

The use of homemade masks to help prevent transmission of COVID-19



Recommendations on the design, use, and management of cloth masks for community settings

Why should you wear a mask?

Many individuals with the novel coronavirus (COVID-19) are asymptomatic. Because of long incubation periods averaging 5-14 days, even those who eventually present symptoms can transmit the virus before they become sick through the spread of large respiratory droplets by speaking, coughing, or sneezing in close proximity to other people.

Recently, the Centers for Disease Control and Prevention (CDC), Africa CDC, and a number of country governments,^{1,2} have advised people to wear non-medical masks in public when community transmission may be widespread. Faced with shortages of personal protective equipment (PPE)—and in order to reserve the use of medical-grade masks for health care workers—homemade cloth masks can help reduce the spread of large droplets if used correctly. Though not as effective as medical-grade masks, modelling studies suggest that even small preventative measures can help to prevent surges to overburdened health systems and save lives.^{3,4} Masks may also provide protection in crowded settings where physical distancing is not possible.⁵

This guidance only applies to homemade cloth masks for use in communities; it is not applicable to health care settings. It does not replace locally issued guidance on social distancing, hand washing, and the need to limit trips outside. Instead, it complements these preventative measures, providing

recommendations for countries that may not have reliable PPE supply chains.

How to select mask material

Several different household items can be used to make your own mask. When choosing a material it is important to strike a balance between breathability and the filtration efficiency of the fabric. Among the most effective materials for both factors are 100% cotton t-shirts, pillowcases, bedsheets with a high thread count, flannel, and quilting fabric.⁶

- **A light test can help determine if a fabric is suitable.** If light does not easily pass through the fibers when held up to a light source, the weave should be thick enough to capture viral particles.
- **Multiple layers of fabric are more effective at filtering large droplets.** Research suggests that the filtration efficiency of different materials increases with layering. However, too many layers can make it difficult to breathe. An average of 2-3 layers should be sufficient.
- **Material should be breathable.** While other household materials, such as vacuum bags and coffee filters, have higher filtration they make it more difficult to breathe.
- **Avoid fabrics that may trap bacteria and other harmful particles.** The loops of thread found in terry cloth tea towels, for example, can trap bacteria close to the face. Similarly, some vacuum filter brands contain fiberglass and can shed particles that are dangerous to inhale.

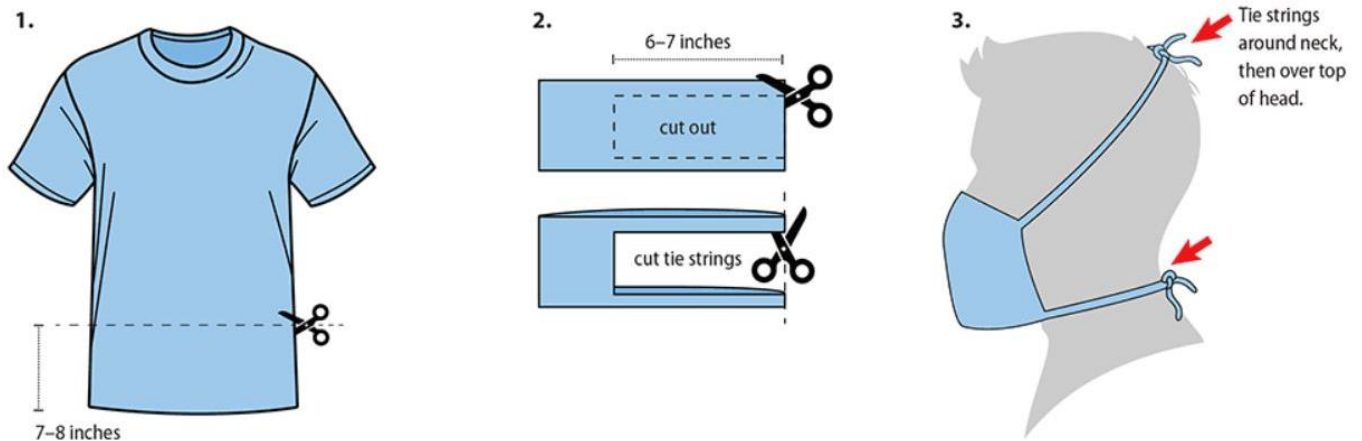


Figure 1. CDC, Use of cloth face coverings to help slow the spread of COVID-19.

How to make a no-sew mask

There are many variations of mask designs, including both sew and no-sew options. Below is one no-sew option (**Figure 1**):

1. Using a 100% cotton t-shirt, cut the bottom 7-8 inches off the base of the shirt, forming a loop of fabric.
2. Leaving at least half an inch of fabric at the top and bottom, cut out a rectangular hole that is 6-7 inches deep.
3. To form tie strings, cut the narrow strips at the top and bottom of the mask. Secure the mask around the back of your head.

How to sew a mask

Below is one design option for sewing a homemade mask:

1. Cut two 10 by 6 inch cloth rectangles from the fabric of your choice.
2. Stack and align the two squares of material to sew them as a single piece of fabric.
3. Fold over the longer sides of fabric squares by one-quarter an inch and hem. Fold over the short sides of the fabric by half an inch and stitch them down.
4. Run a 6-inch length of elastic through the wider hem on each side of the mask, using a needle to thread it through.
5. Tie the elastic tightly. If elastic is not available, hair bands or string may also work.

Key takeaways:

- Ensure the fit and breathability of your mask.
- Practice good hand hygiene after touching the outer surface of your mask and proper removal.
- Follow other preventative measures while wearing your mask, such as social distancing.

6. Pull on the elastic so the ties are tucked inside the hem.

How to wear a mask

Cloth masks are especially critical in settings where the public cannot follow physical distancing requirements. This may include crowded locations, such as public transportation, shopping areas, and certain social services. When wearing a cloth mask, individuals should follow the below guidance:

- Masks should fit snugly across the face, stretching from the bridge of the nose, to below the chin. Do not wear the mask around your neck or below your nose.
- Masks should be breathable. If worn too tightly or close to the face, individuals may have to breathe through the sides of the mask, exposing them to large droplets.
- Avoid self-contamination by properly removing the mask from behind the ears or the back of the head.

- Practice good hand hygiene every time you touch the outer surface of the mask and after removing it.
- Change your mask if it becomes wet or damp while wearing it.
- Young children, individuals who have trouble breathing, or those who need assistance removing their mask, should not wear them. Cloth masks are also not suitable for individuals providing homecare to patients with COVID-19.

How to clean and manage masks

To manage your mask between uses:

- If you live in a communal space, such as an apartment building, do not remove your mask until you are in your own home. Elevators and stairwells can be high contamination areas.
- You should have at least two cloth masks on hand so you are able to wash one and have a clean one ready for use.
- Do not share your mask with anyone else.

- Place your mask in a plastic bag or another container when you take it off, until you are ready to wash it.
- Immediately wash your hands after removing your mask.
- Wash your mask separately from other laundry with hot water (between 60-100 degrees) and detergent.
- To dry the mask, use a hot iron, tumble dry, or soak in a mild bleach solution for 10 minutes before rinsing and drying the mask in the sun.
- Make sure the mask is fully dry, clean, and undamaged before reusing.

On their own, masks do not offer enough protection. Masks should not give people a false sense of safety, which can lead to riskier behavior. Individuals should continue to follow other preventative measures, such as proper handwashing and should remain at home, except for critical trips. This guidance will be updated when additional research is available.

¹ Deese K. Kenya begins jailing people who don't wear masks in public. The Hill. Available at:

<https://thehill.com/homenews/coronavirus-report/492978-kenya-begins-jailing-people-who-dont-wear-masks-in-public>.

² Nguyen H. Vietnam imposes hefty fines for going maskless.

VOA News. Available at: <https://www.voanews.com/science-health/coronavirus-outbreak/vietnam-imposes-hefty-fines-going-maskless>.

³ Abbott S, Gimma A, et al., Centre for the Mathematical Modelling of Infectious Diseases COVID-19 Working Group. Feasibility of controlling COVID-19 outbreaks by isolation of cases and contacts. Lancet Glob

Health2020;8:e488-96. doi:10.1016/S2214-109X(20)30074-7 pmid:32119825.

⁴ Greenhalgh T, et al. University of Oxford. Face masks for the public during the COVID-19 pandemic. BMJ 2020;369:m1435.

⁵ Africa CDC, African Union. Community use of face masks. Accessed on 29-April. Available at: https://africacdc.org/covid-19/covid-19-resources/?wpv_aux_current_post_id=3648&wpv_view_count=3646&wpv-resource-type=fact-sheets-brochures

⁶ Mole, Beth. Face masks for COVID-19: A deep dive into the data. Ars Technica. Accessed on 14-April. Available at: <https://arstechnica.com/science/2020/04/should-you-wear-a-face-mask-heres-all-the-data-we-have/>.