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Several versions of a poster saying that face masks are dangerous have been making the rounds on social media. Dr. Mac Ernst of Oriental NC responds to these false claims.

### 1. Masks DO NOT decrease oxygen intake.

Facial coverings, including surgical masks and even N95 masks, do not stop the flow of oxygen into the body and do not result in lowered oxygen levels to the person wearing the mask. The simple experiment shown below can be replicated by purchasing a pulse oximeter and wearing it with, and without, a mask on.



Without a mask (Oxygen level 96%)

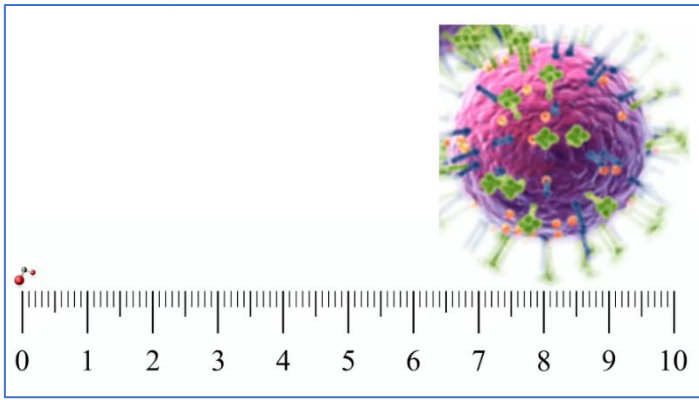


With a mask (Oxygen level 97%)

### 2. Masks DO NOT increase inhalation of toxins.

Humans inhale oxygen and exhale carbon dioxide. It has been claimed that masks trap the CO<sub>2</sub> exhaled, which is then re-inhaled into the lungs causing elevated levels of CO<sub>2</sub>. Carbon dioxide molecules are 0.000232 microns in size, and face masks generally filter particles of 3 microns or larger. Because of this size discrepancy, masks do not stop carbon dioxide from being exhaled and do not cause a dangerous build-up of carbon dioxide in the body.

Masks DO prevent the wearer from spraying respiratory droplets (on which bacteria and viruses travel) into the environment, potentially endangering others in the vicinity. Masks also block respiratory droplets emitted from others from entering the wearer's nose and mouth, reducing the risk of infection to the wearer.



The illustration shows the relative size of a respiratory droplet (which your mask blocks from coming out of your mouth and nose into the atmosphere) and a CO<sub>2</sub> molecule (which easily passes through a mask). The CO<sub>2</sub> molecule is that tiny set of dots on the left.

### 3. **Masks DO NOT harm the immune system.**

Some have said that decreased oxygen intake claimed in #1 and increased inhalation of toxins claimed in #2 mean that masks harm the immune

system. We have already seen that both these claims are false. Masks do not affect the levels of oxygen or carbon dioxide in the body and have NO effect on a person's immune system.

### 4. **Masks DO NOT increase virus risk.**

This false claim is that wearing a mask encourages other viruses in the body to take advantage of an immune system. We have already seen that there is no effect of wearing a mask on the immune system. Humans have many retroviruses residing in the body that are not harmful. Humans may become infected with retroviruses normally NOT in the body (such as the HIV virus) but wearing a face mask is NOT a risk factor for HIV or other external viruses.

As a surgeon, I wore a mask which prevented blood from my patients from being splashed onto my face, reducing my risk of HIV (if my patient had been positive for the virus). If a person is already infected with the HIV virus, wearing a mask will not activate an infection or make one worse. The immune system is NOT affected by wearing a mask.

### 5. **Masks are dense enough to block the virus.**

The claim that the weave of the fabric in masks is not tight enough to stop penetration of the virus that causes COVID-19 is **false**. Masks are not designed to stop the penetration of any virus, because a virus does not float freely in the air, but is attached to something, such as a respiratory droplet. Respiratory droplets are produced when a person sneezes, cough, sings, and even when a person talks (the louder, the more droplets). Masks ARE designed to prevent the respiratory droplets that a person (who may be infected) produces from getting into the air around them where others may breathe them and become infected. Masks also help the wearer by preventing larger respiratory droplets from others from entering the mask-wearer's nose and mouth.

### 6. **There is scientific support for the use of masks.**

The claim that effectiveness has not been studied is false. Masks have been studied extensively to control and prevent the spread of infectious diseases and have been used to protect both patients and healthcare providers since at least 1897. Multiple peer-reviewed studies have been published in major medical journals about the effectiveness of masks at stopping the spread of infectious particles.

As a former obstetrician and surgeon, I would not consider operating on a patient (and would not consider allowing my surgeon to operate on me) without a mask because of their effectiveness at protecting me and my patients. **I have worn masks many thousands of times, sometimes for hours at a time, as have my**

**professional friends and colleagues. I do not know of a single negative effect of any kind, major or minor, of a mask having been worn.**

For more information, you can read this recent summary of several studies on effectiveness

<https://www.ucsf.edu/news/2020/06/417906/still-confused-about-masks-heres-science-behind-how-face-masks-prevent>

or watch a video from a Surgeon's Perspective: Mask wearing and Hypercapnia:

<https://www.youtube.com/watch?v=I3iqGaAACUg>

## **HELP TO STOP THE SPREAD: WEAR A MASK**

The North Carolina Department of Health and Human Services issued a statement on June 30 stating that “people must wear face coverings when in public places, indoor or outdoor, where physical distancing of six (6) feet from other people who are not members of the same household or residence is not possible.” This requirement was issued because “scientific evidence suggests that public use of face coverings can help reduce disease transmission.”

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Mac Ernest is a retired physician, and a member of the COVID-19 Community Task Force. Before moving to Oriental in 2014, Mac was the Chair of the Dept of Obstetrics and Gynecology at Carolinas Healthcare in Charlotte. Prior to that he was Professor of Obstetrics-Gynecology at Wake Forest medical school in Winston-Salem. In addition to patient care and teaching, his research has included studying infectious diseases.



COVID-19 Community Task Force (CCTF) is a volunteer organization established to engage the community in responding to the COVID-19 Pandemic and to support and augment the County's efforts. The information shared by the CCTF is not an official communication from Pamlico County, its Health Department or the Pamlico County COVID19 Task Force.