

## ID position Statement on Respiratory Virus Transmission. 24/3/2020

### 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 or possibly very high tussive forces. If aerosols are generated they may remain locally viable for up to 3 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 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 now some reports for SARS CoV.
- How might these asymptomatic people transmit virus, as an adult or child with no respiratory symptoms is by definition not coughing or sneezing? A normally breathing child with no respiratory, coryzal symptoms or secretions does not produce any forced exhalation of air, such as coughing or sneezing, and so generates minimal droplets and aerosols.
- Only in aerosol generating procedures or extremely close examination of the respiratory tract (eg ENT examination), or prolonged close contact with the mouth, might there be possible respiratory viral spread.
- Transmission, when it occurs, is predominantly contact. Virus present in nose, saliva and faeces from infected but asymptomatic individuals transfers from mucous membranes or hands (theirs or another persons eg 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 spread predominantly by contact transmission in asymptomatic individuals.**

### HCW protection for SARS CoV 2 based on knowledge of respiratory viral transmission and sound infection control principles.

- 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 (eg droplet, aerosol) without fully considering another (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 super powers) 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 CoV2) 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.