



Press Release

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Masks can block 99.9% of Covid-linked droplets, study shows

People who wear a face mask significantly lower the risk of spreading Covid-19 to others through speaking and coughing, research suggests.

Speaking and coughing without face protection exposes people nearby to virus-laden droplets that would otherwise be stopped by wearing a mask, the study shows.

Someone standing two metres from a coughing person who has no mask is exposed to 10,000 times more droplets than someone half a metre from a coughing person who is wearing one, the researchers found.

The findings – published on a non-peer reviewed preprint server – could have implications for social distancing measures, the team says.

Researchers at the University of Edinburgh compared the number of droplets that landed on a surface in front of a person coughing and speaking without and with a surgical mask or a basic cotton face covering.

Tests were carried out on people and a life-sized anatomical human model connected to a machine that simulates coughs and speech.

The analysis found that the number of droplets was more than 1,000 times lower when wearing even a single layer cotton mask.

The results contrast with previous research that suggested masks are less effective. However, these studies also measured small droplets – known as aerosols – which can remain airborne for hours.

It is still uncertain how much virus transmission occurs by aerosol, but if it is found to be significant, the team cautions that the new findings overestimate the protective effects of face coverings.

Nevertheless, for bigger droplets carrying the largest amount of virus, masks are extremely effective in reducing spread to the immediate surroundings, researchers say.

The pre-print is available here: <https://www.medrxiv.org/content/10.1101/2020.08.11.20145086v1>

The study was funded by the Engineering and Physical Sciences Research Council, the Biotechnology and Biological Sciences Research Council, the European Commission and Japan Student Services Organization.

Lead researcher Dr Ignazio Maria Viola, of the University of Edinburgh's School of Engineering, said: "We knew face masks of various materials are effective to a different extent in filtering small droplets.

"However, when we looked specifically at those larger droplets that are thought to be the most dangerous, we discovered that even the simplest handmade single-layer cotton mask is tremendously effective. Therefore wearing a face mask can really make a difference."



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Fellow researcher Professor Paul Digard, of the University of Edinburgh's Roslin Institute, said: "The simple message from our research is that face masks work. Wearing a face covering will reduce the probability that someone unknowingly infected with the virus will pass it on."

Dame Ottoline Leyser, Chief Executive, UK Research and Innovation (UKRI), said: "The Covid-19 pandemic is a crisis that has impacted virtually everybody. In these extraordinary circumstances we have seen the value of rapid and collaborative research in supporting our response to the crisis.

"The findings published today from a study led by researchers at the University of Edinburgh and co-funded by UKRI support the growing body of evidence that face coverings reduce Covid-19 transmission via respiratory droplets.

"Research into Covid-19 is obviously a relatively new field, with the science still evolving. New information about the virus plays a crucial role in informing policy makers and the public."

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