

Homemade face masks may not block coronavirus like N95: CDC says make them your last resort

N95 masks adhere to strict protocols to block out airborne particles, including viruses, in ways that cotton and elastic just can't.

Homemade face masks are a topic of hot conversation as stock of certified N95 respirator masks -- the essential protective equipment used by health care workers fighting the coronavirus pandemic -- reaches critical lows. In response, grassroots campaigns across the US are urging residents to sew face masks at home for the medical community and for your own family's protection.



There's just one problem: Handmade masks aren't scientifically proven to be as effective at protecting you from the novel coronavirus, no matter how extreme the shortage of N95 masks. Why not? The answer comes down to the way N95 masks are made, certified and worn. A self-made cotton mask certainly won't harm you as long as you understand its limitations. But assuming it will shield you from COVID-19, the disease caused by the coronavirus, could put communities at greater risk if you're not following other protocols to stay safe.

While many argue that using a homemade mask is better than nothing (especially in a last-resort hospital setting), when it comes to personal use, the most surefire way for most of us to protect the health of high-risk groups such as senior citizens and people with compromised immune systems is to self-quarantine at home, frequently and thoroughly wash your hands and practice appropriate social distancing.

Those who work in health-care capacities don't always have that choice. As a result, global leaders and medical professionals ask that you please not buy N95 masks for yourself, so as to save them for the medical community that's in desperate need. For example, Target has apologized for selling N95 masks amid the shortage.

If you do have a supply of N95 masks on hand, consider donating them to a health care facility or hospital near you. Here's how to donate hand sanitizer and protective equipment to hospitals in need -- and why you should also refrain from making your own hand sanitizer.

N95 masks fit to your face and go through certification

N95 respirator masks differ from other types of surgical masks and face masks because they create a tight seal between the respirator and your face, which helps filter at least 95% of airborne particulates. They might include an exhalation valve to make it easier to breathe while wearing them. Coronavirus can linger in the air for up to 30 minutes and be transmitted from person to person through vapor (breath), coughing, sneezing, saliva and transfer over commonly touched objects.

Each model of N95 mask from each manufacturer is certified by the National Institute for Occupational Safety and Health. N95 surgical respirator masks go through a secondary clearance by the Food and Drug Administration for use in surgery -- they better protect practitioners from exposure to substances such as patient blood.

In US health care settings, N95 masks must also go through a mandatory fit test using a protocol set by OSHA, the Occupational Safety and Health Administration, before use. This video (linked) from manufacturer 3M shows some of the key differences between standard surgical masks and N95 masks.

Homemade masks are unregulated.

Who handmade masks are for

Hospitals and medical centers are taking nontraditional steps to resupply their stock, asking for community donations of items like N95 masks, protective goggles and nitrile gloves. Some that do request hand-sewn masks note that donated masks will go to worried patients and nonclinical staff, not physicians and nurses.

Protective equipment is in such short supply at other hospitals and medical care centers that they're now driven to use surgical masks or other masks if there's no other option -- and only during COVID-19 conditions. Some health centers suggest their preferred patterns and request that masks have four layers of fabric to better block out particulates. In these cases, personnel are asked to maintain a high level of caution (more on this in the CDC section below).

Harvard Medical School Teaching Hospital and the Boston Children's Hospital shared a joint video about making a homemade reusable respirator mask in response to the current shortage. However, the design is currently limited to a pilot program and is not certified for official use. Here's the legal disclaimer:

The device created as part of this publication should NOT be used as a replacement for conventional and approved Personal Protective Equipment. The device has not been industry tested nor has it been NIOSH approved. The publication of this article shall not constitute or be deemed to constitute any representation by the authors, their affiliates, and Boston Children's Hospital and is intended for

educational purposes only. The decision to use this device is solely your own.



Handmade masks: Cotton and elastic

The DIY projects that provide patterns and instructions for sewing face masks at home tell you to use materials like multiple layers of cotton, elastic bands and ordinary thread.

By and large, the patterns contain simple folds with elastic straps to fit over your ears. Some are more contoured to resemble the shape of N95 masks. Still others contain pockets where you can add "filter media" that you can purchase elsewhere.

It's the belief of people who make their own masks that adding filters will help protect against transmission. However, there isn't strong evidence that the masks will conform to the face tightly enough to form a strong seal, or that the filter material inside will work effectively. Standard surgical masks, for example, are known to leave gaps.

Homemade masks weren't originally intended to protect you from COVID-19

Many sites sharing patterns and instructions for homemade masks were created as a fashionable way to keep the wearer from breathing in large particles, like car exhaust, air pollution and pollen during allergy season. They were not conceived of as a way to protect you from acquiring COVID-19.

One site, CraftPassion, includes this disclaimer:

Due to recent coronavirus attacks across the world, I have been receiving a lot of requests on how to add nonwoven filter inside the face mask. Disclaimer: this face mask is not meant to replace the surgical face mask, it is a contingency plan for those who have no avail to surgical mask in the

market. Proper use of a surgical mask is still the best way to prevent virus infection.

Mask vs. Respirator



Centers for Disease Control and Prevention's stance on homemade masks

The CDC is the US authority on coronavirus protocols and protection. Along with the World Health Organization, the CDC is the authoritative body that sets guidelines for the medical community to follow.

Acknowledging a shortage of N95 masks, one page on the CDC website suggests five alternatives if a health care provider, or HCP, doesn't have access to an N95 mask. Handmade masks are not one of them. However, alternatives like wearing a full face shield or isolating the patient with a ventilated headboard are.

Here's what one CDC site has to say about homemade masks:

In settings where face masks are not available, HCP might use homemade masks (e.g., bandana, scarf) for care of patients with COVID-19 *as a last resort* [our emphasis]. However, homemade masks are not considered PPE, since their capability to protect HCP is unknown. Caution should be exercised when considering this option. Homemade masks should ideally be used in combination with a face shield that covers the entire front (that extends to the chin or below) and sides of the face.

A different page on the CDC site appears to make an exception, however, for conditions where no N95 masks are available, including homemade masks.

HCP use of non-NIOSH approved masks or homemade masks

In settings where N95 respirators are so limited that routinely practiced standards of care for wearing N95 respirators and equivalent or higher level of protection respirators are no longer possible, and surgical masks are not available, as a last resort, it may be necessary for HCP to use masks that have never been evaluated or approved by NIOSH or homemade masks. It may be

considered to use these masks for care of patients with COVID-19, tuberculosis, measles, and varicella. However, caution should be exercised when considering this option.

Homemade masks aren't sterilized

Factory-made masks from brands like 3M, Kimberly-Clark and Prestige Ameritech go through certification and are considered sterile out of the box, which is crucial in hospital settings. With handmade face masks, there's no guarantee the mask is sterile or free from an environment with coronavirus.

The CDC considers N95 masks contaminated after each single use and recommends discarding them. However, the severe shortage of N95 masks has caused many hospitals to take extreme measures in an attempt to protect doctors and nurses, like attempting to decontaminate masks between use. One medical center in Nebraska, for example, is experimenting with ultraviolet light treatments to sterilize N95 masks.

The danger: Not knowing the limits

If you still want to make your own face masks for personal use because it provides you a project and peace of mind, there's no harm in that. What's important to understand, however, is that sewing your own face mask may not greatly reduce your chances of acquiring the coronavirus, especially if you're also engaged in risky behavior like going to crowded places.

Since the coronavirus can be transmitted from someone who appears to be symptom-free but actually harbors the virus, it's crucial to the health and wellness of people over 65 and those with underlying conditions to know which proven measures will help keep everyone safe.

For more information, here are eight common coronavirus health myths, how to sanitize your house and car and answers to all your questions about coronavirus and COVID-19.

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