ECDC TECHNICAL REPORT

Interim guidance for environmental cleaning in non-healthcare facilities exposed to 2019-nCoV

7 February 2020

Scope of this document

This document aims to provide guidance about the environmental cleaning in non-healthcare facilities (e.g. rooms, public offices, transports, schools, etc.) where 2019 novel coronavirus (2019-nCoV) confirmed cases have been before being admitted to hospital.

This guidance is based on the current knowledge about the 2019-nCoV and evidence originating from studies on other coronaviruses.

Target audience

Competent bodies in EU/EEA Member States.

2019-nCoV

The causative agent involved in the current outbreaks of 2019-nCoV acute respiratory disease, the 2019-nCoV (genus: *Betacoronavirus*), belongs to the family of *Coronaviridae*, a large family of enveloped, positive-sense single-stranded RNA viruses. Coronaviruses are transmitted in most instances through large respiratory droplets and contact transmission, but other modes of transmission have also been proposed.

The time of survival and the conditions affecting the 2019-nCoV viability in the environment are currently unknown. According to studies assessing the environmental stability of other coronaviruses, the Severe Acute Respiratory Syndrome coronavirus (SARS-CoV) is estimated to survive several days in the environment and the Middle East Respiratory Syndrome-related coronavirus (MERS-CoV) more than 48 hours at an average room temperature (20°C) on different surfaces [1-3].

Environmental cleaning options

Due to the potential survival of the virus in the environment for several days, the premises and areas potentially contaminated with the 2019-nCoV should be cleaned before their re-use, using products containing antimicrobial agents known to be effective against coronaviruses. Although there is lack of specific evidence for their effectiveness against 2019-nCoV virus, cleaning with water and household detergents and use of common disinfectant products should be sufficient for general precautionary cleaning.

Several antimicrobial agents have been tested against different coronaviruses (Table 1). Some of the active ingredients, e.g. sodium hypochlorite (contained in the household bleach) and ethanol are widely available in non-healthcare and non-laboratory settings.

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A recent paper which compared different healthcare germicides [4], found that those with 70% concentration ethanol had a stronger effect on two different coronaviruses (mouse hepatitis virus and transmissible gastroenteritis virus) after one minute contact time on hard surfaces when compared with 0.06% sodium hypochlorite. Tests carried out using SARS-CoV showed that sodium hypochlorite is effective at a concentration of 0.05 and 0.1% after five minutes, when it is mixed to a solution containing SARS-CoV [5]. Similar results were obtained using household detergents containing sodium lauryl ether sulphate, alkyl polyglycosides and coco-fatty acid diethanolamide [5].

Table 1. Antimicrobial agents effective against different coronaviruses: human coronavirus 229E (HCoV-229E), mouse hepatitis virus (MHV-2 and MHV-N), canine coronavirus (CCV), transmissible gastroenteritis virus (TGEV), and Severe Acute Respiratory Syndrome coronavirus (SARS-CoV)

Antimicrobial agent	Concentration	Coronaviruses tested	Reference
Ethanol	70%	HCoV-229E, MHV-2, MHV-N, CCV, TGEV	[4,6,7]
Sodium hypochlorite	0.1-0.5% 0.05-0.1%	HCoV-229E SARS-CoV	[6] [5]
Povidone-iodine	10% (1% iodine)	HCoV-229E	[6]
Glutaraldehyde	2%	HCoV-229E	[6]
Isopropanol	50%	MHV-2, MHV-N, CCV	[7]
Benzalkonium chloride	0.05%	MHV-2, MHV-N, CCV	[7]
Sodium chlorite	0.23%	MHV-2, MHV-N, CCV	[7]
Formaldehyde	0.7%	MHV-2, MHV-N, CCV	[7]

Cleaning approaches

The use of 0.1% sodium hypochlorite (dilution 1:50 if household bleach at an initial concentration of 5% is used) after cleaning with a neutral detergent is suggested for decontamination purposes, although no data on the effectiveness against the 2019-nCoV are available. For surfaces that could be damaged by sodium hypochlorite, 70% concentration of ethanol is needed for decontamination after cleaning with a neutral detergent.

Cleaning should be performed using the proper personal protective equipment (PPE). The correct donning and doffing of PPE should be followed; further information on the donning and doffing procedures can be found in the ECDC Technical Document 'Safe use of personal protective equipment in the treatment of infectious diseases of high consequence' [8].

Disposable PPE should be treated as potentially infectious material and disposed according to the national rules. The use of disposable or dedicated cleaning equipment is recommended; non-single use PPE should be decontaminated using the available products (e.g. 0.1% sodium hypochlorite or 70% ethanol). When other chemical products are used, the manufacturer's recommendation should be followed and the products prepared and applied according to them. When using chemical products for cleaning, it is important to keep the facility ventilated (e.g. opening the windows) in order to protect the health of cleaning personnel.

The following PPE are suggested for use when performing cleaning works in facilities likely to be contaminated by 2019-nCoV:

- Filtering face pieces (FFP) respirators class 2 or 3 (FFP2 or FFP3);
- Goggles or face shield;
- Disposable long-sleeved water-resistant gown;
- Disposable gloves.

All frequently touched areas, such as all accessible surfaces of walls and windows, the toilet bowl and bathroom surfaces, should be also carefully cleaned. All textiles (e.g. bed linens, curtains, etc.) should be washed using a hot-water cycle (90°C) and adding laundry detergent. If a hot-water cycle cannot be used due to the characteristics of the tissues, specific chemicals should be added when washing the textiles (e.g. bleach or laundry products containing sodium hypochlorite, or decontamination products specifically developed for use on textiles).

Contributing ECDC experts (in alphabetical order)

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