New tool helps people decide how best to protect themselves and others from COVID-19

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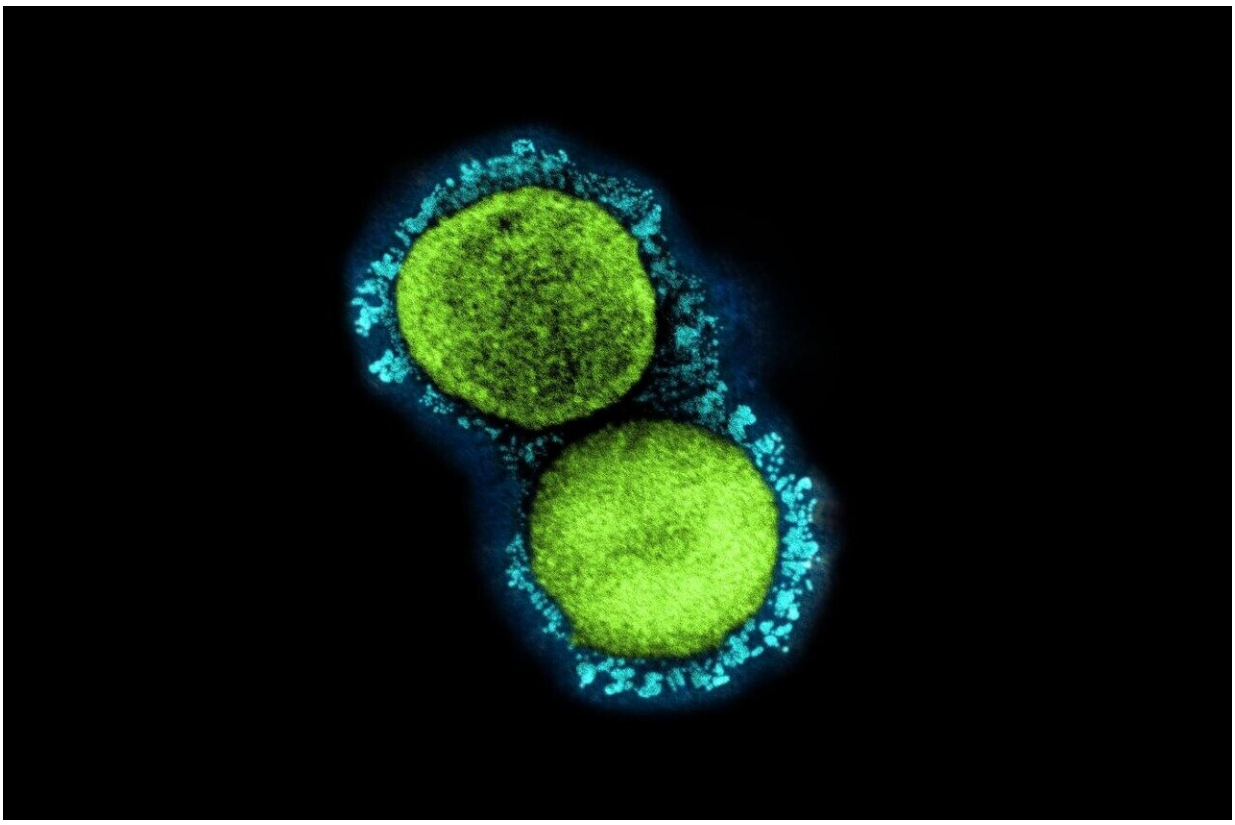

A transmission electron micrograph of SARS-CoV-2 virus particles (UK B.1.1.7 variant), isolated from a patient sample and cultivated in cell culture. Credit: NIAID

A new interactive graphic developed by UK researchers and published by *The BMJ* today will help people decide what to do in everyday situations to protect themselves, and others, from COVID-19.

Based on estimates provided by 26 international experts, it shows the different pathways that may be taken by the virus that causes COVID-19 when it transfers between two people.

It is designed to help illustrate the risks of catching COVID-19 in different scenarios—and what can be done to reduce those risks—based on the available evidence.

As well as the areas of scientific consensus, it also conveys the uncertainties and the disagreement that exists between experts about how the virus behaves, how it is transmitted, and how we can best reduce the likelihood of transmission through personal and social measures.

The researchers say the tool should support decision makers and the public to make informed decisions about how to reduce virus transmission in different contexts, such as how to make a workplace or a public area as safe as it can be while still being open and functional.

To create the tool, the researchers consulted 26 experts from a range of disciplines and countries, asking them for every value needed to underpin the graphic.

These included the importance of different virus transmission routes (eg. small and large airborne droplets, contact with contaminated surfaces) during a range of activities (eg. talking, coughing, exercising, eating) in different environments (eg. outdoors or indoors in different sized rooms, with or without ventilation).

They also gathered estimates on the importance of different protective

measures (eg. face coverings and screens, physical distancing, hand hygiene, surface cleaning) in reducing transmission.

This infographic will display on browsers that support iframes.

Analysis of all the values showed that airborne transmission routes were most important in almost all situations, while face coverings, especially when worn by an infected person as a form of source control, were the most important mitigation measure.

But importantly, all routes were considered to play a part in transmission, and simple measures such as physical distancing, hand washing, and respiratory hygiene all made a useful contribution.

The researchers found important evidence gaps and differences in opinion amongst experts around several variables, including the role of aerosol transmission; the effects of different kinds of masks on inhaled aerosols; and the effects of face coverings on transfer from hand to eyes, nose, and mouth.

"Everyone has been keen to know how much difference each possible action we've been told about makes, and finally we have been able to gather together enough knowledge from experts from around the world and in a range of fields to answer those questions," explains author Alexandra Freeman at the University of Cambridge.

She adds: "The tool is interactive, so that you can explore the scenarios that are most relevant to you, whether it's because you sing in a choir, or want to know about the risks of eating in a small restaurant. How much difference would it make if you opened the windows, or cleaned the surfaces? Have a look and find out."

Co-author Harry Rutter at the University of Bath says: "It is all too easy to focus on just a single route of spread for COVID and forget about all the others. One of the ways a tool like this can help is by making it really clear that all the transmission routes matter, in different proportions in different contexts. The fact that one of those routes—airborne transmission—is the main one in most situations doesn't mean that we can ignore the others."

The authors acknowledge some study limitations and say generating robust evidence on the complex and highly contingent routes of COVID-19 virus transmission is not straightforward. But they say they hope their approach "will prove helpful to those faced with the challenge of communicating complex, imprecise, and uncertain evidence in the future."

More information: Visualising SARS-CoV-2 transmission routes and mitigations, *BMJ* (2021). bmjopen.bmj.com/lookup/doi/10. … /bmjopen-2021-050869

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