

Infection Management and Prevention Service

Respiratory virus transmission

Position statement (13 July 2020)

How do respiratory viruses transmit?

- Respiratory viral transmission depends on increased secretion production and promotion of nasopharyngeal and airway inflammation and irritation to produce coughing and sneezing, and in some viruses, excessive mucous production.
- The forced exhalation of air by coughing and sneezing very efficiently spreads virus laden droplets into the air (droplet spread) or onto surfaces, hands, tissues etc.
- Viral contaminated hands and environment (fomites) are then sources of onward viral contact transmission (contact spread).
- Viral containing secretions may also be aerosolised, particularly by external aerosol generating procedures, high tussive forces, or possibly other manoeuvres such as singing. If aerosols are generated, they may remain locally viable for hours, though their transmission potential is unknown.
- Respiratory viruses are not true airborne infections, and do not have the large, prolonged airborne travelling range that measles for instance has. This is epidemiologically obvious from the distinct differences in reproductive number between measles (at 12-18) and seasonal influenza (R1.3) / pandemic flu (1.8). As a coronavirus SARS-CoV-2 is behaving like other respiratory virus in this respect with R2-3.

Respiratory viruses spread predominantly by droplet and sometimes local aerosol spread, secondarily by contact and fomite mediated transmission.

How does an asymptomatic person transmit a respiratory virus?

- Some respiratory viruses may be detected by PCR within nose/throat of people who have no symptoms or a day or two before they develop symptoms.
- This has previously been well recognised for influenza and other respiratory viruses and there are reports for SARS-CoV-2
- Mode of transmission from asymptomatic people is unclear as these people by definition do not have respiratory symptoms and thus generate minimal droplets and aerosols.
- Transmission, when it occurs, may be predominantly contact. Virus present in nose, saliva and faeces from infected but asymptomatic individuals transfers from mucous membranes or hands (theirs or another person's e.g. parent in the case of a child) to another person or the environment.
- Environmental contamination of respiratory viruses in general is well reported and several reports are emerging for SARS-CoV-2. There are also evolving reports of faecal detection of SARS-CoV-2, which adds another potential vector.



Respiratory viruses may spread by contact and respiratory transmission in asymptomatic individuals.

Healthcare worker protection for SARS-CoV-2 based on knowledge of respiratory viral transmission and sound infection control principles.

- Healthcare worker (HCW) protection is an absolute priority for infection prevention and it is therefore essential that HCWs understand the routes of transmission, the rationale for different modes of PPE and optimise their practice.
- By concentrating on one mode of spread (e.g. droplet, aerosol) without fully considering another (e.g. contact), HCW protection may be compromised.
- For protection when in contact with asymptomatic individuals, there is a risk that HCW may be falsely reassured a mask is protective and neglect effective hand hygiene (HH). A mask does NOT remove the need for full attention to HH and the appropriate use of Contact precautions.
- Infection prevention processes are already embedded within guidelines and models of care, but not always well followed in routine services. We know HH rates historically could be improved.
- SARS-CoV-2 is a respiratory virus that behaves as other respiratory viruses do, (it does not have superpowers) and established infection prevention measures if followed correctly, routinely and reliably will provide the optimal means of protection.
- “Doing what we should always be doing, but doing it better.”

Summary of infection prevention precautions

Symptomatic respiratory viral infection – standard, droplet; (+contact for SARS-CoV-2) precautions. Airborne Plus instead of droplet for severe disease or aerosol generating procedures (for SARS-CoV-2).

Asymptomatic respiratory viral infection- standard precautions, emphasis on hand hygiene and respiratory etiquette.

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