

What we know about COVID-19 virus transmission: things to remember as the UK unlocks



PROTECT

A COVID-19 National Core Study

As the majority of remaining COVID-19 related restrictions are removed in England on Monday 19 July, and with other UK nations also set to ease controls, our knowledge of how the virus transmits can be applied to help policymakers, business and individuals manage the associated risks. The following key points are based on evidence from the [PROTECT COVID-19 National Core Study](#) on transmission and environment.

1. **Transmission is a continuous risk.** It can occur in any of the numerous environments people transit and inhabit throughout the day, including but not limited to the workplace. Outbreak investigations conducted as part of the PROTECT study have made it clear that effective risk management should focus on small spaces such as canteens, changing areas, and meeting rooms, as well as the main factory floor or office space people inhabit for most of their workday. Work-associated transmission can also occur away from the workplace, such as when commuting and socialising with colleagues.
2. **All three routes of transmission must be addressed**, in every setting and during every activity. That means reducing transmission via surfaces; directly person-to-person via inhaled particles; and through the air in a shared room. The airborne route is important but most difficult to control – improving ventilation (either by natural or mechanical means) is critical to addressing this, as is improving understanding of how to effectively employ ventilation and maintain existing ventilation systems.

We know from our lab-based experiments, computer modelling, and human volunteer studies that face coverings can be effective – if worn correctly and by the majority of people – at reducing all three routes of transmission, as they block many respiratory particles at source. This means they can reduce the number of respiratory particles that land on surfaces, mix into the air in shared rooms, or are inhaled directly when people are close together. Perspex screens can be effective in blocking larger particles at close range, but are unlikely to prevent airborne transmission and should not be relied on in isolation.

3. **It is better to introduce control measures pre-emptively than when an outbreak is already underway.** Our agent-based modelling has shown that measures are more effective at limiting transmission when introduced early, particularly to limit any source of infection introduced into the workplace. This is of particular relevance now for businesses that may be planning for staff to move back into offices. Use of good baseline measures – including social distancing, ventilation, testing, and isolation by those with symptoms – is likely to be effective at managing risks and reducing disruptions due to sickness absence. We are continuing to develop evidence on the most effective combination of measures and the optimum time of intervention in a range of different environments and situations.

About the PROTECT study

The [PROTECT Covid-19 National Core Study](#) on transmission and environment is a UK-wide research programme improving understanding of how SARS-CoV-2 (the virus that causes COVID-19) is transmitted, and how this varies in different settings and environments. This improved understanding will enable more effective measures to stop transmission, saving lives and getting society back towards 'normal'.

Led by the Health and Safety Executive's Chief Scientific Adviser, Professor Andrew Curran, this critical work is being delivered by more than 70 researchers from 16 institutions across the UK. The PROTECT study began in October 2020, as part of the [COVID-19 National Core Studies](#) programme spearheaded by UK Government Chief Scientific Adviser Sir Patrick Vallance. It is funded by HM Treasury until March 2022.

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