

## Questions, Questions, Do We Get Questions

**Lyle R asks:** With all of the masking going on in Arizona and elsewhere, why do the number of COVID-19 cases continue to rise? Aren't masks supposed to stop the spread?

It is well known that masks such as surgical, cloth and the N95 mask have little if any effect upon transmission of the COVID-19 or any other virus for that matter as viruses are simply too small to be filtered out. This certainly was not lost on the Centers for Disease Control (CDC) that came out against wearing masks for the general healthy population but later reversed themselves, something they have done a number of times through out this pandemic. None of the studies conducted on the effectiveness of mask wearing were able to establish a positive relationship between mask and respirator use and the spread and elimination of the COVID or Influenza virus. [1] The only mask that has any effect at all is the N95 and then it only reduces clinical respiratory illness in health-care workers by about 41% and influenza-like illness by about 66%. [2] Additionally, Korean researchers found that persons who were infected with COVID-19 could spread the disease through coughing, even though they were wearing masks. [3]

Consider that when one wears a mask several things occur. First of all the virus that has entered through the mask is inhaled and will not be able to fully escape when exhaled. This allows for it to concentrate in the nasal passages and to potentially enter the olfactory nerves and travel to the brain. It is not surprising that COVID-19 has been found in brain tissue because of this close proximity. Rebreathing the virus over and over when the mask is kept on for long periods also allows it to travel into the lungs, an area where it has been found to flourish. [4, 5, 6, 7] Also of note is that rebreathing allows the virus to set up "house keeping" on the mucus membranes of the nose which has led to an increased number of positive tests and are probably the reason that COVID-19 numbers have not gone down but have risen! Consider that many of those with positive tests do not demonstrate symptoms and are asymptomatic carriers and will eventually develop antibodies.

Additional studies have found that medical personnel, as well as patients who wear masks for prolonged periods of time suffer from problems that vary from headaches due to carbon dioxide accumulation, hypoxia or a lack of oxygen delivered to the tissues and increased airway resistance, especially in patients with preexisting respiratory illnesses. In other cases the lack of oxygen can lead to life threatening complications such as arteriosclerosis or cardiac irregularities. [8, 9]

However, one of the most important findings is that a drop in blood oxygen levels leads to an impairment of immune function due to inhibition of CD4+ T-cells needed for immune function that occurs due to higher levels of hypoxia inducible factor – 1 (HIF-1) that induces the action of regulatory T cells, or Tregs, leading to an inhibition of their action against viruses. [10, 11] The take home here is that hypoxia lowers immune function and increases ones risk of becoming infected with COVID-19 or the flu. Lower immune function can be particularly problematic in patients with cancer as it fosters an acidic environment in addition to lowering T and B cell activity.

We have written before about whom should and should not be wearing masks and have suggested that medical personnel in high-risk positions at least wear the N95 mask. Certain susceptible patients may also benefit from wearing masks when in close contact with others but remove them when not. Recently several State Governors have lifted mask restrictions, hopefully based upon a review of the scientific literature. Because of the problem associated with mask wearing and the potential to increase susceptibility to infection to the population, [12] mask mandates really need to be reevaluated in light of the scientific evidence and not become a political agenda.

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## References

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