Masks – Can I safely wear one?

A Q & A with Primary Care Physician
Dr. Marny Eulberg, MD

Question: Dr. Eulberg, I find that wearing a mask makes breathing hard. I started to faint Friday at work. Is it the carbon dioxide I am rebreathing? What other options are there?

Answer: Different masks make a difference in the control of respiratory infections (including COVID-19) in different ways. They affect the wearers ability to breathe differently as well based on the purpose and the materials the masks are made of.

The COVID-19 virus is only about 1 micron in size, which is 100 times smaller than the width of a human hair. (There is an interesting video on YouTube if you Google "What is the size of the COVID virus?"). So-o-o if the goal of the mask is keeping the virus particles that are in the air from coming through the mask material and into your nose and mouth then the openings in the fabric of the mask must be smaller than 1 micron. That means very, *very* little air can come in and out!

The challenge is finding a balance between limiting the amount of respiratory droplets that can be dispersed out into the environment by a contagious person, decreasing (if possible) the virus particles breathed in by a person wearing a mask, and breathability. At this time, we believe the primary purpose of wearing a mask is to keep the wearer from spreading germs to others—the mask can trap many of the much larger bacteria and reduce the distance that small viral particles travel when the wearer talks, coughs, or sneezes. For example, when wearing a mask an infectious person may now only spew respiratory droplets a distance of 1-2 feet instead of 6-10 feet. No mask, except those with hoses that circulate filtered air into a hood can keep the wearer from breathing in ANY viral particles.

A mask's effectiveness at serving as a filter to limit the spread of virus from an infected person is based on the materials the mask is made of and the number of layers in the mask. More layers or more dense materials increase the filtering capacity, but also decrease the ability of air to move in and out of the mask and thus the breathability. The easiest mask to breathe through is one with only two layers of a loosely woven fabric, but that also is the least protective. More effective is a mask made with four layers of material including at least one layer of a non woven material, such as that found in surgical drape material or fusible interfacing.

There are many reasons why a person might feel faint after wearing a mask for a period of time, including increased heat and moisture around the mouth and nose and a feeling of claustrophobia. If a mask is allowing enough oxygen in, it likely also allows most of the carbon dioxide to escape; the carbon dioxide molecule is only slightly larger than the oxygen molecule.

Obviously the best mask for you is one that you will wear! It may take some trial and error to find the best mask for you - one that provides the maximum protection while also allowing you to breathe semi-comfortably. Ask anyone who has had to wear medical masks at work for several hours per day. No mask is really comfortable!

Do you have a question for Dr. Eulberg? Email us at: info@papolionetwork.org

Additional articles and videos with Dr. Eulberg are on the "Living with Post-Polio Syndrome" page of our website.