of waste-related accidents for staff in health facilities. To reduce the risk of needlesticks, do not recap, bend, cut, or break needles or try to remove the needles from the syringe before disposal.

Although burning is the best way to dispose of medical waste, sharps are not destroyed by burning, except in large industrial incinerators. If an industrial incinerator is not available, sharps can be rendered harmless by placing needles, plastic syringes, and scalpel blades in a metal container and then, when the container is three-quarters full, pouring in fuel and igniting and burning it until the fire goes out on its own. When this is done, the plastic syringes will melt and, when cool, become a solid block of plastic, with the sharps embedded within the block. The block can then be buried in the type of burial pit used for solid medical waste. If it is not possible to bury all medical waste on-site, sharps should be given priority for burial, since they pose the biggest risk of injury and infections.