COVID-19: GUIDANCE ON ENVIRONMENTAL CLEANING FOR HEALTHCARE FACILITIES

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Pacific Community
Communauté du Pacifique

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Representative Office for the South Pacific

Objective of the guidance note

To support Pacific Island countries and territories with guidance on cleaning and disinfection of rooms, areas, and equipment in healthcare facilities occupied with suspected and confirmed COVID-19 patients.

Background

The COVID-19 virus is a respiratory disease that is transmitted via droplets and airborne transmission. This occurs through close contact and exposure to coughing, sneezing, and speaking with infected individuals. Therefore, standard precautions for airborne and droplet transmission are recommended.

A recent study reported that the COVID-19 virus could be found for up to 3 hours in aerosols, up to 24 hours on cardboard, and up to two to three days on plastic and stainless steel.

Cleaning with neutral detergent, followed by a chemical disinfectant can effectively inactivate the COVID-19 virus. Regular environmental cleaning should continue, involving wiping with water and detergent, rinsing and then drying items.

The level of cleaning required in certain areas of a health facility depends on the risk of contamination with infectious agents. For example, the general areas of the hospital will require regular cleaning, whereas areas with greater risk of COVID-19 transmission, such as isolation units, which will require more cleaning.

Key definitions:

Cleaning (environmental) refers to the removal of dirt and impurities, including germs, from surfaces with water and detergent. Cleaning alone does not kill germs but by removing the germs, it decreases their number and therefore reduces the risk of spreading infection.

Disinfection uses chemicals to kill germs on surfaces that have been cleaned. This process does not necessarily clean dirty surfaces or remove germs, but kills germs remaining on a surface after cleaning, further reducing the risk of spreading infection.

Detergents: A detergent is a surfactant that facilitates the removal of dirt and organic matter. Most hard surfaces can be adequately cleaned with warm water and a neutral detergent as per the manufacturer's instructions. Allowing the cleaned surfaces to dry is an important aspect of cleaning.

Disinfectants: A disinfectant is a chemical agent that rapidly kills or inactivates most infectious agents. Disinfectants used within a healthcare setting must be either be an approved hospital-grade disinfectant, preferably with label claims against specific organisms, or a chlorine-based product such as sodium hypochlorite.

Proper use of personal protective equipment (PPE)

In view of the global shortage of PPE, it is recommended that healthcare facilities consider assigning daily cleaning and disinfection duties in patient care areas to nursing personnel who will already be in the room.

All housekeeping staff are required to attend mandatory training in Infection Prevention and Control (IPC), including PPE donning and doffing. The IPC officer will determine PPE requirements.

Steps to putting on PPE

1. Clean your hands. This can be done with either liquid soap and running water or alcohol-based hand rub.
2. Put on a disposable apron or gown. Fasten the back of the apron/gown at the neck and waist.
3. Put on a surgical mask if required, secure the ties of the mask at the middle of the head and neck. Fit the flexible band to nose bridge and ensure mask is fitted snug to face and below the chin. **Do not touch or adjust the mask until you are ready to remove the mask.**
4. Put on protective eyewear to protect your eyes from the cleaning fluids.
5. Put on disposable latex or vinyl gloves.

Steps to removing PPE (See PPE removal poster)

1. Remove and dispose of gloves.
2. If wearing apron or gown, remove and dispose of apron/gown. The apron front may be contaminated. Untie or break fasteners and pull apron away from body, touching the inside of the apron only.
3. Perform hand hygiene.
4. If wearing, remove protective eyewear/face shield. The outside of protective eyewear/face shields may be contaminated. Remove eyewear/face shield by tilting the head forward and lifting the head band or earpieces. Avoid touching the front surface of the eyewear/face shield. Reusable protective eyewear should be placed into a container and washed in detergent and water and allowed to completely air dry.
5. If wearing a mask, remove and dispose. Do not touch the front of the surgical mask; remove the surgical mask by holding the elastic straps or ties and remove without touching the front.
6. Perform hand hygiene.

How to clean and disinfect

Environmental cleaning applies to bed rails, mattresses, call buttons, chairs, and surfaces of noncritical patient care equipment (e.g. IV poles, stethoscopes), and floors. This requires a two-step system.

First, thoroughly clean all hard surfaces and frequently touched areas with a solution of water and normal neutral detergent. Allow to air-dry completely. Follow facility procedures on cleaning.

Second, disinfect all cleaned surfaces with a household bleach solution, 0.5% chlorine solution, or 70% alcohol.

- The flow of cleaning should be from areas that are cleaner to dirtier. E.g. when cleaning a bathroom, the toilet should be cleaned last as it is likely to be the most contaminated element in that area.
- To maximize the use of cleaning cloths, they should be folded and rotated in a manner so as all surface areas of the cloth, including the front and back, are used progressively, as elements are cleaned.
- Wipe external surfaces of portable equipment in the patient's room with a hospital-approved disinfectant (wipes containing 70% alcohol) upon removal from the patient's room.
- Clean and disinfect spills of blood and body fluids using current recommendations for spill management.
- Upon discharge of patient, clean and disinfect all surfaces that were in contact with the patient or may have become contaminated during patient care including items such as blood pressure cuffs, pulse oximeters, stethoscopes, etc.
- Wipe down mattresses and headboards with neutral detergent followed by sodium hypochlorite.
- Privacy curtains should be removed, placed in a bag in the room, and transported to be laundered.
- No special treatment is necessary for window curtains, ceilings, and walls unless there is evidence of visible soil.
- After an aerosol-generating procedure (e.g. intubation), clean and disinfect horizontal surfaces around the patient. Clean and disinfect as soon as possible after the procedure.
- Once cleaning is completed, place all disposable cleaning items in the rubbish waste bag which is dedicated for infectious waste. Waste does not need any additional handling or treatment measures.

Floors

Instead of sweeping, begin with a damp mop to clean floors. Avoid using brooms as this will disperse dust into the air. Mop from cleaner to dirtier areas. Work in a systematic manner, proceeding from area farthest from the exit and working towards the exit.
Change/wash mop heads/floor cloths and buckets of cleaning and disinfectant solutions as often as needed (e.g. when visibly soiled, after every isolation room, every 1–2 hours) and at the end of each cleaning session. Use a 3-bucket system for floors:

First bucket with detergent and water

Second bucket with disinfectant

Third bucket for clean water for rinsing mops

Mopping steps

1. Insert the clean mop into first bucket, wring out and mop a portion of the floor using overlapping stroke, turning the mop head regularly (e.g. every 5–6 strokes).
2. After cleaning a small area (e.g. 3m x 3m), immerse the mop or floor cloth in the third bucket for rinsing and wring out. Repeat process from step 1 until you are finished mopping.
3. Once floor is dried, mop with disinfectant from the second bucket.

Cleaning equipment and supplies

Proper use and care of cleaning equipment is important to effective prevention control.

- Isolation rooms should have their own dedicated cleaning equipment and supplies which should be kept in that isolation room/area.
- Cleaning equipment including mop heads should be laundered using hot water and disinfected with sodium hypochlorite and completely dried before re-use.
- Cleaning equipment, such as buckets, should be emptied and cleaned with a new batch of chlorine bleach solution and allowed to dry completely before re-use.
- The use of spray bottles or equipment that might generate aerosols during usage should be avoided. Chemicals in aerosols may cause irritation to eyes and mucous membranes. Containers that dispense liquid such as 'squeeze bottles' can be used to apply detergent/disinfectants directly to surfaces or to cleaning cloths with minimal aerosol generation.
- Cleaning cloths should be laundered and dried between use. In outbreak situations, it is recommended that disposable cloths are used.

Disinfecting solutions

Chlorine (bleach) solution for disinfectant:

- The minimum concentration of chlorine is 5000 ppm or 0.5%. Liaise with your pharmacy department for mixing dilution. See Annex.
- Chlorine solutions should be made fresh daily, and gloves should be worn when handling and preparing solutions. Protective eyewear should be worn in case of splashing.
- Never mix chlorine solution with ammonia or any other cleanser.
- Follow manufacturer's instructions for application and proper ventilation.

- Check to ensure the product is not past its expiration date.
- **Disinfectants such as sodium hypochlorite and alcohol are used to disinfect inanimate surfaces and equipment after cleaning with a neutral detergent. Therefore, spraying of alcohol and chlorine all over your body will not kill the viruses that have already entered your body.**
- Alcohol is a flammable substance; it should be used in well-ventilated areas. Alcohol use should be limited to small surface areas e.g. stethoscopes, and ventilators, rubber stoppers of multi-dose vials and thermometers etc.

Monitoring

A facility-wide ongoing process to monitor environmental cleaning and disinfection is needed to ensure compliance with the Infection Control Plan.

Supervisors can monitor and reinforce compliance to ensure environmental surfaces are regularly and thoroughly cleaned during patient admission, care, and discharge.

It is recommended that healthcare facilities conduct regular audits and provide reports to managers. This information may be used to give staff feedback, adapt training processes, acquire appropriate supplies, and develop improvement plans.

Annex

How to make chlorine solutions for environmental disinfection (WHO EVD guideline 2014)

Using liquid bleach

Chlorine in liquid bleach comes in different concentrations. Any concentration can be used to make a dilute chlorine solution by applying the following formula:

$$\left(\frac{\%\ Chlorine\ in\ liquid\ bleach}{\%\ of\ Chlorine\ desired}\right) - 1 = Total\ parts\ of\ water\ for\ each\ part\ bleach$$[1]

Example: To make a 0.5% chlorine solution from 3.5% bleach[2]:

$$\left(\frac{3.5\%}{0.5\%}\right) - 1 = 7 - 1 = 6\ parts\ water\ for\ each\ part\ bleach$$

Therefore, you must add 1 part 3.5% bleach to 6 parts water to make a 0.5% chlorine solution.

Using bleach powder

If using bleach powder[3], calculate the amount of bleach to be mixed with each litre of water by using the following formula:

$$\left(\frac{\%\ Chlorine\ desired}{\%\ of\ Chlorine\ in\ bleach\ powder}\right) \times 1000 = Grams\ of\ bleach\ powder\ for\ each\ litre\ of\ water$$

Example: to make a 0.5% chlorine solution from calcium hypochlorite (bleach) powder containing 35% active chlorine:

$$\left(\frac{0.5\%}{35\%}\right) \times 1000 = 0.0143\ \times 1000 = 14.3\ grams\ powder\ per\ litre\ water$$

Therefore, you must dissolve 14.3 grams of sodium hypochlorite (bleach) powder in each litre of water used to make a 0.5% chlorine solution.

Formula for making a dilute solution from a concentrated solution

$$Total\ parts\ (TP)\ H_2O = \left(\frac{\%\ Concentrate}{\%\ Dilute}\right) - 1$$

Example: To make a 0.1% dilute solution from 5% concentrated solution:

$$TP\ H_2O = \left(\frac{5.0\%}{0.1\%}\right) - 1 = 50 - 1 = 49$$

Take one part concentrated solution and add to 49 parts of cool boiled water (filtered if necessary).

[1] "Parts" can be used for any unit of measure e.g. ounce, litre or gallon) or any container used for measuring such as a pitcher.
[2] In countries where French products are available, the amount of active chlorine is usually expressed in degrees chlorum. One degree chlorum is equivalent to 0.3% active chlorine.
[3] When bleach powder is used; the resulting chlorine solution is likely to be cloudy (milky)

References

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This document has been developed in accordance with global guidance and contextualized to the Pacific context by the Pacific Community (SPC) from the COVID-19 Pacific Joint Incident Management Team