

Do cloth masks work? Only if you machine wash them after use

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A new publication from researchers at UNSW Sydney advises daily washing of cloth masks to reduce the likelihood of contamination and transmission of viruses like SARS-CoV-2.

Cloth [masks](#) must be washed daily at high temperatures to be protective against infection, a new analysis from the Kirby Institute at UNSW Sydney published in *BMJ Open* suggests.

"Both cloth masks and surgical masks should be considered 'contaminated' after use," says Professor Raina MacIntyre, who conducted the study. "Unlike surgical masks, which are disposed of after use, cloth masks are re-used. While it can be tempting to use the same mask for multiple days in a row, or to give it a quick hand-wash or wipe-over, our research suggests that this increases the risk of contamination."

The researchers analyzed unpublished data from a randomized controlled trial (RCT) they published in 2015. This study is still the only RCT ever conducted on the efficacy of cloth masks in preventing viral infections.

"Given the potential implications for health workers or [community members](#) who are using cloth masks during the pandemic, we did a deep dive into the 2011 data on whether the health workers in our study washed their masks daily, and if so, how they washed their masks. We found that if cloth masks were washed in the hospital laundry, they were as effective as a surgical mask."

It is important to note that given the study was conducted over five years ago, the researchers did not test for SARS-CoV-2—instead, they included common respiratory pathogens such as influenza, rhinoviruses and seasonal coronaviruses in their analysis. It is based on self-reported washing data and was conducted by health workers in high risk wards in a healthcare setting.

"While someone from the [general public](#) wearing a cloth mask is unlikely to come into contact with the same amount of pathogens as healthcare worker in a high risk ward, we would still recommended daily washing of cloth masks in the community. COVID-19 is a highly infectious virus, and there is still a lot that we don't know about it, and so it's important that we take every precaution we can to protect against it and ensure masks are effective," says Professor MacIntyre.

According to the analysis, handwashing the masks did not provide adequate protection. Healthcare workers who self-washed their masks by hand had double the risk of infection compared to those who used the hospital laundry. The majority of people in the RCT handwashed their masks, and this may be why the cloth masks performed poorly in the original trial.

"The WHO recommends machine washing masks with hot water at 60 degrees Celsius and laundry detergent, and the results of our analysis support this recommendation," says Professor MacIntyre. "Washing machines often have a default temperature of 40 degree or 60 degrees, so do

check the setting. At these very hot temperatures, handwashing is not possible. The clear message from this research is that cloth masks do work—but once a cloth mask has been worn, it needs to be washed properly each time before being worn again, otherwise it stops being effective."

The original study was conducted in hospital [health workers](#) in Vietnam in 2011. Study participants were randomly assigned to use cloth masks, surgical masks or no masks. The researchers found that 2-layered cotton cloth masks were not as effective as [surgical masks](#) in a hospital setting, and that they potentially increased the risk of infection, when compared with wearing no mask at all.

"This has become a flashpoint for the debate around cloth masks between pro and anti-mask groups, both of which have focused on our 2015 study in their arguments—but a more detailed look at the washing data suggests that hand-washing made the cloth masks riskier, rather than the cloth mask itself. When we break the data down in this new way, comparing machine washing with handwashing, a machine-washed cloth mask is as effective as a surgical mask," says Professor MacIntyre. "There is much research on the design, fabric and construction of masks, but washing is also key for protection."

More information: Chandini Raina MacIntyre et al. Contamination and washing of cloth masks and risk of infection among hospital health workers in Vietnam: a post hoc analysis of a randomized controlled trial, *BMJ Open* (2020). DOI: [10.1136/bmjopen-2020-042045](https://doi.org/10.1136/bmjopen-2020-042045)

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