



# YOUR IMMUNE SYSTEM AND THE CORONAVIRUS

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**A**re you concerned about the coronavirus? Experts have deemed the novel coronavirus to be a major threat to public health. However, there is another virus that infects and kills even more every year. Seasonal influenza infects millions and kills over ten thousand people in the U.S. every season. With younger people dying from viral infections every year, it is important to measure and strengthen your immune system so that you are prepared for both seasonal and novel viral infections.

As of March 19th, 2020, there are now over 550,000 confirmed cases of the Coronavirus globally, with over 80,000 cases and 1,300 deaths in the United States, numbers that are growing daily.<sup>1</sup> With the incidence of coronavirus developing rapidly every day, we see that the demographics of the most serious cases and fatalities of these patients in the U.S. and globally have similar profiles. Often, they are adults over the age of 65, with underlying diseases and immune dysfunction that occur due to immune senescence, which refers to the gradual decline of the immune system as we get older. However, there have also been cases of young, seemingly healthy victims, which are causing many to rethink the root causes of death in those that contract the virus. Based upon the research that has been conducted on previous coronavirus outbreaks, such as Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS), the Covid-19 deaths of seemingly healthy and older victims alike can be indicative of underlying immune system dysfunction.

Imbalances and dysfunction in your immune system can place you at higher risk of serious infection from the coronavirus. Research has shown that patients with SARS have significantly lower natural kill cell counts and function compared to patients with less severe infections and healthy controls.<sup>2</sup> Natural killer cells, along with B cells and T cells, are one of the main pillars of your immune system that are used to fight infections and serious illness. When these cells are dysfunctional, your body's ability to combat the infection and restore normal function is diminished, placing you at risk of serious infection or even death.

In addition to the coronavirus which has captured the media's attention as it has spread throughout the world, we are also neglecting to take appropriate measures to protect ourselves from the flu, which is even more widespread. According to the CDC, the 2019-2020 seasonal influenza has already caused over 29 million illnesses and 16,000 deaths in the U.S. alone.<sup>3</sup> The World Health Organization estimates that every year, the flu leads to 3 to 5 million cases of serious illness and 290,000 to 650,000 respiratory deaths.<sup>4</sup>

**What can we do to protect ourselves from contracting viral infections?** There are many everyday approaches that can be taken to keep ourselves healthy, such as washing our hands regularly and practicing respiratory hygiene by covering our mouth and nose after coughing or sneezing. It is also important to get the seasonal flu vaccine as well. Although there isn't a similar vaccine for the coronavirus, researchers are actively working to create one.

While vaccines are vital in increasing our resistance to viral infections, they are only part of the solution. According to a study published in *Pediatrics* in 2017, the overall vaccine effectiveness against death in healthy children was 65% (95% confidence interval, 47% to 78%); however it was just 51% (95% confidence interval, 3% to 67%) in children with high-risk conditions.<sup>5</sup> Along with young children and those with pre-existing conditions, adults aged 65 and older are in the high-risk group which is likely to experience serious flu-related complications.<sup>6</sup> Vaccine effectiveness in older adults ranges from 14% to 62% depending on the viral strain.<sup>7</sup>

Therefore, what is the missing piece of the puzzle when you have taken all the steps to protect yourself, yet still may be at significant risk of contracting a viral infection? The answer is a compromised immune system. Previous research has shown that natural killer cells are a crucial part of the body's immune response to fight the flu and other serious infections.<sup>8</sup> Immune system dysfunction can place you at higher risk of being affected by the coronavirus, but you may be at similar or even greater risk of contracting the flu, which affects many more people every year!



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Here at the Maharaj Institute of Immune Regenerative Medicine, you can have your immune system measured to get a precise understanding of your immune health and the risk that you may have of contracting serious infections. The Immune Panel that you will receive looks at your peripheral blood and specifically your innate and adaptive immune system at a much more detailed level than standard blood tests, with focus on the three main pillars of your immune system: the B cells, T cells, and Natural Killer cells. After you have done so, you can take steps to work on your immune system to better protect yourself against viral infections.

## WHAT DOES WORKING ON YOUR IMMUNE SYSTEM MEAN?

1. If you have a healthy immune system, we can mobilize, collect, and cryogenically store your stem cells and immune cells in case you experience significant illness or infection at a later date. At that point, your younger, healthier immune system can be reinstated, to help combat the illness or infection. Additionally, using your own banked immune system means that you can be sure that there is little to no risk of rejection or infection.

2. If we measure your immune system and it reveals dysfunction in any of the three main pillars, the B cells, T cells, and Natural Killer cells, you can receive personalized, precision based treatment at the Institute. This treatment mobilizes your stem cells to move out of the bone marrow, into the peripheral blood stream, from where they will repair the immune system, reduce inflammation and repair damaged tissue. This will get your immune function back on track, so that it can naturally fight off infections.

This occurred for a 22 year old patient who came to the Institute with chronic infections that caused her to experience brain fog, recurrent sinus infections, colds, fatigue, bloating and constipation. Measurement of her immune system revealed significant immune dysfunction and poor natural killer cell function. The patient started receiving treatment at the Institute which boosted her immune system and improved her natural killer cell function. Her condition improved and she experienced improved memory, concentration, and energy, with no recurrence of her brain fog or chronic infections.

The recent outbreak of coronavirus and the underlying causes of death are still being heavily researched, but established research shows us that immune dysfunction plays a central role in this process. Along with coronavirus, seasonal influenza affects millions every year causing serious infection and death. Your immune health is vital to reducing your risk of serious infection from both novel and seasonal viruses and as a component of your overall health. Therefore, the importance of measuring your immune system and taking steps to improve or maintain your immune system function cannot be understated.