

Dr. Delgado COVID-19 Update 6-12-20

We've been told alternatively to not wear masks, to wear masks, to stay home, and to get out and reinvigorate the economy. Both Hydroxychloroquine and remdesivir got our hopes only to eventually make little to no impact. With over 100,000 deaths, we are near the end of this crisis? Is a vaccination forthcoming? How likely is it we still get the disease?

Viruses operate under the laws of science — physics, chemistry and biology. Eventually, with only time being the unknown, it will infect the majority of our population and only then, when herd immunity will likely be reached, will it begin to slow.

No specific public policy will really alter its eventual course.

This virus is likely going to keep transmitting to others until it hits that 60 or 70% level that generally leads to herd immunity. This portends to the virus circulating in our population for months and possibly years to come if we cannot produce an efficacious vaccine in the foreseeable future.

Three months ago, COVID-19 was not even in the top 75 causes of death in this country. Much of the last month, it was the leading cause of death in this country. This is more remarkable than even the 1918 Flu pandemic.

If it were to mimic influenza, which has produced 10 known pandemics, then we can likely predict its course. An initial wave that last months much like we are seeing presently and then it dissipates. In every instance, a second wave has occurred three to four months after the initial wave ended and has been much more severe.

Because this is a coronavirus — not an influenza virus — we cannot know how this will unfold for sure. Many other scenarios and models are also being considered, but with the known scientific laws related to viruses, we can expect Covid-19 to transmit until we see a majority of the population infected.

Most estimates suggest that 5% of our country has been infected to date. The level of death, economic disruption, resource allocation and pain that this has caused is hard to fathom, but imagine what this might look like if we were to reach 60 or 70% of our population?

Time & Dose

The virus doesn't magically jump between two people. How much time you are exposed and the amount of exposure — via the volume of aerosolized exposure — determines your level of risk.

Time-The longer you are in the vicinity of someone that may be infected the higher your risk. This virus is transmitted largely by what we call aerosols and we put out hundreds of thousands of these every minute just talking. Studies clearly show that the longer the potential exposure, the higher the likelihood of transmission.

Dose-Avoiding large gatherings of people or social events also limits your risk. The larger the pool of potential carriers adding to this milieu, the likelier your risk of exposure. Of note, of all of the documented outbreaks that occurred in Wuhan, all but one of them occurred inside. Fresh air and being in an outside environment, while maintaining social distancing, quickly dissipates these aerosols and dramatically diminishes this risk.

Its time and dose. It's limiting exposure and by doing so risk. These tenets remain unchanged.

More on vaccinations

There are now over 120 vaccine candidates and the allocation of researchers and funding to this endeavor are unprecedented. While there has been a tremendous amount of conjecture and optimism related to this venture, the question still remains. Will it work and if so for how long?

How robust an antibody response (i.e., what percentage will actually develop sufficient antibodies to offer protection) and the duration of any adequate response remains to be seen. The vaccine will not provide universal coverage to anyone who receives it. Furthermore, it is likely any vaccine will only provide short term immunity. This would entail the need for interval re-vaccination for it to continue to provide immunity.

In addition, production and distribution (as per my previous updates) will be a challenge for a populace of over 300 million that may need more than one inoculation to achieve immunity.

New treatment option?

When a pathogen invades your body, your immune system produces molecules called cytokines that aid in making your response more robust. This response is regulated and when no longer necessary slowly recedes.

Emerging research shows that this may be a significant aspect of the rapid decline we see in many patients with coronavirus. This response appears to become dysregulated and subsequently disproportionate leading to a “cytokine storm” of inflammation that overwhelms multiple organ systems as I discussed previously.

Several candidates are now in trials to see if targeting and tempering this response by blocking specific cytokines may lead to better outcomes. Some early anecdotal reports suggest that drugs that lower certain cytokines appear to lower risk of respiratory failure and death.

More importantly, blocking this response prior to its onset would seem the next logical avenue to pursue. In a paper recently published by Science Immunology, several cancer drugs appear to do just that. Though these trials have been limited, small and without controls, the early data appears promising and certainly merits watching.

Final thoughts

One of the most challenging parts of this pandemic has been trying to provide meaningful and thoughtful risk-based information that doesn't scare people needlessly, but at the same time, informs them and doesn't put them in harm's way for what can happen.

The current information age — with its inherent and voluminous biases, opinions and mostly unvalidated conclusions — has created a fractured populace as to what the risk may or may not be. I continue to try to provide clear and concise information as to those risks and measures that appear to mitigate them accordingly.

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