

CSU

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1. Fleeting contact and the Delta and Kappa variants

The COVID-19 community cases in Sydney and Melbourne were followed by comments in the media that fleeting contact was all it took to transmit the virus from person to person ([link](#) and [link](#)). The Victorian COVID-19 Testing Commander, Jeroen Weimar, referred to this as “stranger-to-stranger” transmission, stating “*What we’re seeing now is people are brushing past each other in a small shop, ...and this relatively speaking fleeting contact [is enough to spread the virus]*” ([link](#)). The outbreaks in Australia are due to two closely linked variants, Kappa (B.1.617.1) in Melbourne and the Delta (B.1.617.2) variant in Melbourne and Sydney, respectively. These comments raise some important questions:

1. How much more transmissible are the new variants, Delta and Kappa?
2. What is a “fleeting contact”?
3. How likely is someone to get COVID-19 after fleeting contact?
4. What impact does vaccination have on the risk of infection?

1. How much more transmissible are the new variants of concern, Delta and Kappa?

- The WHO estimates that the Delta variant is 97% more transmissible than the original variant of the virus ([link](#)).
- Data for the transmissibility of the Kappa variant is less certain, but is probably less than Delta, which has become the predominant variant in several countries.
- Estimates of secondary attack rates (SARs) for household contacts, a type of close contact, are 8.6% for Alpha and 12.0% for Delta, based on contact tracing data from Public Health England ([link](#)). While these differences appear small in absolute terms, these SARs are an indication that Delta has an increased transmissibility of approximately 40% compared to Alpha. The authors also note that these rates are likely underestimates as they are based on contact tracing data, and many cases go unreported, such as asymptomatic infections.
- The R_0 for Delta is estimated to be approximately 5-6, which is substantial increase over the R_0 of the original Wuhan variant, which was approximately 2.5 ([link](#)).
- There is also preliminary evidence for increased viral replication for Delta, compared to Alpha ([link](#), [link](#)). Researchers at Cambridge in the UK analysed 118 ‘breakthrough’ infections in vaccinated healthcare workers in India and found that Delta variant infections had higher respiratory viral loads compared to non-Delta infections: PCR Cycle threshold (Ct) values averaged 16.5 for Delta infections compared to 19 for non-Delta infections, with lower Ct values suggesting higher viral load. Public Health England also reported that, on average, the Ct values are lower for Delta infections compared to Alpha, with Ct values for Delta averaging below 20, compared to (approximately) 20-30 for Alpha.
- Hence, the increased transmissibility may be due, in part, to an increased viral load, with aerosols and droplets containing a higher concentration of live virus. This could partly explain the “casual” spread of this variant, and the transmission arising from shorter interactions.

2. What is a “fleeting contact”?

- “Fleeting contact” is not a term used by the contact tracing teams.
- There are no strict criteria used to distinguish a close from casual contact, but, in general, the closeness (less than 2 metres) and the duration (more than 15 minutes) of the contact event are important. Other factors also contribute, such as the location (indoors or outdoors), the size of the space, the number of people in the space, the viral variant, and the activity (for example, shouting or singing, versus sitting quietly).
- The nature of the contact event is often used to evaluate the risk of infection. For example, a contact identified at a crowded bar would be considered at higher risk than a contact identified at a large, well-ventilated library.
- The risk of infection for close contacts, such as members of the same household, ranges from about 50% for partners, down to about 1% for people that are on public transport within 2 meters of each other. Note that these estimates are based on the transmission risk of the previously circulating variants, such as the wild type variant.
- Casual contact includes any contact which is not a close contact. The risk of being infected after a casual contact is less than 1%. However, while an infected person may have only a few close contacts, they may have many hundreds or even thousands of casual contacts, as has been seen in the recent case in Wellington.
- Therefore, even though each individual contact may be at a low risk of infection, the virus may be spread through casual contacts because there are so many of them.
- It is also important to note that transmission is not guaranteed even in the highest-risk settings. For example, despite repeated close contact, only 50% of partners of infected individuals become infected.

3. How likely is someone to get COVID-19 after fleeting contact?

- The media reports stating that “fleeting contact” can result in transmission of the virus do not contain enough useful information to assess how these cases are occurring. However, this information is consistent with a greater recognition that the virus may remain in the air for several minutes and, in smaller spaces with poor ventilation, transmission can occur without the individuals being within 2 metres of each other. It is possible that, in some instances, contacts may not even need to be in the same space at the same time for transmission to occur.
- Transmission that appears to have occurred as a result of “very” casual contact has been reported a number of times during the pandemic. For example, it was seen earlier with the Auckland city transmission case from a defence worker ([link](#)), and the NSW bottle shop transmissions in January ([link](#)). What is unknown is how often these events occur, and whether they are becoming more frequent due to the increased transmissibility of the virus, or if they are now being recognised more often.

4. What impact does vaccination have on the risk of infection?

- Vaccination will not only decrease the risk of the vaccinated person becoming infected, but it also decreases the risk of the infected person transmitting the virus to other people.

- A study of almost one million people in the United Kingdom has estimated the risk of infection in unvaccinated people when the case, or source of infection, was a vaccinated or an unvaccinated person ([link](#)). The study reported that an unvaccinated case had twice the risk of infecting unvaccinated household members, compared to vaccinated cases. These data were collected over January and February 2021, while the Alpha variant was predominant and prior to the prevalence of the Delta variant.

Comment:

While it seems possible for “fleeting contact” to result in transmission, how often this occurs or the amount of transmission accounted for by fleeting contact, as opposed to the usual definitions of close or casual contact are unknown. With regard to casual contacts, the risk of transmission is “low risk but not no risk”. It is possible that the presence of an infectious individual in a poorly ventilated space, for even a short period of time, could result in enough airborne virus to cause infection. While it may be possible to reduce the number of close contacts via physical distancing and other measures, decreasing the number of casual contacts potentially at risk due to airborne transmission is more challenging. Therefore, decreasing the risk of infection in some settings will likely require management of infectious air-volumes, in addition to the use of non-pharmaceutical interventions such as masks and standard hygiene measures.