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## **BRIEF19**

*A daily review of covid-19 research and policy*

### **RESEARCH BRIEFING**

**Do two face masks filter better than one? Probably. Is it worth the effort? Less clear.**

One mask is better than none. Does that mean two is better than one? So far, some data suggests that [may be the case](#). Now, data from a new study published in [JAMA Internal Medicine](#) adds at least some more support for the notion that the *type* of mask worn and the *number* of masks may affect filtration efficiency. The authors of the new study sought to compare the efficacy of cloth versus surgical masks worn alone, in tandem, or doubled.

Specifically, the researchers evaluated the fitted filtration efficiency (FFE) of various configurations in a testing chamber. FFE was defined as the proportion of particles that ended up behind a mask compared to the proportion of particles that ended up outside the mask.

The researchers found the surgical masks (also referred to as “medical procedure” masks) were better at filtering particles out than cloth masks. Additionally, two masks provided better filtration, but in the case of cloth masks, significantly reduced breathability was noted. Interestingly, when the two types of masks were combined, one on top of the other (i.e. in tandem), it appears to matter *which* of the masks is worn on top. A medical procedure mask worn *over* a cloth mask appeared to offer little advantage over wearing just the medical procedure mask alone. On the other hand, a medical procedure mask worn under a cloth mask was found to offer marked improvement over a cloth mask alone.

This was a creative study that attempted to provide quantitative information regarding masking efficacy. The problem is that it is difficult to say whether the results are clinically relevant. For example, if a single mask filters approximately 40 percent of particles compared to double masking (which might filter 60-70 percent of particles), do either or both of these configurations provide enough of a barrier to prevent SARS-CoV-2 infection? If so, under what circumstances; indoor versus outdoor; good ventilation versus poor ventilation; brief versus prolonged exposures? This study did provide granular details that allow us to draw any related conclusions. Asking people to wear two masks is not entirely “free.” There is some degree of mask fatigue. So, unless there is slam dunk evidence to suggest that two masks genuinely keeps people safer from infection, which this study does not robustly provide, it could be that recommending that people routinely wear two masks in all but the most high-risk circumstances, might not be worth the public health “clout.”

—Joshua Niforatos, MD MTS

### **POLICY BRIEFING**

**US Centers for Disease Control and Prevention investigating breakthrough infections.**

We have known since data from the various vaccine trials were released that very few people would develop severe covid-19 illnesses but that some people would still become infected with asymptomatic or mild cases of SARS-CoV-2, despite vaccination. The question was: just how effective are the vaccines in preventing all infection. This was not measured in any of the major trials, as it would have required serial testing of tens of thousands of test subjects for weeks and months.

A few months into the vaccination campaign, we can take a look at [the numbers](#) (as of April 13th, according to the US Centers for Disease Control and Prevention’s). Data on

“breakthrough infections,” (i.e. individuals who tested positive for SARS-CoV-2 after completing a vaccination regimen), are accumulating. Here are the facts:

- At least 75 million individuals in the United States have been fully vaccinated.
- There have been 5,814 reported cases of breakthrough infections.
- 2,622 (45 percent) were age 60 or older.
- 3,752 (65 percent) were female.
- 1,695 (29 percent) were asymptomatic cases. These cases were picked up in situations such as required testing prior to elective medical procedures or other required testing.
- 396 (7 percent) were hospitalized and 74 (1.3 percent) died (note: individuals hospitalized for reasons other than covid-19 were still counted as breakthrough cases if they were fully vaccinated and later tested positive; around 12 percent of the “covid-19” deaths were actually considered not related to covid-19. However, out of caution, those numbers were included in the statistics).

What is the takeaway? First, it is important to know that the vaccines are not 100 percent effective; breakthrough cases were always seen as a likely scenario. What is less certain, however, is how accurate these numbers are in reflecting larger trends, as these data are reliant on voluntary reporting from state health departments, and without serial universal screening, asymptomatic breakthrough cases are especially likely to be undercounted. This means that the number of asymptomatic or mild cases is likely far higher. That’s actually “ok” in a sense. If the vaccines mean that people who get infected with SARS-CoV-2 do not even notice it, we can assume that the vaccines are doing their job—which is to keep people from experiencing substantial illness, disability, or death. On the other hand, a higher number of breakthrough infections also begs the frequently asked question: are vaccinated people with breakthrough infections contagious? That remains unknown. This major unknown is why the CDC has maintained guidance that essentially says that vaccinated people can get together with relatively few restrictions, while vaccinated and unvaccinated persons still need to be more careful.

For its part, the CDC continues to emphasize that the vaccines are still largely effective and that everyone who is eligible should get vaccinated at their earliest opportunity. Because breakthrough cases can happen, it is also important to maintain physical distancing and masking policies, especially around unvaccinated and incompletely vaccinated individuals, until the data supports a universal relaxation in protective measures. *The Centers for Disease Control and Prevention*

—*Brief19 Policy Team*