

Transmission of COVID-19 and the role of face masks in health settings

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The World Health Organization reports that based on available evidence, the SARS-CoV-2 virus is transmitted via droplets and fomites through close contact, not by airborne transmission.¹

Droplet transmission occurs when respiratory droplets travel from the respiratory tract of the infectious individual to the susceptible mucosal surfaces of the recipient, generally over short distances (1-2 metres). Droplets are $>5\ \mu\text{m}$ in size, and are generated when an infected person coughs, sneezes or talks. Respiratory droplets fall to the ground, under the effect of gravity, soon after being expelled and so only those people in close contact with the infected individual are at risk of exposure. Examples of other viruses transmitted by droplet spread diseases include influenza and rhinovirus.²

Airborne transmission occurs when airborne droplet nuclei containing infectious agents remain infective over time and distance. Droplet nuclei are $\leq 5\ \mu\text{m}$ in size and can remain suspended in the air for longer periods of time. They can be dispersed over long distances via air currents, meaning susceptible individuals who have not been in close contact with the infected individual can be at risk of exposure. Examples of diseases spread by airborne transmission include measles and varicella.

There is evidence that some viruses which are generally spread by droplet transmission (such as influenza and rhinovirus) can be transmitted via small-particle aerosols within a defined space (eg, patient room) when specific procedures such as endotracheal intubation, non-invasive ventilation, tracheostomy, bronchoscopy, manual ventilation, sputum induction, high flow nasal oxygen, cardiopulmonary resuscitation are undertaken.

Because SARS-CoV2 is spread mainly through droplet transmission, medical/surgical masks are recommended for use in primary care in the care of patients. This includes taking nasopharyngeal and throat swabs, as these are not considered aerosol generating procedures.

Patients with severe illness and those with symptoms consistent with pneumonia, may be coughing more and consequently are more likely to generate infectious droplets when swabs are taken. For this reason, and in the context of the COVID-19 situation, it is recommended that swabs are not taken in these patients when seen in primary care, and that they are sent to the local hospital for swabbing and further management.

Because they are managing more severe cases, some District Health Board staff may use N95 masks more often, particularly by staff who will be having frequent direct care (close contact) of the patients early in the admission or when undertaking aerosol generating procedures. These recommendations are in line with those of Australia as well as the WHO.

References

1. Rational use of personal protective equipment for coronavirus disease 2019 (COVID-19). Interim guidance. 27 February 2020. Geneva, World Health Organization. apps.who.int/iris/handle/10665/331215
2. Siegel JD, Rhinehart E, Jackson M, Chiarello L, and the Healthcare Infection Control Practices Advisory Committee, 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings (Updated July 2019). [cdc.gov/infectioncontrol/guidelines/isolation/index.html](https://www.cdc.gov/infectioncontrol/guidelines/isolation/index.html)

3. Infection prevention and control during health care for probably or confirmed cases of Middle East respiratory syndrome coronavirus (MERS-CoV) infection. Interim guidance. Updated October 2019. Geneva, World Health Organization. who.int/csr/disease/coronavirus_infections/ipc-mers-cov/en/
4. Infection prevention and control of epidemic and pandemic prone acute respiratory infections in healthcare – WHO Guidelines. Geneva, World Health Organization, 2014. apps.who.int/iris/bitstream/10665/112656/1/9789241507134_eng.pdf