



July 20, 2020

This is Dr. Michael Tawadrous, I am a board certified Family Medicine Physician. I write this letter to explain some details about COVID-19 Pandemic that we are all facing. This letter is meant to explain scientific facts behind the pandemic. There are mainly 2 aspects that I will explain.

1. The reproductive number of the virus (R0) Pronounced as R-Naught. This basically explains how many people will get infected from someone with the infection. If $R_0=1$ that means each one with infection will infect one person, if $R_0=2$ that means each infected person will infect 2 others and so forth. You might think the difference between $R_0=1$ and $R_0=2$ is not that huge but the reality is this is a very significant difference of millions more people getting infected. Generally speaking if $R_0 < 1$ that means it will be a self limited disease and will eventually disappear. If $R_0 > 1$ that means the numbers of infected individuals will keep increasing exponentially.

To give a life example the Influenza virus $R_0=1.4$ which is why we have a flu epidemic season every year but the numbers are getting more controlled with the use of the flu vaccine.

Why is this R0 number important? Because it shows you how contagious a disease is. Think of it as when a child back in the days had Chicken pox and they gathered all children with this child in one room for 30 minutes to have them get the infection and get it done with, how many of them got infected? All of them... Why... Because R0 of Chicken pox is 9-10.

What's the R0 of COVID-19? It's too early to tell but most recent studies are showing R0 of 2-3, which is significantly high and shows that it's a very highly contagious disease compared to the Influenza virus.

2. The severity of the Illness:
I will describe this from my personal work experience with COVID-19 patients over the last few months. It's true that the majority of patients will get no symptoms to mild or moderate symptoms and they can be treated from home like getting a regular viral cold infection. But I have also seen patients that got admitted to the hospital in a severe critical condition unable to breathe with a severe lung infection that continued to worsen to the point that every CT scan they get done shows worsening findings from the one before. These patients can overcome the disease after many days in the ICU and sometimes this leaves them with life long lung damage OR other times they can't overcome the disease and pass away.
Who will end up having mild to moderate symptoms and who will end up getting severe symptoms is really unpredictable. I saw a 78 years old wheel chair bound gentleman who was only tested because he was exposed and he tested positive but he didn't really develop any symptoms. But I have also seen a 52 years old healthy patient without any chronic condition who suffered from severe symptoms and was admitted to the ICU.



If you combine first and second point you will get the picture of how our healthcare system in Arizona now is overburdened with thousands of severe cases. Many hospitals are running out of ICU beds. I know where I work we had to close a whole department to open it as a second ICU because of the huge number of severe COVID-19 cases. Our pulmonary physicians refuse to take any outpatient consults as they are overwhelmed with the number of patients they are trying to save in the hospital.

I talked with another physician from our church congregation, Dr. Gerges Makar who is board certified internal medicine physician and works as a hospitalist. He takes care of COVID-19 patients in the hospital on a regular basis. He confirmed that where he works their ICU had no more beds available and they had to close another department and open a second ICU in the hospital and as of yesterday they only had 1 bed available between both ICUs. He said about 75% of patients in both ICUs are admitted for treatment of COVID-19. This unfortunately is the reality of most hospitals in Arizona now.

Now after reading all this you might still think: Oh I will be ok if I get the COVID infection. I am a very healthy and young individual, I will definitely have No symptoms to mild or moderate symptoms. While this remains unpredictable. Even if you are right, how about the other 2-3 people you will infect? And the 2-3 other people each one of them will infect. After only one week about a 100 people will get sick because of your infection. How many of them do you think will be severe cases or possibly dead!!!???

Also you might think that once you get the disease you will quarantine so you will not infect anyone else. Actually people who get infected are at highest rate of being contagious at day 4,3 and 2 before developing ANY symptoms. That's when the virus level in blood is the highest. This really means you will infect other people before you even have any doubts that you have the infection.

In conclusion Dr. Makar and I are not writing this to put fear in anyone's heart. We are only stating facts to help us understand why we have all these regulations and guidelines in our community and in our church as an effective part of our community. Please follow the guidelines so we keep each other safe.

Love and Peace

Michael Tawadrous, MD

Gerges Makar, MD