Coronavirus Infection Control Overview

Leadership in Filtration

MANN+HUMMEL

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CORONAVIRUS

The coronavirus (Sars-CoV-2) has certainly grabbed the attention of the world, governments and financial markets over the past few weeks. COVID-19, is a respiratory disease and much of what is currently known about it and how it spreads is based on what we know about similar viruses – that it is spread from human-to-human through two main methods: airborne and surface contact.

Airborne distribution via droplet nuclei

Sars-CoV-2 can also be spread by surface contact

AIRBORNE DISTRIBUTION

Viruses range in size from 0.05 to less than 0.005 microns, but typically attach to larger particles – usually around 1 micron in size – when airborne. Viruses typically become airborne via droplet nuclei – microscopic particles less than 5 µm in size. These leftover particles of evaporated droplets are produced when a person coughs, sneezes, shouts, or sings.

Droplet nuclei can remain suspended in the air for prolonged periods of time and can be carried great distances on air currents. This is typically the main method of transmission for viruses.

The information below is from the World Health Organization (WHO) website on how the coronavirus is spread:

- Sars-CoV-2 can spread from person-to-person through small droplets from the nose or mouth
- People can catch COVID-19 if they breathe in droplets from a person with the virus who coughs out or exhales droplets
- It is important to stay more than 1 meter (3 feet) away from a person who is sick

SURFACE CONTACT

Another method of transmission is via surface contact. Transmission can occur as a result of person-to-person contact, such as a handshake or via fomites.

Transmission via fomites occurs when a person becomes infected by touching a surface (such as a door knob) with the flu virus on it, and then touching their face.

The WHO website has this information about surface contact:

> "The disease can spread from person to person through small droplets from the nose or mouth which are spread when a person with COVID-19 coughs or exhales. These droplets land on objects and surfaces around the person. Other people then catch COVID-19 by touching these objects or surfaces, then touching their eyes, nose or mouth."

It is not yet known how long Sars-CoV-2 can survive on surfaces, but it seems to behave like other coronaviruses – which can persist for a few hours to several days.

EMERGING DISEASE

COVID-19 is an emerging disease and there is more to learn about its transmissibility, severity, and other features. Check the WHO and other relevant authorities to keep abreast with the latest information.

Coronavirus
What you can do to help control the virus

PREVENTION STEPS

Infection control of viruses can present many challenges. Obviously personal hygiene is the first line of defense, but an effective prevention strategy should include several or all of the following:

- Personal Protective Equipment (glasses, gloves, respirators, masks, clothing) for healthcare and maintenance workers
- Isolation (negative pressure) in healthcare diagnostic and treatment areas
- Control air-flow patterns (move droplet nuclei out of breathing zones)
- Air cleaning (portable air cleaners to increase air changes, reduce droplet nuclei)
- HEPA filtration to catch all airborne droplet nuclei
- Increase HVAC filtration efficiency without sacrificing air flow – air changes are as critical as efficiency.
- Identify possible exhaust re-entrainment of contaminated air (i.e. exhaust too close to HVAC air intakes)
- Dispose of any contaminated waste according to the guidelines in your location

HEPA FILTRATION

HEPA filters are tested and rated by their performance at retaining particles at the most penetrating particle size (MPPS) – 99.95% for H13 HEPAs and 99.995% for H14. This means that HEPA filters will remove any solid or liquid particle from the air with an efficiency of at least 99.95%.

Viruses like Sars-CoV-2 also often attach themselves to larger particles well within the focus of HEPA filters, so HEPA filtration should be a key part of your infection control strategy if it's appropriate to your building.

In healthcare facilities, suspected or confirmed coronavirus patients should be placed in airborne infection isolation rooms with a negative pressure and appropriate HEPA or above filtration on the recirculation or exhaust air flows.

PORTABLE AIR PURIFIERS

In buildings without any form of high efficiency filtration system, portable air purifiers with HEPA-level filtration can be used to capture airborne droplet nuclei and reduce the chance of infection.

Be careful with low quality air cleaners that can do more harm than good by creating a turbulent air flow while contributing little cleaning power.

Place the device as close as possible to your position, so you are able to breathe the filtered air. The further away you are from the purifier, the greater the chance that you will inhale swirling contaminants, including viruses.

Fresh air is vitally important, so dilution with outside air should still be a priority.

Some air purifiers also feature an activated carbon stage that can remove the hazardous gases released by cleaning agents, which can help avoid any negative side effects caused by additional cleaning activity.

HIGH EFFICIENCY HVAC FILTERS

HVAC air filtration products with documented efficiencies on 1 micron-sized particles can also be an effective tool to help in the reduction of airborne droplet nuclei.

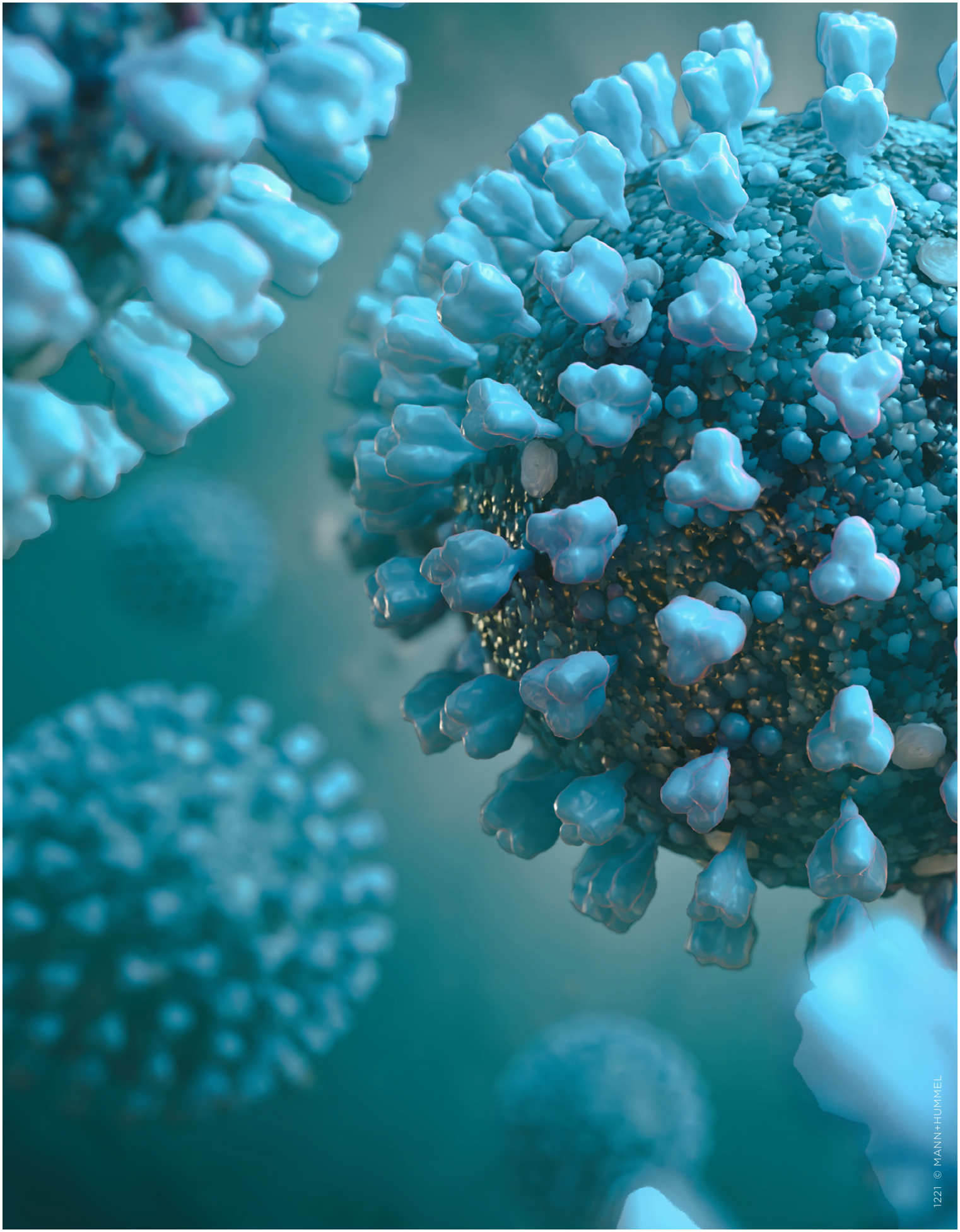
Increasing the filtration efficiency will remove more contaminants from your internal environment, but care must be taken not to choke the air flow and impact refresh rates.

MANN+HUMMEL have experienced staff and a complete offering of filtration products and services to assist in implementing your prevention strategy.

FILTER MAINTENANCE AND REMOVAL

Check that all filters are operating effectively. And, when it's time to change filters, take care not to release any viruses that have collected on the filter media into the internal environment – remembering that Sars-CoV-2 can survive for up to several days on surfaces.

Contact your local representative for assistance in developing an effective infection control strategy for the coronavirus.



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