

Environmental cleaning in healthcare facilities in context of COVID-19

Molly Patrick, M.Eng

Environmental Engineer

International Infection Control Program

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Disclaimer

The content of this presentation references the recommendations in WHO guidance and other relevant documents. The content is subject to revision as new evidence on COVID-19 becomes available.

Organizations should also consider if further changes are needed to reflect the local context and other cultural considerations.



Outline

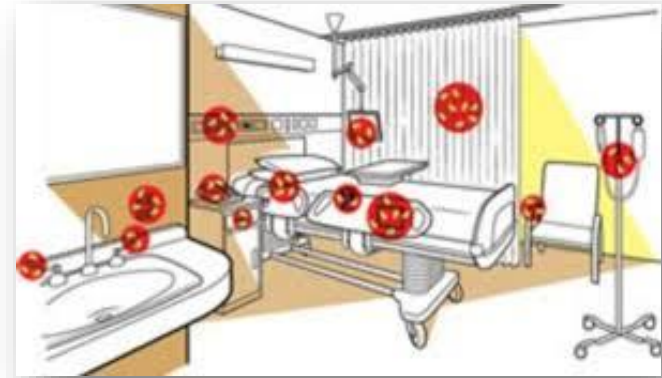
- Role of contaminated environment in pathogen transmission (contact transmission route)
- Best practices for environmental cleaning in health care
 - Specific techniques and materials for environmental cleaning in context of COVID-19

Key messages for environmental cleaning in context of COVID-19

1. Environmental cleaning is **important to mitigate the spread** of COVID-19 (contact transmission route)
2. SARS-CoV-2 **can survive on some environmental surfaces for days**, but environmental survival is low compared to many other important pathogens
3. Environmental cleaning using existing best practice methods and strategies is **effective against SARS-CoV-2**
4. SARS-CoV-2 is **susceptible to standard environmental cleaning and disinfection methods** (enveloped virus)

Environmental cleaning in health care

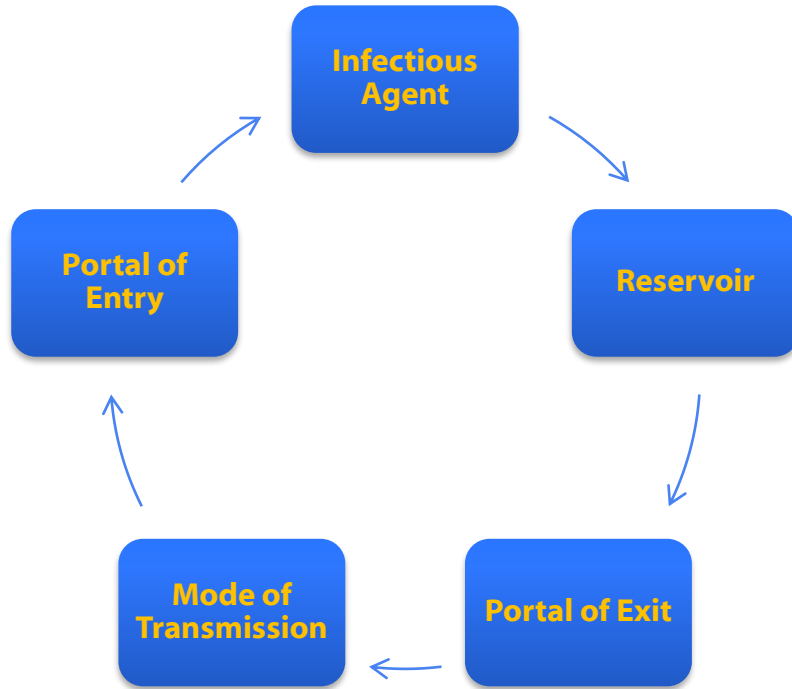
- Cleaning and disinfection (when needed based on risk) of **environmental surfaces** and **non-critical patient care equipment**
- **Environmental surfaces** include:
 - Tables, chairs, floors, walls, bedrails, light switches
- **Non-critical patient care equipment** means:
 - Comes into contact with intact skin only (not mucous membranes, for example)
 - Examples in a clinical setting: IV poles, blood pressure monitors, stethoscopes, mobile computers and workstations, incubators, wheelchairs



Emphasis is always on surfaces that are frequently touched by HCWs and/or patients
“high-touch surfaces”



Chain of Infection



- For an infection to spread, all links must be connected
- Breaking any one link, will stop disease transmission!

Primary modes of transmission – COVID-19 virus

Droplet:

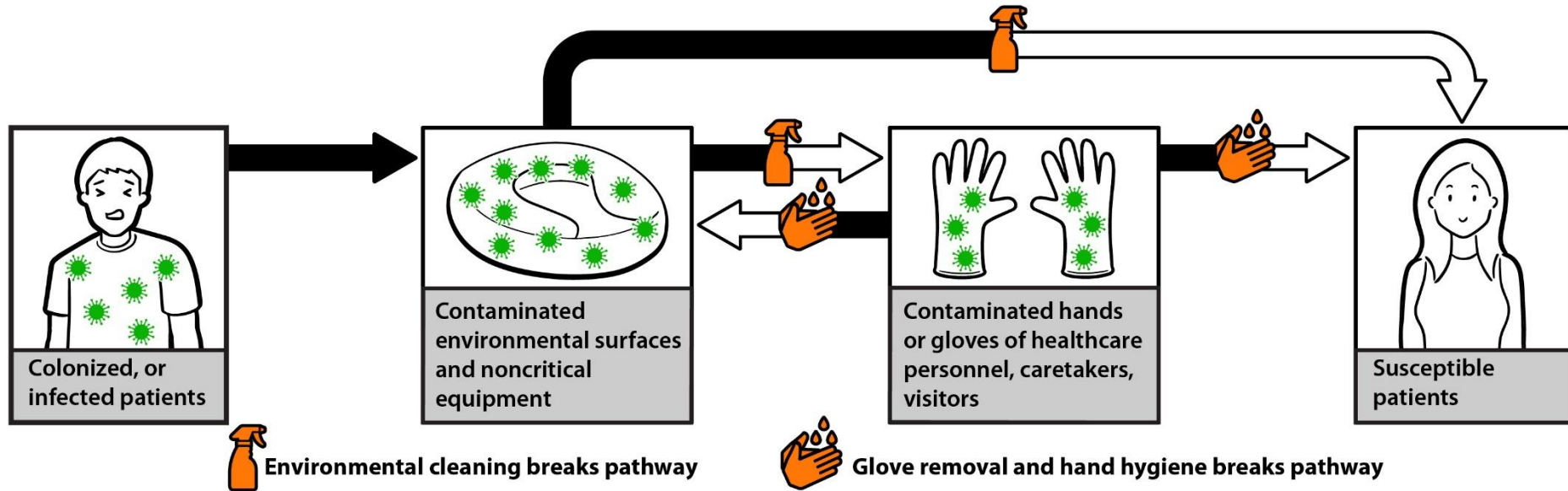
Respiratory droplets are generated when an infected person coughs or sneezes. Any person who is in close contact (within 1 m) with someone who has respiratory symptoms (coughing, sneezing) is at risk of being exposed to potentially infective respiratory droplets.

Contact:



Droplets may also land on surfaces where the virus could remain viable; thus, the immediate environment of an infected individual can serve as a source of transmission (contact transmission).

How do we break this chain of infection?

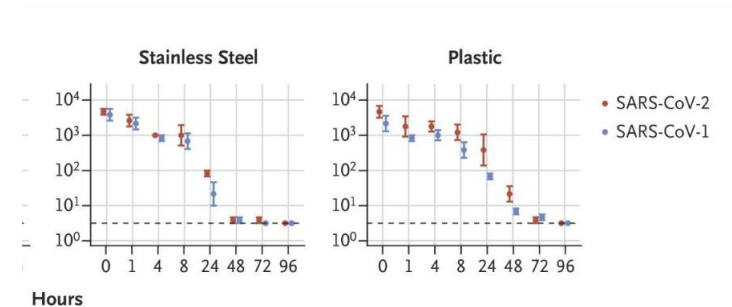


What do we know about environmental survival?

- Many clinically important healthcare pathogens can survive on surfaces for days to possibly months
- Laboratory-based studies (see table):
 - Actual survival based on temperature, humidity, surface type and other factors
- SARS-CoV-2 (laboratory studies):
 - 2-7 days (wood 2 days; plastic and stainless steel 7 days) (Chin et al, 2020)
 - ~ 4 days (plastic and stainless steel) (van Doremalen et al, 2020)

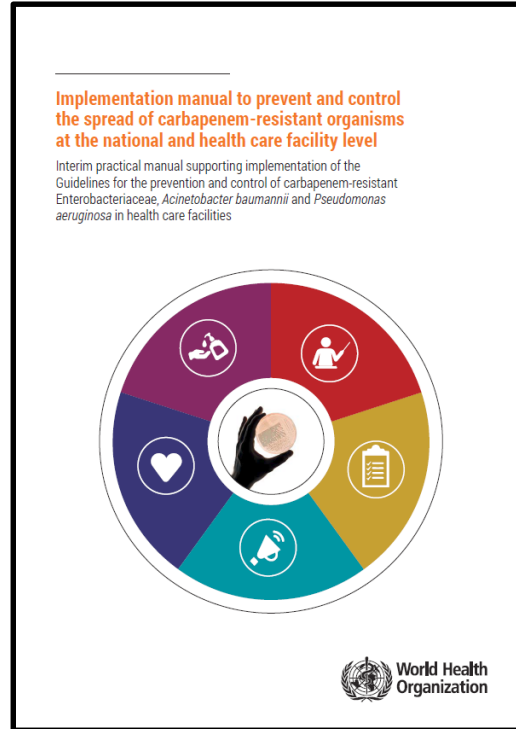
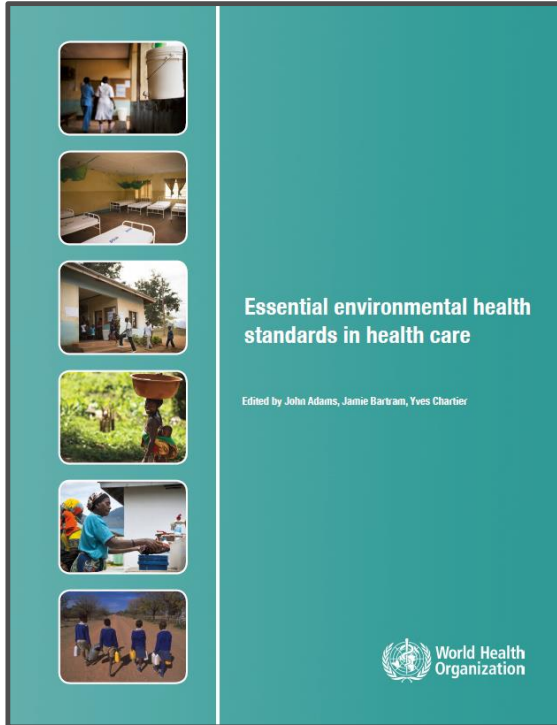
Organism	Survival time
Methicillin-resistant <i>Staphylococcus aureus</i>	7 days→7 mo
<i>Acinetobacter</i>	3 days→5 mo
<i>Clostridium difficile</i>	>5 mo
Vancomycin-resistant <i>Enterococcus</i>	5 days→4 mo
<i>Escherichia coli</i>	2 h–16 mo
<i>Klebsiella</i>	2 h→30 mo
Norovirus	8 h–7 days

(Dancer, 2014 adapted from Kramer, 2006)




(van Doremalen et al, 2020)

Key documents for environmental cleaning



WHO 2020 [Technical guidance on IPC / WASH for COVID-19](#)

Environmental cleaning is one of the Standard Precautions for infection prevention and control (IPC)

- Environmental cleaning requires a multi-modal approach
- For all types of healthcare facilities, best practices for cleaning programs should include:
 1. Organizational structures
 2. Staffing and training
 3. Policies and standardized procedures
 4. Supporting infrastructure and supplies
 5. Monitoring, audit and feedback
- These elements are needed for all types of facilities
- These are relevant no matter whether cleaning is provided by in-house services or contracted

Refer to CDC/ICAN Guidance for more information: <https://www.cdc.gov/hai/prevent/resource-limited/index.html>

Best Practices for Environmental Cleaning Programs

1. Organizational structures

- Administrative/leadership support:
 - Designated facility-based manager or focal person
 - Validation of cleaning policy
 - Annual budget
- Communication and integration of cleaning program:
 - Multisectoral planning committee
 - Routine meetings with key stakeholders
- Management and supervisory structures:
 - Cleaning program organizational chart
 - On-site supervisors



The focal point and on-site cleaning supervisors are key management personnel

Best Practices for Environmental Cleaning Programs

2. Staffing and training

- Formal staffing:
 - Job descriptions, performance standards
 - Adequate staffing levels
- Formal training:
 - Introduction to IPC
 - Practice and review
 - Workplace safety

Training best practices:

- Participatory
- Practical (hands-on)
- Appropriate literacy level
- Repeated annually (refresher)
- Conducted prior to staff working on their own
- Led by experienced trainers

TEACH CLEAN is a training package developed by The Soapbox Collaborative & the London School of Hygiene & Tropical Medicine. For free copy, visit:
<https://www.lshtm.ac.uk/research/centres/march-centre/soapbox-collaborative/teach-clean>

Lessons Learned from Training

TEACH-CLEAN Training Package: comprehensive participatory training in basic IPC & environmental hygiene to all staff who clean in healthcare facilities in low- and middle-income countries (LMICs)

Experiences from implementation in Gambia, India, Myanmar & Tanzania:

- Participatory approach greatly appreciated
- Important to consider including in training, healthcare professionals who clean and/or supervise cleaners
- Scheduling training can be challenging
- High turn-over of cleaners, so need for repeat training
- Important training is matched by regular availability of equipment and supplies
- Post-training supportive supervision is key, including reminders using illustrated guidelines

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HEALTH WORKERS WHO CLEAN ARE ENVIRONMENTAL HEALTH CHAMPIONS

Environmental cleaning is known to play a key role in reducing the global burden of healthcare associated infections (HAIs) and antimicrobial resistance (AMR). In line with WHO & UNICEF recommendations, system wide changes are necessary to establish improvements in environmental hygiene to strengthen infection prevention and control (IPC) and achieve global goals, including addressing:

- Training for all staff responsible for cleaning
- Resource availability
- Availability & monitoring of cleaning protocols & records
- Supportive supervision
- Increasing the emphasis on health for all

Participatory Training for a Cleaner Environment and Health for All

The **TEACH CLEAN** package presents information and materials required to deliver comprehensive, participatory training in environmental hygiene and IPC in healthcare facilities.

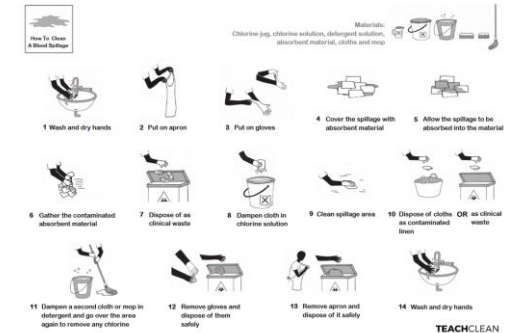
Tailored towards use within low-resource settings, TEACH CLEAN is a freely available, evidence and best practice based resource which is:

- Intended for use by organisations & individuals who want to improve knowledge & practices of those who clean
- Accessible for staff with limited literacy skills through its participatory approach to training
- Adaptable to the local context
- Suitable for a cascade approach to training (Training of Trainers)

The TEACH CLEAN package contains:

- A 'How to Train' instruction document and ToT modules on Supportive Supervision & Quality improvement
- Seven essential Clean Box training modules addressing IPC and environmental hygiene
- Competency Assessment Checklists
- Written and illustrated Cleaning Procedure Guidelines
- An Advocacy & Communications Resource Pack

TEACH CLEAN helps address a lack of formal training for those who clean and promotes IPC and WASH standards for a safer environment. It underpins quality health for all.



Best Practices for Environmental Cleaning Programs

3. Policies and standardized procedures

— Facility cleaning policy

- Reporting lines and responsibilities
- **Cleaning schedules**
- Training requirements
- Monitoring requirements
- Approved cleaning products, supplies and equipment

Type of Clean	Frequency	Person / Staff Responsible	Products/Technique	Additional Guidance / Description of Cleaning
Routine clean	At least daily	Cleaning staff	Clean (neutral detergent and water): <ul style="list-style-type: none"> • high-touch surfaces in the patient zone • handwashing sinks • floors 	In addition, clean low-touch surfaces on a scheduled basis (e.g., weekly)

— Standard operating procedures (SOPs) and job aids

- **Step-by-step process** for performing cleaning in each patient care area
- Should include all of the products, supplies and equipment required (including cleaning staff PPE)
- SOPs and job aids also needed for preparing cleaning and disinfectant products, reprocessing non-critical equipment

What are the recommended cleaning schedules in the context of COVID-19?

Patient area	Frequency	Person / staff responsible	Products/Supplies	Additional guidance
Triage area	At least twice daily	Environmental cleaning (EC) staff	Cleaning solution (neutral detergent and water); Disinfectant (alcohol, chlorine-based, other as approved*) *will address in more detail later in slides Freshly made solutions, cloths, and mops for each cleaning session. Discard/reprocess supplies after each cleaning session. Dedicated supplies for inpatient isolation areas. PPE: gowns and/or impermeable aprons, rubber gloves, medical mask, and eye protection (preferably face shield).	Focus on high-touch surfaces, then floors (last)
Inpatient rooms / cohort – occupied	At least twice daily; three times daily if possible (high-touch surfaces)	EC staff OR clinical staff if possible		Focus on high-touch surfaces, starting with shared/common surfaces, then move to each patient bed; use new cloth for each bed if possible
Inpatient rooms – unoccupied (terminal clean)	Upon discharge/transfer	EC staff		Low-touch surfaces, high-touch surfaces, floors (in that order); waste and linens removed, bed thoroughly cleaned and disinfected
Outpatient / Ambulatory Care rooms	After each patient visit and at least once daily terminal clean	Clinical staff (after each patient); Terminal clean (EC staff)		High touch surfaces to be disinfected after each patient visit; terminal clean as above (end of day)
Hallways / Corridors	At least twice daily	EC staff		High-touch surfaces (e.g., railings)
Patient toilets	Private (at least twice daily); Shared (at least three times daily)	EC staff		High-touch surfaces, including door handles, light switches, counters, faucets, then sink bowls, then toilets and finally floor (in that order)

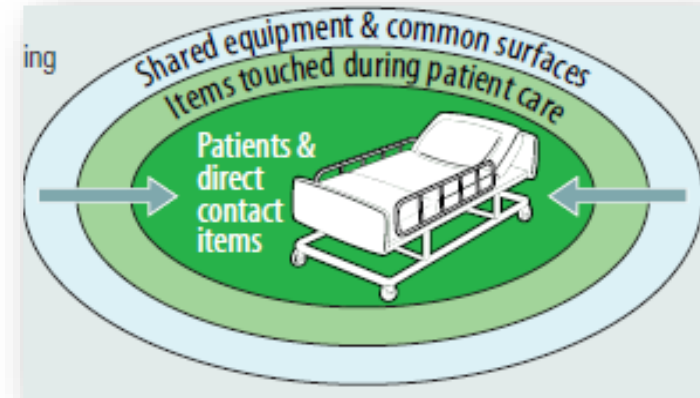
Priority!

Immediately attend to any body fluid spills prior to starting routine cleaning

Best practices for cleaning procedures

1. Proceed from cleaner to dirtier:

- Clean high-touch surfaces outside the patient zone before high-touch surfaces inside the patient zone
- Clean patient beds before patient toilets
- Clean low-touch surfaces before high-touch surfaces (terminal clean)
- Clean general patient areas before isolation areas



Example of a cleaning strategy from cleaner to dirtier areas

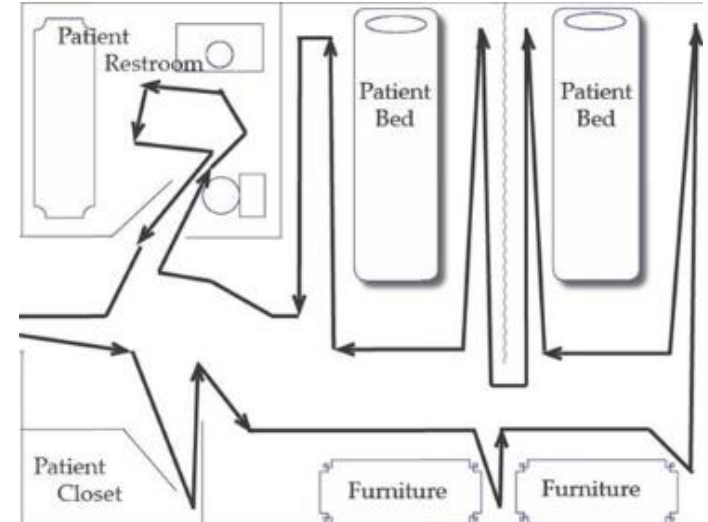
Best practices for cleaning procedures

2. Proceed from high to low (top to bottom):

- Clean bed rails before bed legs
- Clean environmental surfaces before floors

3. Proceed in a methodical, systematic manner:

- Left to right
- Clockwise or counterclockwise



Example of surface cleaning, moving in a systematic manner around the patient care area

Best practices for surface cleaning

- Use fresh cleaning cloths to start
- Change cleaning cloths when no longer saturated
- Change cleaning cloths between each patient zone (in high-risk areas)
- Make sure you have enough cleaning cloths to finish the cleaning session
- Never double-dip!



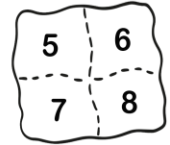
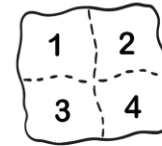
- 3** Submerge the folded cloth into cleaning solution only once, do not “double dip” as this will contaminate the solution



- 1** Start by folding the cloth in half



- 2** Then fold the cloth in half again



- 4** You now have a cloth with eight different cleaning surfaces

Switch to a different side after each one has been soiled. When all sides have been used, dispose of cloth appropriately as waste or laundry and use a new cloth to continue the task

(From Soapbox, 2018 “TEACH CLEAN”)

Best practices for floor cleaning

1. Display wet-floor sign
2. Immerse mop in bucket with cleaning solution and wring out
3. Mop in a figure eight, overlapping stroke, turn the mop head regularly (e.g., every 5-6 strokes)
4. After cleaning a small area (e.g., 3m x 3m), immerse mop in bucket with rinse water and wring out
5. Repeat from step 2

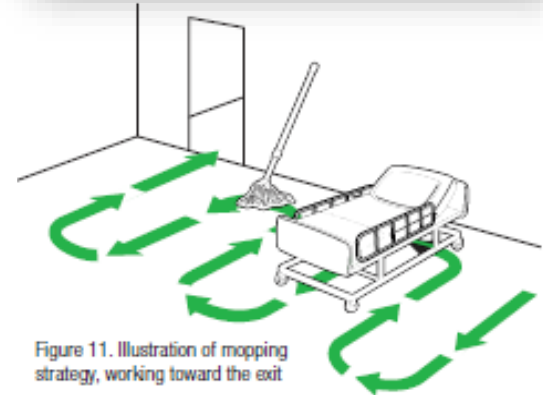


Figure 11. Illustration of mopping strategy, working toward the exit

Best Practices for Environmental Cleaning Programs

4. Supporting infrastructure and supplies

- Designated space at facility
 - Environmental cleaning services area
 - Decontamination / sluice area
- Water and wastewater services
 - Adequate water supply and wastewater management!
- Approved environmental cleaning products, supplies and equipment
- Procurement and supply management systems
 - Avoid stock-out of cleaning supplies and equipment
 - Furniture and patient equipment that can be cleaned



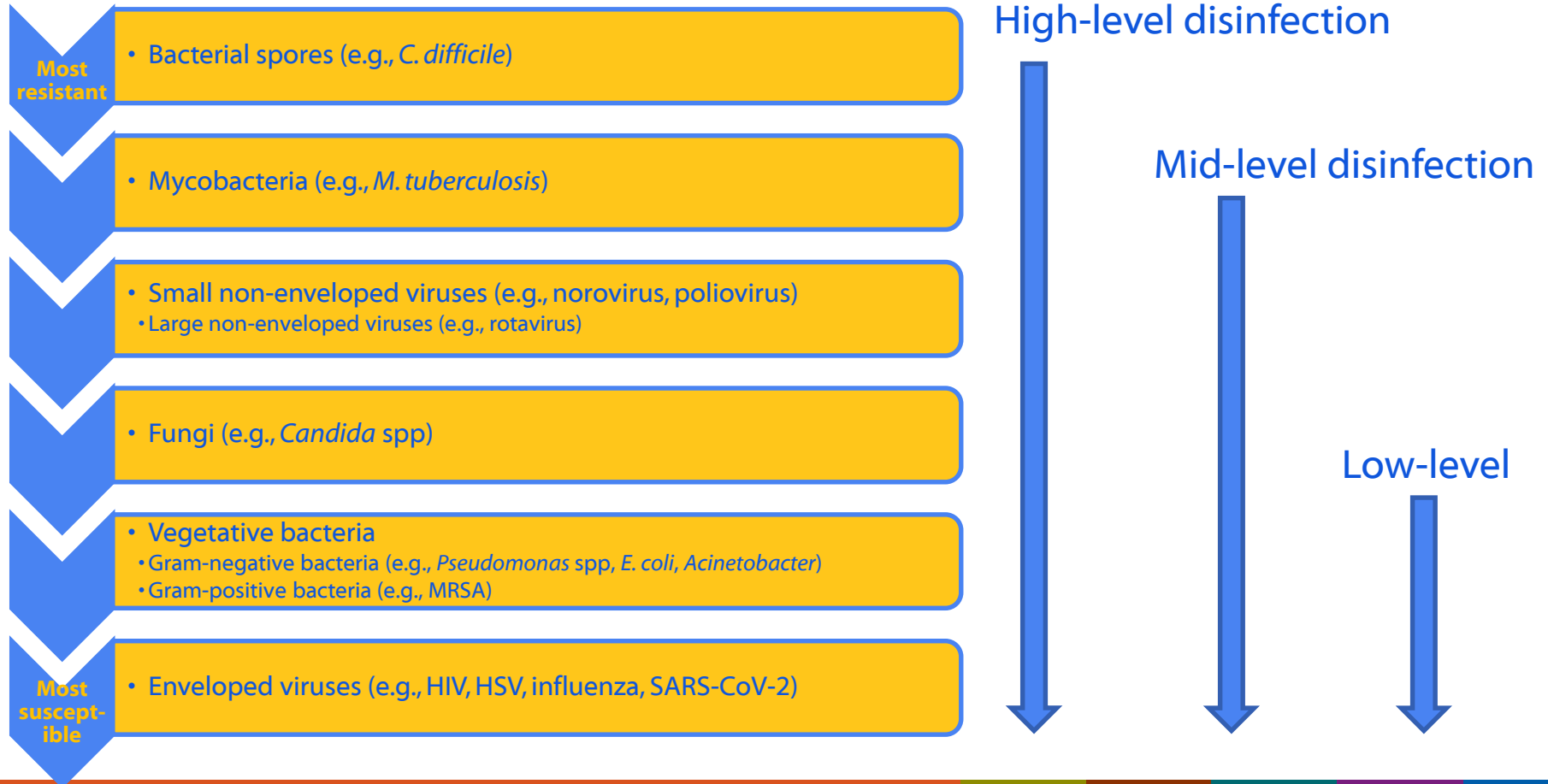
Cleaning and cleaning products

- **Cleaning:** the physical removal of foreign material (e.g., dust, soil) and organic material (e.g., blood, secretions, excretions, microorganisms). Cleaning physically removes rather than kills microorganisms. It is achieved with water, cleaning products and using 'mechanical action' (e.g., friction, scrubbing).
 - Cleaning is always the first step in environmental cleaning
 - Under routine operations, generally only cleaning is required!
- **Cleaning products:** liquids, powders, sprays, or granules that remove organic material (e.g., dirt, body fluids) from surfaces and suspend grease or oil. Can include liquid soap, enzymatic cleaners, and **detergents**.
 - For most surface cleaning procedures: neutral detergent (pH 6-8), easily soluble in warm and cold water is best

Disinfection and disinfectant products

- **Disinfection:** a chemical process for inactivating microorganisms (with the exception of bacterial spores) on inanimate objects. Disinfection occurs after the cleaning process.
 - **Low-level disinfection:** inactivates most vegetative bacteria, some fungi, and some viruses, but does not kill more hardy viruses (e.g., non-enveloped), bacterial genus (e.g., mycobacteria), or bacterial spores
 - **Mid-level disinfection:** kills inactivate vegetative bacteria, including mycobacteria, most viruses, and most fungi, but might not kill bacterial spores
 - **High-level disinfection:** kills all microorganisms, with the exception of small numbers of bacterial spores (**not used for environmental cleaning, used for invasive device reprocessing**)
- **Disinfectants:** chemical compounds that inactivate (i.e., kill) pathogens and other microbes. **All organic material and soil must be removed by a cleaning product before application of disinfectants.**
 - **When disinfectants are required:** low-level disinfectants are used (mid-level disinfectants are some times required)
 - Some products combine a cleaner with a disinfectant (combined detergent-disinfectants)
 - There are some situations where separate cleaning and disinfectant products are required

Microbial disinfectant hierarchy – intrinsic resistance



Disinfectants

Healthcare disinfectants:

- alcohols, chlorine and chlorine compounds, standard and improved hydrogen peroxide, phenolics, iodophors, peracetic acid, and quaternary ammonium compounds.

To assess appropriateness of disinfectants for the task, look at:

- Active ingredient(s)
- Label claim (spectrum of activity, test organisms)
- Remember the disinfectant hierarchy!

Active ingredient(s)	Spectrum of activity	Level of disinfection
Quaternary ammonium compounds (e.g., alkyl dimethyl benzyl ammonium chloride) (0.1-1%) *newer formulations dimethyl ammonium bromide	Bactericidal Fungicidal	Low-level
Chlorine-releasing agents (e.g., sodium or calcium hypochlorite, sodium dichloroisocyanurate (NaDCC)) at 500ppm	Bactericidal Fungicidal	
Alcohols (60-80%) (e.g., isopropyl alcohol, ethyl alcohol/ethanol) *Ethyl alcohol doesn't inactivate poliovirus or HAV, but does adenovirus, enterovirus, rhinovirus	Bactericidal Fungicidal Virucidal* Mycobactericidal	Mid-level
Chlorine-releasing agents (e.g., sodium or calcium hypochlorite, NaDCC) at 1,000ppm	Bactericidal Fungicidal Virucidal Mycobactericidal	
Improved hydrogen peroxide (e.g., 0.5% enhanced action formulation hydrogen peroxide, 3% hydrogen peroxide)	Bactericidal Fungicidal Virucidal Mycobactericidal	
Hypochlorite at 5,000ppm; Hydrogen peroxide at 4-5%	Bactericidal Fungicidal Virucidal Mycobactericidal Sporicidal	High-level (Sporicidal) *not used routinely*

What are the disinfectants we should use in healthcare facilities in the context of COVID-19?

- Disinfection of environmental surfaces in healthcare facilities should consider not only SARS-CoV-2, but also other clinically important healthcare pathogens
 - Hospitalized patients at increased risk of other infections due to underlying medical conditions and invasive procedures
- The following disinfectants and defined concentrations can be used on environmental surfaces to achieve a >3 log reduction of human coronavirus (Kampf, 2020), and they are also proven to be effective against other clinically relevant pathogens in healthcare settings (**contact time ≥ 1 minute**):
 - Ethanol $\geq 70\%$
 - Hydrogen peroxide 0.5%
 - Hypochlorite from 0.1% (1,000 ppm)
- Other disinfectants can be used, provided they have demonstrated action against other human coronaviruses or harder to kill organisms (e.g., non-enveloped viruses) for healthcare settings, according to the local authorities or regulatory bodies (**use manufacturer recommended contact time**).



Use 5,000ppm on hardy pathogens when facility has history with hardy pathogens (*C. auris*, *C. difficile*)

Use 5,000ppm for large blood and body fluid spills

Best practices for environmental cleaning products

- A **master list of facility-approved products** should be developed in the facility policy, as well as approved suppliers
- The number of approved products should be **minimized** to:
 - Simplify the environmental cleaning process
 - Simplify training requirements for staff
 - Reduce potential for errors in preparation and use
- Products should be **stored to prevent exposure and degradation**



Other factors to consider

- Contingency planning
- Supply chain
- Ease of use & preparation
- Safety
- Environmental disposal

Preparing cleaning and disinfectant solutions

- Prepare solutions in **dedicated environmental cleaning services area**
- Provide training and simple instructions for preparing solutions
 - Pictorial job aids (e.g., posters) helpful if possible
- Provide any required PPE needed for preparing solutions according to the product safety data sheet
- If feasible, use an automatic dispensing system to prepare solutions (calibrated regularly)
 - If preparing manually, **use standardized containers for measuring**
- If feasible, use test strips to confirm correct concentrations


Preparing chlorine solutions

- Always wear PPE when preparing and using chlorine-based solutions
- Store in a covered, plastic container away from direct sunlight
- Test concentration every day (test strips) or make new solution every day
- NEVER mix chlorine solutions with any other cleaning products

How to Make 0.1% (1,000ppm) Chlorine Solution

Use 0.1% (1,000ppm) chlorine solution to disinfect frequently touched surfaces and items.
Make new 0.1% chlorine solution every day. Throw away any leftover solution from the day before.

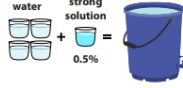
Proceed with **only one** of the following: 2a or 2b or 2c



1
Make sure to wear required PPE.


From Strong (0.5%) Solution

4 parts water + 1 part strong solution = 0.5%




2a
Pour 4 parts water and 1 part strong (0.5%) solution into a bucket.

OR




2b
Add TWO tablespoons (30g) of high-test hypochlorite (HTH) (70%) to 20 liters of water in a bucket.

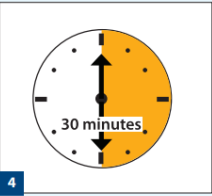
OR




2c
Add FOUR tablespoons (60g) of chlorine powder (35%) to 20 liters of water in a bucket.




3
Stir well for 10 seconds, or until chlorine powder/granules have dissolved.




4
Wait 30 minutes before use.




5
Label bucket "0.1% Chlorine Solution - Disinfecting."




6
Cover bucket with lid. Do not store in direct sunlight.




Tablespoon




Measuring cup or liter bottle




Bucket with lid and spigot




Water




Strong (0.5%) chlorine solution




OR 70% HTH



OR 35% chlorine powder



Stick for stirring




Label


CS-216419-B

Supplies Needed

WARNING



Do NOT mix chlorine solution with other cleaning products.

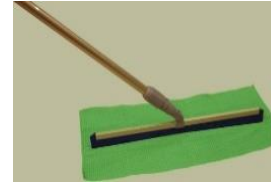


Do NOT put chlorine solution in mouth or eyes.

<https://www.cdc.gov/coronavirus/2019-ncov/downloads/make-chlorine-solution.pdf>

Environmental cleaning supplies and equipment

- Surface cleaning: cloths can be cotton or microfiber
 - Different colored cloths should be stocked to allow color-coding, for example:
 - One color for cleaning and one color for disinfection steps
 - One color for toilets, one color for general patient areas, **one color for isolation areas**
- Floor cleaning: mop heads or floors cloths can be used (cotton or microfiber)
 - Two or three-buckets needed, depending on need for floor disinfection
 - Always use wet floor sign!
- **Dedicated supplies for COVID-19 wards!**



Personal Protective Equipment (PPE) for Cleaning

Hand hygiene should always be performed, before and after PPE removal

Type of cleaning task	Required personal protective equipment for cleaning staff
Routine cleaning (standard precautions)	None (unless spills or contamination risk—see below)
Terminal cleaning (standard precautions)	Reusable rubber gloves
Blood and body fluid spills and high contamination risk areas (e.g., cleaning bed of an incontinent patient, labor and delivery wards)	Gown and/or plastic apron Reusable rubber gloves Face shield or face mask and goggles (if splash risk or large spill)
Droplet precautions (routine and terminal cleaning)	Gown and/or plastic apron Reusable rubber gloves Face shield or face mask and goggles
Contact precautions (routine and terminal cleaning)	Gown and/or plastic apron Reusable rubber gloves
Airborne precautions (routine and terminal cleaning)	Respirator (N95 or FFP2), fit tested Reusable rubber gloves
Preparation of disinfectant products and solutions	According to specifications in SDS (manufacturer instructions) If SDS not available, then: Chemical-resistant gloves (e.g., nitrile) Gown and/or apron Face shield or face mask and goggles



Cleaning staff PPE for COVID-19

Reprocessing reusable supplies and equipment (including PPE)

Item	Process	Product	Other
Cleaning cloths, mop heads, cloth gowns, uniforms	<ol style="list-style-type: none"> 1. Immerse in soap and water solution, use mechanical action (scrubbing) 2. Immerse in disinfectant solution, then rinse with clean water 3. Dry fully 	Soap and warm water; 0.05% chlorine solution (30 minutes) or other approved disinfectant (manufacturer contact time)	<p>Lay items to dry in a clean and dry area to prevent recontamination</p> <p>Position mops with the head up to allow the mop head to fully dry</p> <p>Launder cloths and mops separate from gowns and uniforms</p>
Buckets, plastic apron, rubber gloves and boots	<ol style="list-style-type: none"> 1. Immerse in or wipe with soap and water solution, use mechanical action (scrubbing) 2. Immerse in or wipe with disinfectant solution, then rinse with clean water 3. Dry fully 	Soap and warm water; 0.1% chlorine solution (> 1 minute) or other approved disinfectant (manufacturer contact time)	<p>Store buckets and boots upside down to allow to fully dry</p> <p>Hang gloves with fingers up to allow to fully dry</p>
Eye protection (goggles, face shields)	<ol style="list-style-type: none"> 1. Immerse in or wipe with soap and water solution, use mechanical action (scrubbing) 2. Immerse in or wipe with disinfectant solution, then rinse with clean water 3. Dry fully 	Soap and warm water; 0.1% chlorine solution (> 1 minute) or other approved disinfectant (manufacturer contact time)	Chlorine-based disinfectant recommended over alcohol, as alcohol may damage and discolor plastic and deteriorate glues over time; note that it may also remove anti-glare and anti-fogging properties of the eye protection

Best Practices for Environmental Cleaning Programs

5. Routine monitoring and feedback

— Routine monitoring

- Use objective (e.g., fluorescent markers) over subjective methods (e.g., visual assessment of cleanliness)
- Use both direct (e.g., performance observation) and indirect methods (e.g., marking with fluorescent gel)

— Direct feedback

- Timely feedback to staff
- Used for coaching, inform training needs
- Also monthly reporting, summary, trends

CDC Environmental Checklist for Monitoring Terminal Cleaning¹

Date: _____
 Unit: _____
 Room Number: _____
 Initials of ES staff (optional): _____

Exclude the following priority sites for each patient room:

High Touch Room Surfaces	Cleaned	Not Cleaned	Not Present in Room
Bedside control			
TV controls			
TV pole controls			
Call light / button			
Lighting			
Bedside table handle			
Chair			
Room sink			
Room light switch			
Room door / door knob			
Bathroom door / door knob			
Bathroom light switch			
Bathroom handle / toilet			
Bathroom sink			
Toilet seat			
Toilet flush handle			
Toilet bidet / sprayer			

Exclude the following additional sites if these equipment are present in the room:

High Touch Room Surfaces	Cleaned	Not Cleaned	Not Present in Room
TV touch control			
Medication / medical carts			
Mobile medical / medical trash carts			
Mobile medical / medical tables			
Ventilator gas manifold			


Mark the monitoring method used:

☐ Direct observation ☐ Fluorescent gel ☐ ATP system ☐ Agar plate cultures

Selection of detergent and disinfectant should be according to hospital policy and prescriber's instructions. Cover is to be used after use of chemical disinfectant service staff for bedlock or linen.

Use most frequently contaminated and touched by patients and/or healthcare workers

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 Division of Healthcare Quality Improvement



For assessing:	Use these methods:
Cleaning practice	<ul style="list-style-type: none"> - Performance observation - Visual assessment - Fluorescent markers
Cleanliness	<ul style="list-style-type: none"> - ATP system (residual bioburden) - Environmental cultures (agar plate, swab)

Summary of guidance

1. Implementing environmental cleaning according to best practices requires **multiple strategies and strong organizational/leadership support**
2. Staff who perform cleaning functions should always be **trained** and should be **given supportive supervision** through monitoring and feedback
3. Environmental **cleaning schedules and protocols** should be developed for all patient areas **based on risk-level**
4. Environmental cleaning requires a **standardized process**, always apply the best practices for cleaning techniques (clean to dirty, high to low, systematic order)
5. Cleaning products and disinfectants should be **carefully selected and managed** at the facility level

Key messages for environmental cleaning in context of COVID-19

1. Environmental cleaning is **important to mitigate the spread** of COVID-19 (contact transmission route)
2. SARS-CoV-2 **can survive on some environmental surfaces for days**, but environmental survival is low compared to many other important pathogens
3. Environmental cleaning using existing best practice methods and strategies is **effective against SARS-CoV-2**
4. SARS-CoV-2 is **susceptible to standard environmental cleaning and disinfection methods** (enveloped virus)

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For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

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