

Some government officials in the United States have disingenuously stated that masks do not protect people from COVID, and some have even claim that they cause harm. The truth appears to be that the government failed plan and masks are not available, and they want to ease fears, by spreading this misinformation.

There have been dozens of studies, and there is clear benefit to the use of masks in lowering the risk of transmission of respiratory infections. Wearing N95 masks greatly reduced the infection rate of health care workers caring for patients with SARS. Wearing medical masks lowers risk of catching the flu from a family member if they are worn consistently, if hand washing is frequently done, and this procedure is started early (obviously before one is inoculated). Wearing a mask in public places, outside of the home lowers risk of contracting respiratory infections. Also so does frequent hand sanitation. Those sanitizing their hands 10 times a day had fewer respiratory infections.¹

No *statistically significant* difference has been found in the rate of influenza infection between health care workers wearing N95 masks and regular medical masks.² While N95 masks work significantly better for the prevention of bacterial respiratory infections, both N95 and regular medical mask greatly lowered the risk of influenza. For droplet inoculation, N95 masks may have a slight edge.³ In a meta-analysis of studies the SARS virus, another deadly corona virus, where most of the exposed subjects were nurses, medical masks and N95 masks both lowered risk of contagion by more than 85%.⁴

Since some studies show a slight benefit to the n95 masks, the general consensus seems to be that N95 masks should be used by medical personnel that have a high risk of exposure, while hazmet suits should be used for those caring for COVID-19 critically ill patients.

The downside to N95 masks is that they vent to room air. COVID-19 appears to spread from asymptomatic individuals, and likely from those with preclinical disease. Both N95 and regular medical masks protect equally well from infection but only the medical masks prevent persons with the infection from spreading it to others. In consideration of this, I think that other than those caring for persons with severe or critical COVID, medical masks are the better choice.

The evidence is clearly that masks are helpful in preventing the spread of respiratory infections, especially in conjunction with frequent hand washing. China was correct in urging everyone to wear a mask when in a public space, as it lowers the risk of contracting the disease. People shed the virus at high numbers at the onset of the disease, and likely during the incubation period, before a person knows that they are sick. In at least mild disease with adequate immune response, antibodies prevent the shedding of infectious viral particles after 10 days from the onset of symptoms.⁵ Thus from this research, it appears that it should be safe for people with mild disease to return to normal activities after 2 weeks from the onset of symptoms.

How to Use Masks

Hands should be sanitized before putting on a mask. The metal bar goes on top and needs to be shaped to the nose so that fits the bridge of the nose closely. The lower part of the mask goes below the chin. The mask should not be worn for more than 6 hours as it gets contaminate (that is its job –to capture the bacteria and virus particles.) To remove the mask, touch only the straps

(around the ears) and dispose of it, and immediately sanitize the hands. Do not reuse masks as they are likely contaminated.

In contrast to prevention, a person with the disease can wear the mask all day, as it is contaminated from the start. N95 mask should not be worn by those with an infection as they do not filter outflow. This is another reason that the general population should use regular medical masks; they do not know when they become infectious.

Goggles and Glasses

The corona virus (SARS-CoV2) can cause conjunctivitis (pink-eye). This makes it clear that the virus can infect and reproduce on the conjunctiva of the eye. Thus, droplet exposure to the eyes can spread the infection. When exposure is possible, eye protection should be worn.

I use safety goggles when using grinders and skill saws but used safety glasses working in the lab growing cancer cells. One does not want cancer cells in the eyes. I can use goggles for a few minutes and they are uncomfortable the entire time. I can wear safety glasses all day and quickly forget that I am wearing them. They do not obstruct my vision as goggles do, are not hot or uncomfortable, and make me look like I know what I am doing rather than looking like a nerdy steam-punker. I would guess that they provide 85% as much protection as goggles and I am also confident that compliance with wearing safety-glasses will be many times higher than for goggles. Like masks, safety glasses can also act as a barrier that reminds one not to touch the face and eyes.

Thus, I recommend the use of safety glasses in situations where they may be COVID droplet exposure, i.e.; going out in public, work, or at home with someone who is ill. The glasses should be washed frequently with dishwashing detergent and dried. If wearing them at work wash them at least twice a day. They can also be quickly disinfected with alcohol.

Hands

Studies have shown washing or otherwise sanitizing the hands at least 10 times lowers infection risk. Do this if in public places, at work with other people, or at home with a sick person. Sanitize hands every time you get into your vehicle. Wash hands as soon as you come home. Soap and detergents break up the lipid coat of the virus, preventing it from causing disease.

Body

The infectious respiratory droplets are subject to gravity, and they mostly land on the upper surfaces of the mask.⁶ Droplets thus also land on your head and clothing. Hospital workers should not wear hospital clothing outside of the hospital. Additionally, it is likely possible to contract the virus from running your fingers through your hair if your hair has been exposed, and then touching your eyes, nose, or mouth. We all touch our faces many times daily.

When coming home after possible exposure, sanitize hands, place clothing in washer, sanitize hands again and shower – washing hair with shampoo and wash face. If washing the hair is not an option, a hot brush or flat iron should heat the hair sufficiently to kill the viruses.

Wearing a mask protects those with respiratory disease from contaminating the environment. As I write this, masks are scarce or unavailable in stores in the United States. If a few masks become available, use them when appropriate, but save at least one, for going to seek medical care if you need it, to protect others and yourself from a very high risk environment.

Masks cannot not stop all spread of respiratory infections, but their use lowers risk considerably and helps lower the R_0 of the disease. If we as a society lower the R_0 to less than one, we can halt the pandemic. If everyone wore masks and safety glasses properly, we could lower the R_0 sufficiently to quell this outbreak. Each intervention that lowers transmission helps to do that.

Would a cowboy bandana, which was traditionally used to protect from breathing dust (not to rob banks), scarf, or shemagh as used in the Middle East, help protect from exposure to the virus? Not as well as a medical mask, but probably better than nothing as long as it is washed and dried after every use.

3-17-2020: The CDC allows the use of bandanas and scarves for healthcare workers as there is a shortage of medical masks.

“In settings where facemasks are not available, HCP (health care professional) might use homemade masks (e.g., bandana, scarf) for care of patients with COVID-19 as a last resort. However, homemade masks are not considered PPE (personal protective equipment), 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.”



Man using a shemagh

"We are as strong as we allow the most vulnerable in our society to be."

¹ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5779801/>

² <https://www.ncbi.nlm.nih.gov/pubmed/31479137>
<https://www.ncbi.nlm.nih.gov/pubmed/26952529>

³ [The efficacy of medical masks and respirators against respiratory infection in healthcare workers.](#) MacIntyre CR, Chughtai AA, Rahman B, Peng Y, Zhang Y, Seale H, Wang X, Wang Q. Influenza Other Respir Viruses. 2017 Nov;11(6):511-517. doi: 10.1111/irv.12474. PMID:28799710

⁴ [Effectiveness of Masks and Respirators Against Respiratory Infections in Healthcare Workers: A Systematic Review and Meta-Analysis.](#) Offeddu V, Yung CF, Low MSF, Tam CC. Clin Infect Dis. 2017 Nov 13;65(11):1934-1942. doi: 10.1093/cid/cix681. PMID:29140516

⁵ <https://www.medrxiv.org/content/10.1101/2020.03.05.20030502v1>

⁶ <https://www.ncbi.nlm.nih.gov/pubmed/31159777>