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Routes of transmission of SARS-CoV-2 and behaviours to block it: a summary

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Abstract

The article briefly describes the main routes of transmission of the SARS-CoV-2 in the community. It also shows key actions required to prevent this transmission. All these behaviours are important but maintaining physical distance and not touching one's T-Zone appear to be particularly important in blocking the final pathways to infection.

Definitions

[Personal protective behaviour](#)

Defined by Robert West et al.

Respiratory viruses such as SARS-CoV-2 have the capability to spread rapidly between people [1]. The combination of infectivity, including when asymptomatic, and severity of the consequent disease means that these viruses can cause very large numbers of deaths, overwhelm health systems and wreak havoc in the global population. Large scale 'lock downs' and quarantine can be used to limit the spread of these viruses but the cost to society is massive. They are necessary because of the difficulty in securing adequate adherence to what may be termed [personal protective behaviours](#). These are behaviours that individuals can enact to protect themselves and others from spread of infection. This article briefly summarises these behaviours.

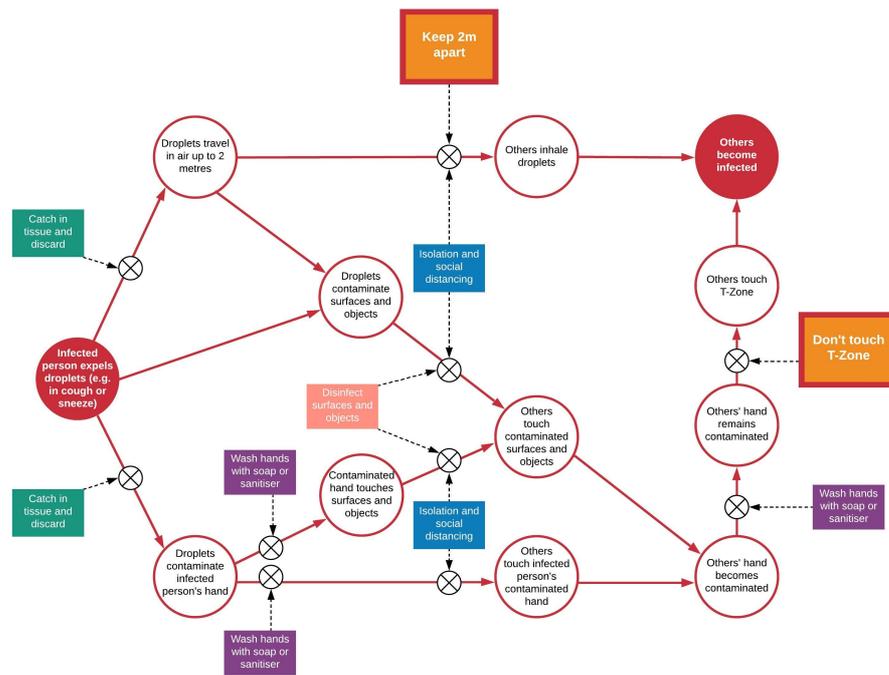


Figure 1: Transmission pathways of respiratory viruses and behaviours required to block them. Red arrows represent routes of transmission. Large circles represent stages in the pathway and the crosses in small circles represent blocks. Rectangles represent actions to create blocks. Dotted arrows point to the blocks they act on

Figure 1 shows the pathways to transmission and the actions required to block it. In the blue boxes are the upstream measures (isolation and social distancing) that aim to create physical distance between people and between people and potentially contaminated objects and surfaces. Isolation and social distancing are being defined in varying ways but in general isolation means maintaining a physical barrier or distance between a person (e.g. someone with extreme vulnerability) and all other people as well as potentially contaminated objects; social distancing means staying at home with one's family (if one has one) and only going out for essential journeys. To achieve social distancing, governments are closing shops and businesses and banning gatherings and movement outside of one's immediate environment. These measures are having catastrophic effects on many people's lives, the global economy and societal infrastructure.

The need for such draconian measures arises because of the difficulty getting people to adhere to the downstream [personal protective behaviours](#) required to block transmission. Enacting these behaviours with sufficient rigour is not just a matter of motivation but also requires the capability (e.g. understanding and skill) and opportunity (e.g. resources, circumstances and physical space).

Behaviour	Description
Catch in tissue and discard	When coughing or sneezing, use a disposable tissue to catch all droplets, then dispose of the tissue as soon as possible in a suitable receptacle.
Wash hands with soap or sanitiser	Thoroughly wash hands, including all surfaces and under nails, using soap or a suitable hand sanitiser (e.g. >60% alcohol-based), whenever hands have touched an object or surface that may have been contaminated, or having coughed or sneezed into a tissue they have been holding.
Disinfect surface and objects	Use a suitable cleaning agent to clean and disinfect all surfaces that may have been contaminated by contact with other objects, hands or exhaled droplets, and repeat this whenever new contamination may have occurred.
Keep 2m apart	Maintain a minimum distance of 2m from another person whose infection status is unknown or who is infected.
Do not touch the T-Zone	Do not touch the eyes, nose or mouth except after washing or disinfecting one's hands and before touching any surface, object or person whose contamination status is unknown or that is contaminated.

Table 1: Personal protective behaviours required to block transmission of the SARS-CoV-2 virus in the community

Wearing face masks is not included in the list because, while appropriate face masks are an essential component of personal protective equipment in healthcare settings, current evidence does not indicate that it would confer a benefit in general community settings [2]. This may change as new information becomes available. It may be noted that there are two behaviours in particular that could block the final pathway: keeping physical distance and not touching one's T-Zone (eyes nose and mouth). The physical distancing is important but would not be enough on its own. Not touching the T-Zone is crucial because the virus appears to be able to live on surface for up to several days in some cases and surfaces can easily become re-contaminated after being washed, as can hands [3]

References

1. ^ Mary A Lake. (2020). *What we know so far: COVID-19 current clinical knowledge and research*. *Clin Med*, vol. 20 (2), 124-127. doi:10.7861/clinmed.2019-coron.
2. ^ Shuo Feng, Chen Shen, Nan Xia, Wei Song, Mengzhen Fan, Benjamin J Cowling. (2020). *Rational use of face masks in the COVID-19 pandemic*. *The Lancet Respiratory Medicine*. doi:10.1016/s2213-2600(20)30134-x.
3. ^ Neeltje van Doremalen, Trenton Bushmaker, Dylan H. Morris, Myndi G. Holbrook, Amandine Gamble, Brandi N. Williamson. (2020). *Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1*. *N Engl J Med*. doi:10.1056/nejmc2004973.