For maximum safety, be sure to wash your homemade face mask, says study

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Credit: Pixabay/CC0 Public Domain

The homemade cloth masks recommended for slowing the spread of COVID-19 seem to expel invisible cotton fibers into the air as people talk, cough or even breathe—underscoring the importance of regularly washing them, researchers say.

In experiments, researchers found that medical-grade masks—surgical and N95—blocked most exhaled "particles" from the wearer's mouth. But the results with cloth masks, fashioned from T-shirt material, were surprising.

People actually emitted more invisible particles while wearing a cloth mask than with no mask at all. And that, researchers said, was because the masks released microscopic cotton fibers.

There's no proof at this point that the fibers can carry infectious viral particles. And experts stressed that everyone should keep wearing masks according to public health guidance.

"They didn't show that infectious particles are being released," said Ravina Kullar, a spokesperson for the Infectious Diseases Society of America. "So it's not clear what this means from an infectious disease standpoint."

And certainly, she added, people would put themselves at greater risk of contracting SARS-CoV-2 if they went out in public mask-free.

William Ristenpart, the senior researcher on the work, agreed that no one should take the findings as an argument against mask-wearing.

"That's not what we're saying at all," said Ristenpart, a professor of chemical engineering at the University of California, Davis.

Instead, he thinks the practical message is this: Wash your mask after each wearing. If tiny cotton fibers are released into the air, let them be as clean as possible.

The U.S. Centers for Disease Control and Prevention and other health authorities urge the people to wear a cloth mask when they are out in public, especially in places where it is hard to maintain physical distance from others.

The CDC recommends wearing masks with at least two layers of fabric, and says "simple masks can be made at home with washable, breathable fabric."

It's not clear, however, exactly how well such homemade masks work. No one is going to run a clinical trial where people are randomly assigned to either wear masks or walk around mask-free.

There is less-direct evidence supporting mask-wearing in the general public, however.

Kullar pointed to the well-publicized case of a Missouri hair salon where two stylists had symptomatic COVID-19. Following local law, the salon required all stylists and patrons to wear face coverings. An investigation found that none of the

stylists' 139 clients or secondary contacts became ill, and none of the clients who volunteered for testing were positive for the virus.

But Ristenpart said lab tests like this one can give more insight into how effective different face coverings are at blocking particles from escaping into the air.

For the study, his team recruited 10 volunteers. Each sat in front of a funnel in a laminar flow cabinet. The funnel drew air from in front of their faces into a device that measured the size and number of particles they exhaled.

The volunteers wore either no mask, a medical-grade surgical mask, two types of N95 mask, a homemade paper mask or homemade one- or two-layer cloth mask made from a cotton T-shirt according to CDC directions.

The medical masks substantially reduced the particles people emitted, versus no mask—by an average of 90% when they were talking, and 74% when they coughed.

In contrast, wearing cloth masks increased the number of tiny "micron-scale" particles that people emitted. That appeared to be from the release of cotton fibers.

The big unknown is whether those tiny fibers matter. In a study published in August, Ristenpart's team found that it is possible for the flu virus to be carried in the air by microscopic fibers and even dust.

But no one has shown that with SARS-CoV-2, he said.

And even if tiny fibers are capable of carrying the virus, the next question would be whether they can transmit an infection.

On the positive side, cloth masks did cut the number of larger-size particles that people emitted. But because the material itself released fibers, Ristenpart said it was not possible to assess how well the masks worked against tiny respiratory particles.

He and Kullar both agreed on the bottom line: Keep wearing, and regularly washing, those cotton masks.

The general public should not buy up medical-grade masks, Kullar said, since they are still in short supply for health care workers in some areas.

The findings were recently published online in the journal *Scientific Reports.*

More information: For more on face coverings and COVID-19, visit the U.S. Centers for Disease Control and Prevention.

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