

Disinfectant efficacy against novel coronavirus (COVID-19) and cleaning in primary and community care settings

The COVID-19 outbreak raises questions about how disinfectants will perform against this new virus and cleaning recommendations for primary and community care settings.

- In Canada, hospital-grade disinfectants are recommended for use in the cleaning and disinfection of environmental surfaces and non-critical equipment. They are products that have a drug identification number (DIN) and are approved by Health Canada based on standardized methods that test the performance of a disinfectant against the pathogen. This is equivalent to processes used by the US Environmental Protection Agency (EPA) or the European EN tests. Because of the time it takes for this testing and authorization, no product will have label claims against COVID-19.
- In the interim, recommendations for cleaning and disinfection are based on the hierarchy proposed by Rutala and Weber (2014). Microorganisms at the bottom of the list are easiest to kill - coronaviruses, including COVID-19, are enveloped viruses.

Microorganism	Examples
Prions	Creutzfeldt-jakob disease agent, scrapie
Bacterial spores	<i>Bacillus</i> , <i>Geobacillus</i> , <i>Clostridium</i>
Protozoan oocytes*	<i>Cryptosporidium</i>
Helminth eggs*	<i>Ascaris</i> , <i>Enterobius</i>
Mycobacteria	<i>Mycobacterium tuberculosis</i> , <i>M. chelonae</i>
Small, nonenveloped viruses	Poliovirus, parvovirus, papilloma virus, norovirus
Protozoal cysts*	<i>Giardia</i> , <i>Acanthamoeba</i>
Fungal spores	<i>Aspergillus</i> , <i>Penicillium</i>
Gram-negative bacteria	<i>Pseudomonas</i> , <i>Escherichia</i>
Vegetative fungi and algae	<i>Aspergillus</i> , <i>Candida</i> , <i>Trichophyton</i>
Vegetative helminthes and protozoa*	<i>Ascaris</i> , <i>Giardia</i>
Large, nonenveloped viruses	Adenovirus, rotavirus
Gram-positive bacteria	<i>Staphylococcus</i> , <i>Enterococcus</i>
Enveloped viruses	Herpes, influenza, HIV, HBV

NOTE. Microorganisms are listed from the most resistant (prions) to the most susceptible (enveloped viruses) to disinfectants.¹⁷ This hierarchical scale is only a guide to microbial susceptibility of pathogens to disinfectants, and it may vary depending on several factors (see text). Modified from McDonnell and Burke.¹⁷ HBV, hepatitis B virus; HIV, human immunodeficiency virus.

* Many of the microbes listed are not causes of healthcare-associated infections.¹⁷

- Any product with a DIN number with a label claim against enveloped viruses are therefore expected to be able to kill COVID-19 when used according to manufacturer's instructions regarding proper concentration, contact time, and whether surfaces require pre-cleaning.

- Examples of products can be found here: peelregion.ca/health/professionals/events/pdf/2014/chemical-disinfectants-unraveling.pdf and the PIDAC resources listed below.
- Many of these disinfectant products can come in a liquid form or as disinfectant-impregnated wipes. Either should be used according to manufacturer's instructions and should not be expired.
- The clinical areas of the office involved in patient care, including examination rooms, procedure rooms, bathrooms and diagnostic and treatment areas should be cleaned and disinfected once the patient leaves.
- If the patient spent time in the public areas of the clinical office, such as the waiting room, these areas should also be cleaned and disinfected.
- Any equipment that comes in contact with a patient should also be disinfected immediately after use.
- Ensure hand hygiene products and masks are available for use at reception, entrances and examination rooms.
- At the end of each day, all examination, waiting and washrooms should be cleaned and disinfected - in particular all counters, high-touch surfaces and objects.

References

Rutala WA, Weber DJ. Selection of the ideal disinfectant. *Infect Control Hosp Epidemiol.* 2014; 35: 855-65

Provincial Infectious Disease Advisory Committee, Infection Prevention and Control for Clinical Office Practice. April 2015

Provincial Infectious Disease Advisory Committee, Best Practices for Environmental Cleaning for Prevention and Control of Infections in All Health Care Settings, 3rd Edition. April 2018