African Union

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Safeguarding Africa's Health

Africa Centres for Disease Control and Prevention

Guidance on Environmental decontamination in the context of COVID-19

+251 11 551 7700 africacdc@africa-union.org www.africacdc.org africacdc @AfricaCDC

Scope

This guidance details basic decontamination principles and procedures that should be followed to decontaminate the physical environment in the context of the coronavirus disease 2019 (COVID-19) pandemic. Surface contamination and transmission risk all differ by the type of setting and the volume of people that frequent each setting (e.g. healthcare facilities, public transport, and other busy facilities/workplaces), even though the principles of environmental decontamination remain the same. As we cannot cover every situation here, this guidance can be adapted for individual situations as they arise. This guidance is focused on how to practically implement environmental decontamination and should be delivered as a part of a planned and resourced program,(1) which is integrated fully with other COVID-19 response efforts.

This guidance covers the following elements regarding environmental decontamination:

- Principles of Environmental Decontamination
- Chemicals Used for Environmental Decontamination
- Environmental Decontamination Equipment
- Environmental Decontamination in Healthcare Facilities
- Environmental Hygiene in Non-healthcare Settings
- Linen Management

Background

SARS-CoV-2 is the virus that causes COVID-19. SARS-CoV-2 is an enveloped virus that can be destroyed by disruption of its outer fatty lipid layer. It is susceptible to detergents and soap as well as all classes of disinfectant if they are used correctly.

It is primarily transmitted through droplet transmission from asymptomatic or symptomatic people coughing or sneezing and their respiratory secretions contacting a susceptible person's nose, mouth, or eyes. Respiratory droplets may also land on surfaces and be transferred via contact with the hands of a susceptible person to their nose, mouth, or eyes. It is unclear at this stage, the proportion of transmission that is related to direct droplet transmission versus contact with contaminated surfaces, however environmental decontamination is vital to minimize the risk of transmission by this route, especially given that the virus can survive on some surfaces for up to three days (2).

Aerosol generating procedures in healthcare settings can generate small aerosols that can put healthcare workers at special risk. In these settings, airborne precautions are needed when procedures are performed.

Aerosol generating procedures include:

- intubation, extubation and related procedures (e.g. manual ventilation and open suctioning)
- cardiopulmonary resuscitation
- bronchoscopy (unless carried out through a closed-circuit ventilation system)
- surgery and post-mortem procedures where high-speed devices are used
- dental procedures
- non-invasive ventilation (NIV) (e.g. bilevel positive airway pressure ventilation (BiPAP))
- continuous positive airway pressure ventilation (CPAP)
- high frequency oscillatory ventilation (HFOV)
- induction of sputum (3)

Good environmental hygiene is one of many critical elements of infection prevention and control (IPC) for COVID-19 and should be implemented in combination with measures like hand and respiratory hygiene and physical distancing (4,5,6).

Principles of Environmental Decontamination

Cleaning is the process of removing physical soil, dirt oils or stains using soap or detergent and water. During this process microorganisms may be removed or destroyed but not all.

Disinfection uses chemical or other means (e.g. heat or UV-C light) to destroy most remaining microorganisms. Chemical disinfection is not effective on dirty surfaces as dirt inhibits their ability to contact and destroy microorganisms, thus cleaning should always precede disinfection.

Note: Widespread spraying of disinfectant in public areas or outdoors for the control of COVID-19 it is not recommended neither is spraying or use of chemical disinfectant on individuals recommended under any circumstances. See position statement for further details (7)

Chemicals Used for Environmental Decontamination (8)

Chemical	Usage	Considerations	Contact time	Concentration
Detergent 	Cleaning physical dirt and soiling	Must be combined with water and friction to work, will remove most micro-organisms but not all.	N/A	No strict concentration, use enough detergent to remove dirt.
Alcohol 	Disinfecting clean surfaces (e.g., medical equipment that may be damaged by contact with oxidizing agents like chlorine)	Toxic; must be stored out of reach of children; flammable	1 minute or until the surface is dry	70% or higher (This differs from 60% alcohol-based hand rub for hand hygiene)
Chlorine household bleach (concentration 5.25% liquid) 	Disinfecting surfaces at home	Toxic if ingested. Store safely and do not mix with any ammonia containing products. Can degrade metal and cloth, leaves a residue on surfaces.	1 minute	For soaking linen: 0.05% = 200ml bleach to 20L of water For disinfecting surfaces : 0.1% = 400ml bleach to 20L of water

Chemical	Usage	Considerations	Contact time	Concentration
Chlorine high test hypochlorite (HTH 70% powder) 	Disinfecting large surfaces in health facilities	Very high concentration powder, not to be stored in the home. Store safely and do not mix with any ammonia containing products. Can degrade metal and cloth, leaves a residue on surfaces.	1 minute	For soaking linen: 0.05% = 1 tsp of powder to 20L of water For disinfecting linen: 0.1% = 2 tsp of powder to 20L of water
Quaternary ammonium compounds (e.g. KIK, 'G' or Lysol disinfectant) 	Disinfecting clean surfaces (e.g. medical equipment that may be damaged by contact with oxidizing agents like chlorine)	Toxic; store out of reach of children.	5 minutes	As per manufacturer's instructions
Detergent / disinfectant combination 	Cleaning and dis-infection in one process, still requires physical friction to remove dirt.	Various combinations on the market, see packet instructions	Variable according to combination	As per manufacturer's instructions

Environmental Decontamination Equipment

Item	Description
Mops and buckets	Ideally different equipment separated for different areas (e.g. kitchens and latrines).
Microfibre cleaning cloths	Ideally microfibre (as they hold an electrostatic charge and trap dirt in the fibres); if microfibre are not available, clean cotton cloths may be used instead. Ideally different equipment separated for different areas.
Buckets	For cleaning solutions and to make up disinfectant.
Measuring jug or spoon	To make up disinfectant solutions.

Disposable or reusable cleaning materials may be used. Disposables if there is a regular supply chain and sufficient finances to replace cleaning cloths and mop heads. Otherwise reusable cleaning materials are more sustainable and cost efficient. These must be decontaminated in between each use and stored appropriately. Storage areas are essential in healthcare and large public facilities like schools to keep cleaning materials in good condition.

Brushes/brooms should never be used in clinical areas and should not be used in any context where COVID-19 is suspected. Brushes create dust and can move contamination around and onto other surfaces. Floors should be damp mopped to control dust before wet mopping to remove dirt or spills.

Cleaning staff should also be provided appropriate PPE, see PPE guidance for more details.

Environmental Decontamination in Healthcare Facilities

Healthcare settings should be cleaned routinely as well as after the discharge of a COVID-19 patient. Standards of environmental hygiene should be set locally and supervised, with regular training provided to cleaning staff. Cleaning records should be considered to provide a level of assurance that cleaning is being conducted in line with local policy.

- Cleaning staff should always have access to appropriate PPE (5) before commencing work
- Hand hygiene should be conducted before and after cleaning
- The process of cleaning should include ventilation of the area before cleaning commences.
- No medical procedures should be conducted in the area at the same time as cleaning.
- Remove all dirty linen for washing before cleaning of furniture or floors
- Clean all surfaces carefully before disinfection with an appropriate disinfectant. Pay particular attention to high-touch surfaces.
- Clean and disinfect all toilets and sanitary facilities, preferably using specific cleaning materials for these areas.
- Clean furniture and beds from top to bottom.
- Clean from the cleanest areas to towards the dirtiest using separate buckets with cleaning solution and for rinsing the mop or cloth
- Dispose of any waste from cleaning into the appropriate waste stream
- Clean and store cleaning materials properly

These principles should be followed alongside local guidelines for linen management, waste management, hand hygiene and management of body fluid spills.

Environmental Hygiene in Non-healthcare Settings.

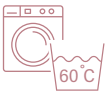
Non-health care settings pose some challenges as there may be soft surfaces like carpets and furnishings that are difficult to decontaminate. These should be avoided as far as possible in high traffic public areas like schools and transport to facilitate environmental hygiene. It may not be obvious that COVID-19 cases have passed through public areas, so it is key that frequent environmental hygiene is conducted to minimize any risk of cross transmission. Frequency of cleaning may vary according to the level of traffic, but not less than once daily.

- Cleaning staff should always have access to appropriate PPE before commencing work (5)
- Hand hygiene should be conducted before and after cleaning
- The area should be ventilated of the area before cleaning.
- Remove any small items or rubbish from surfaces to facilitate cleaning.
- Clean all surfaces carefully before disinfection with an appropriate disinfectant. Pay particular attention to high touch surfaces.
- Clean and disinfect all toilets and sanitary facilities, preferably using specific cleaning materials for these areas.
- Clean furniture and other surfaces from top to bottom.
- Clean from the cleanest areas to towards the dirtiest using separate buckets with cleaning solution and for rinsing the mop or cloth
- Dispose of any waste in a covered waste bin or bag
- Clean and store cleaning materials properly

Linen Management

Textiles (bed linen or clothes) that have been contaminated with SARS-CoV-2 should be decontaminated either by laundering in a machine with detergent at high temperature or by washing at a lower temperature and then taking other actions to kill any remaining virus.

Options are detailed below.

	**Machine wash with detergent above 60deg C**	
	Machine wash with detergent below 60deg C with specific laundry disinfectant added	
	Machine wash with detergent below 60deg C	Then soak in 0.05% chlorine for 10 mins, then rinse in plain water, or iron with a hot iron
	**Hand wash**	Then soak in 0.05% chlorine for 10 mins, then rinse in plain water, or iron with a hot iron

References

1. WHO 2018, Core components for IPC, https://www.who.int/infection-prevention/tools/core-components/en/
2. WHO; 2020; Cleaning and disinfection of environmental surfaces in the context of COVID-19: Interim guidance. Online at: https://www.who.int/publications-detail/cleaning-and-disinfection-of-environmental-surfaces-inthe-context-of-covid-19
3. Public Heath England. (2016) Infection control precautions to minimise transmission of acute respiratory tract infections in healthcare settings; https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/585584/RTI_infection_control_guidance.pdf
4. WHO; 2020; Infection prevention and control during healthcare when COVID-19 is suspected file:///C:/Users/emilio.hornsey/Downloads/WHO-2019-nCoV-IPC-2020.3-eng.pdf
5. Africa CDC COVID-19 Guidance on use of personal protective equipment for different clinical settings and activities; https://africacdc.org/download/covid-19-guidance-on-use-of-personal-protective-equipment-for-different-clinical-settings-and-activities/
6. Africa CDC physical distancing guidelines; 2020; https://africacdc.org/download/guidance-on-community-social-distancing-during-covid-19-outbreak/
7. Africa CDC; Position Statement on Human Disinfection
8. List of disinfectants that are effective against SARS-COV2. US Environmental Protection Agency; Available at: https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2

Africa Centres for Disease Control and Prevention (Africa CDC),
African Union Commission

Roosevelt Street W21 K19, Addis Ababa, Ethiopia

+251 11 551 7700 africacdc@africa-union.org www.africacdc.org africacdc @AfricaCDC