(Archived) COVID-19: Risk of SARS-CoV-2 Aerosol Transmission in Health-Care Settings

September 27, 2023: Archived.

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Version	Summary of major updates
March 5, 2021	Original version
September 8, 2021	• Updated knowledge on circumstances and conditions with demonstrated risk of aerosol transmission • Aligned information on accessibility and use of respirators with the BC Ministry of Health's COVID-19 Infection Prevention and Control Policy for all Health Authorities[1]

August 29, 2022	• Updated information on the following:
	  ○ Transmission risk from direct and indirect contact
	  ○ Risk factors associated with increased risk of aerosol transmission with possible longer distance spread
	• Aligned information on additional considerations for respirators with the updated Point-of-Care Risk Assessment (PCRA) tool.[2]

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SARS-CoV-2, the virus that causes COVID-19, can be spread by respiratory droplets from an infected person when they breathe, speak, shout, sing, cough or sneeze.[3–5] Respiratory droplets can range in size from large liquid droplets, which quickly fall to the ground usually within two metres, to smaller aerosols, which can linger in indoor spaces for a longer period of time. The aerosols can accumulate in enclosed spaces unless they are diluted with clean air from a ventilation system or the outdoors.[3] Infections can occur when respiratory droplets containing sufficient quantities of SARS-CoV-2 virus from an infected person come into contact with the mucous membranes of a susceptible person's eyes, nose, mouth or are inhaled into the respiratory tract.[3–5] It is still unclear how easily the virus can be spread by touching surfaces with the virus on it and then touching one's eyes, nose or mouth[3,4] Please refer to the COVID-19 transmission poster[6] on the BC Centre for Disease Control (BCCDC)

website for more information. The amount of virus, or infectious dose, needed to cause infection is still under investigation.

COVID-19 is most frequently transmitted through respiratory droplets within a close-range from an infected person. Protection from infection is provided by immunization, personal protective equipment (PPE), good ventilation and hand hygiene.[5,7] Elevated risk has been noted in aerosol transmission with possible longer distance spread, during prolonged exposure (typically more than 15 minutes) and without the use of medical grade PPE under the following circumstances:[3–5,7]

- Environmental conditions that increase the concentration and buildup of exhaled respiratory droplets in air spaces, such as poor ventilation or air handling in enclosed crowded spaces;
- Activities that generate increased and/or forceful exhalation of respiratory droplets such as aerosol generating medical procedures (AGMP), excessive and sustained coughing, and activities with heavy expiratory exertion (e.g., physical exertion from exercising and raising voices during singing or shouting).

The risk of transmission decreases with increasing distance from the infectious source.[7]

A combination of factors affect SARS-CoV-2 transmission and infection. Therefore, a multi-layered approach of public health and infection prevention and control (IPC) measures continues to be recommended and remains effective in addressing as well as mitigating these risks. These measures include: immunization; hand hygiene; staying home when sick; screening for COVID-19 symptoms and exposure risk; point-of-care risk assessment; appropriate PPE; as well as cleaning and disinfection of the environment and equipment. Additionally, ventilation systems should be reviewed and maintained in accordance with applicable standards to improve indoor air quality as well as ventilation. Health-care settings are expected to continue implementing public health and IPC measures and using organizational risk assessments[8] to evaluate them.

Although PPE is an important measure, it must be used in conjunction with environmental and administrative control measures in health-care settings. The risk of transmission to health-care workers from patients is low when public health and IPC measures are in place, including the appropriate use of

PPE. Where possible, patients confirmed or suspected to have COVID-19 should be placed in well-ventilated, uncrowded spaces.

Health-care workers should perform a PCRA[2] before every patient encounter to determine appropriate IPC actions and PPE. The World Health Organization and provincial IPC guidance continue to recommend droplet and contact precautions in health-care settings for a person who is confirmed or suspected to have COVID-19.[9–11] The use of a respirator (e.g., N95 respirator or equivalent) is required for airborne precautions, when performing an AGMP on a person confirmed or suspected to have COVID-19, or as determined by organizational risk assessment and guidance. Refer to the provincial AGMP guidance and your local health authority's guidance on AGMPs. Access to respirators and additional PPE will be provided in circumstances where a PCRA performed by a health-care worker determines there is an elevated risk of COVID-19 transmission through patient interaction.[1]

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