

About Coronavirus-19

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As a 77 year old physician with a wife approaching 68, I have been closely studying the coronavirus-19 (hereafter, C-19) pandemic for 10 weeks. The recent incoming data is making me feel distinctly more comfortable. Some readers may feel less comfortable. Thankfully for all, knowledge is power. Time may reveal some errors here, since this is largely written from memory, but what follows is the plain truth to the best of my ability. It isn't copyrighted, so pass it on if you like.

First and foremost, no matter your age, don't be a denier or resistant to "rules" from local, State or Federal government. This pandemic is not a farce, political football, or some conspiracy. And it is not going to be worse in just the big cities with massive citizenry and public transportation. Nor is it going to be mostly over in one month, even two. The frightening spread in N.Y. and death numbers there are a clanging wake-up bell for the rest of our country. Already the case numbers and deaths in Europe, especially Italy and Spain, are staggering.

What is this virus: It is an RNA (as apposed to DNA) virus, part of the coronavirus family that includes at least 5 causes of the common cold. Viruses need a host, and they tend to mutate. Many reside in partially immune animals, and this one is thought to have originated from bats at "wet markets" in China where all sorts of live animals and birds are caged in close proximity for sale as food. Apparently, C-19 mutated to infect a human, and then mutated again to pass from human to human - as the more deadly corona viruses like SARS and MERS have done. One reason this virus is spreading so much is that it is much less deadly than SARS (10% deaths in reported cases) or MERS (34% deaths). This C-19 virus thus has millions of human carriers who spread it widely. The virus particles are exceedingly tiny, rather fragile, and no one has immunity to this virus to start with. It is not affected by ordinary antibiotics (nor are other viruses, contrary to popular belief).

What happens in the infection: Once a C-19 particle reaches your respiratory system via the air from some infected person's sneeze or cough nearby, or from your fingers as you touch your eyes, nose or mouth, the virus readily enters a cell and trouble begins as the virus takes over the cell and thus replicates itself. Soon the virus is all over in the respiratory system, "shedding" to other people and perhaps causing havoc in the lungs via an inflammatory pneumonia. Many who are sickened start off having the two symptoms of dry cough and at least two days of fever over 100 degrees. (Mild sore throat or diarrhea, or body aches, sometimes occur.) For some, this cough and fever worsen to shortness of breath, forming a C-19 symptom triad, now indicating progressive lung involvement and possible dire emergency needing immediate treatment. Rarely, the body's immune response is extreme and the resultant over-reaction causes lung failure or even a shock-like effect that can affect multiple areas and cause organ shut-down and death. On the other hand, many infected people are hardly sick or not sick at all. That's the biggest problem, there are carriers all over who may notice nothing or perhaps a snuffle or slight sore throat. The other issue leading to high infection rate (about 3 times the flu, it seems) is that flu really slams a person - they know they are seriously sick in a matter of hours - but with this virus the symptoms increase only gradually in most patients. They may be shedding virus for several days before becoming ill, or without being ill. Thus the easy spread. Most people who sicken do so within 4-5 days of exposure. But just because you were briefly near someone who tests positive does not mean you got infected. It does mean you should self-quarantine for 14 days, though, because that is the likely limit for getting noticeably sick and for spreading the virus if you are unknowingly infected. Recommendations may change as more data is gathered worldwide.

Who gets the virus: A month ago it was thought that most children were curiously spared, and young people had low risk, with the older population more and more likely to have serious symptoms or even death depending on age: 50s was serious, 60s bad, 70s terrible, 80s and up horrible. Recently, hard-hit Italy reported that of thousands of deaths, 87% were over age 70. But there were no details about the deaths. For some reason, older people are often hit harder than others, though younger people and even infants and children can and do get very sick, even die, at times. But what we now know is that ancillary factors are extremely important in severe and rapid C-19 disease. The sobering evidence now is that just about anybody can get the virus, but the ones with ancillary conditions are much more likely to show major symptoms and possibly get seriously ill. Or possibly die. However, cruise ship testing data shows that a considerable percent of older people may have the virus and show little or no symptoms. So it's the frequent combination of age plus other factors that gives the most risk. Older people without the other risk factors are at much less risk. But when those factors occur in younger people, they are at serious to severe risk too.

Who gets tested: There are not nearly enough kits to test large numbers in the U.S. yet, and the nasal swab testing is for active infection, not whether you had the virus unknowingly and recovered - as most people, even many older ones, do. Most testing is now being done by private labs. Either you are sent for testing by a physician or you wait in a very long line of cars at some testing site, with a great many of those people being turned away because they don't meet the testing criteria. The usual criteria are that a person had a significant fever for at least a couple of days, dry cough, and lung symptoms, or had distinct exposure to someone who tested positive. As of today, 24,700 people have been tested in Arizona. In my County, Yavapai, 707 people have been tested and 673 were negative, so even when there is good suspicion, less than 5% tested positive. In Maricopa County, greatly urban, about 7% of tests came back positive as of Mar. 30th.. So don't panic and seek testing when there are many who really need it. Those tests we have now should be reserved first and foremost for the known contacts, seriously sick, medical people, first responders and police. Many more kits are being produced, and we have some pretty good stats from countries who have already tested large numbers of people.

How to protect yourself and family: This is a mutated virus now having humans as its host. It cannot hide somewhere like a bacteria in soil or water and come back under the right conditions. Remove the host transmission and the virus will gradually die out, though it may well ease off this Spring and Summer like the flu does and then become a larger problem again next Fall. That's why social-distancing is so important, especially since we now know that a great many are unknowing carriers. So stay at least 6 feet away from other people in public. Hugs and handshakes are out. People over 60 and those with risk factors such as diabetes, heart disease and high blood pressure, immune suppression from disease or treatment and (we now know) serious obesity should stay at home and let others do any necessary shopping or trip to bank or post office, etc. Painful to say, these high-risk people, not just the seniors, should not accept visitors, even their own family and grandchildren (that is why the nursing homes and retirement centers are closed to visitors). Fix in your mind that picking up the virus from most anything that people have touched and then touching your face is a very significant way that people get infected. Always cover your cough or sneeze with your elbow, or, if you use your hand, wash or disinfect it with hand sanitizer immediately. Do frequent handwashing using any foamy soap for 20 seconds, enough time for soap-action to kill the virus (sing Happy Birthday to yourself twice, that's 20 seconds). Or use hand sanitizer containing at least 60% alcohol. Keep that sanitizer at belt or purse if possible, you don't want to be fishing for it or waiting to get to your car for it after shopping, because if you picked up any virus particle on your hands you may transfer it to face, purse, keys, car-door handle, etc. before you get your hands disinfected. (And

open the hand sanitizer without using the potentially infected fingers, each time!) Absorbent things like hair, cloth, towels, paper, cardboard, etc. probably only allow the virus to live a few hours or at most a day. Drier surfaces and especially metal or plastic surfaces may harbor live virus 3 days or more. Mail, reportedly, is pretty safe, and likewise food. If you are older or have risk factors as above, I recommend you disinfect things that could be contaminated, and that's a good idea for all. My careful wife wipes down the mail and any packages, as well as any store items before they come into the house. Remove any food packaging there or in a designated area where food is not handled or prepared, including ordered-food containers and wrappings, followed by immediate hand washing without touching anything including the sink faucet and handle (use forearm or wrists for those). Often wipe down any frequently used household or work items or surfaces, and never share phones, pens or the like. Any household disinfectant like Lysol is good but don't spray it on yourself! Or make disinfectant with bleach (Clorox) using three teaspoons per quart of water or 1/3 cup to a gallon. That is about 2% bleach, but it is effective. "Clorox" hand wipes aren't really Clorox-containing but are apparently effective, and won't bleach what you wipe. Avoid using cash, don't let anybody else handle your credit card, and never use the pen at a store counter! Press those credit card machine buttons with your knuckle. Try hard not to touch your face, especially eyes, nose or mouth. Most people with C-19 will not need hospitalization and can recover at home. Don't go out if you are sick with C-19 and wear a mask if around any family member at home. Sick people should have only one caregiver and their own room and bathroom if possible. Their food and dishes should be handled only by this person, who is using great care and doing lots of handwashing. Often used surfaces in the house should be frequently disinfected. More on masks: we should be sure that surgical and N95 masks are in the hands of our medical persons, first responders, police, testing personnel, etc. But the CDC guidelines have just changed and the President has asked all Americans to wear a simple or homemade mask if going out. That is because new data shows that many people are carriers without being sick, and thus a mask is protecting others from the potential that you are infected and don't know it. Wearing a mask if not infected is a two-edged sword, since it prompts you to touch your face a lot, and thus this new directive was very carefully considered. The bottom line: stopping the spread of the virus is paramount.

What about going outside: Follow your local rulings, but going biking, hiking or walking alone or with a family member is very likely safe. This virus is not thought to be blowing around in the air in general. But don't do that exercise with your pal or any small group, especially if you are over age 50, unless you truly stay 6 feet apart. It's not natural for humans to do this, so it takes some willpower. You may like or love them, but they might look perfectly healthy yet carrying the virus. Remember that. Exercising alone or with a family member is safest.

What are the risk factors for serious illness or death: Every day that passes provides more information, being gathered worldwide. But there are loads of mis-information, even potentially fatal information, on the internet and social media. Be very careful about believing what you read or hear from these sources. Some will even have cleverly placed (or said) "vouching" that is untrue. I see it frequently, passed on by well-meaning but misguided people who didn't vet or want to support a particular world-view. Practice vetting by Google search and sites like Snopes.com, and listen to the CDC and Health Department authorities, even if what you see elsewhere appeals to your world-view or politics (see links below). The life you save may be yours or that of a loved one! The most serious risk factor for severe disease or death was previously thought to be age, both because older people often have other health problems and because the immune system becomes less active as we age. But primary or ancillary factors, particularly heart disease, lung dysfunction, and immune suppression play a major role in severe progression with hospitalization and possible intubation so a ventilator can take over breathing. Severe progression is what causes deaths from C-19. Also, statistics from China and

S. Korea strongly suggest that smoking is a major risk factor too. Nonetheless, older people may well survive the illness and a number do not even need to be hospitalized. Why? The very latest information (yesterday and today) from a prominent Infectious Disease expert's study in 72 C-19 patients as well as a study in Seattle and data from China and France show that diabetics and even pre-diabetics, and the morbidly obese with body mass index (BMI) greater than 40, are at considerably greater risk for rapid disease progression and the need for intubation. Of the 72 seriously-ill patients, 32 were diabetic and 23 pre-diabetic (74%). And of these 53 patients, 20 developed severe disease progression needing intubation, of which 18 were diabetics and 2 were pre-diabetic. None of the other patients needed intubation. Of the severely-ill patients in these 72, the average BMI was 30.7. (25 were overweight and 39 obese, which is 89% of the 72 patients). "Obese" starts at BMI 30.0 and "morbid" or "severe" obesity starts at BMI 40.0. (Examples: 5'6" and 186 pounds will put a person at BMI 30, and 5'9" and 275 pounds will put a person at BMI 40. See BMI link below to calculate your own BMI and for lots of health info.) Even young people with morbid obesity are at severe risk from C-19. Notably, obesity is a primary factor in adult-onset diabetes in our society - one does not "catch" diabetes. So this study is showing the combined effects of obesity and diabetes in severe cases of C-19. This is real and has nothing to do with "body shaming". Instead we all need the facts, looked at realistically. As we face the coming months, even a possible renewed C-19 season next Fall, diet, exercise and weight loss is one more important factor to reduce the heart disease, obesity and diabetes risk if C-19 is contracted.

What to do if you have the C-19 symptoms. Do not go to an Urgent-Care, nor even your Doctor's office or the E.R. without calling first to say you are coming so they can prepare. If you are modestly sick, stay home and protect your family as above. If you start getting the respiratory symptoms of shortness of breath, call your Doctor's office or the E.R. for what is best to do. (I'm not using the ubiquitous term "health care provider", because the information level you may reach varies vastly, no matter your cherished world-view. Now is a time to be completely pragmatic.) So do not panic and go to some Urgent Care, clinic, office or E.R. when there are a lot of people there who do have C-19 and the odds are very high that you don't! (See "Who gets tested" section above.) But if you really need medical care for progressing lung symptoms, some local clinic or care-provider is not the place to be. The hospital is. The respiratory symptoms can be very serious but they come on slowly. Don't ignore them by telling yourself "I'll be OK". (Men, are you listening?)

What is positive: I believe all this will bring Americans together against this sudden and unseen enemy in a new worldwide war. The younger people are going to see that the life-cautions their seniors keep expressing are based in experience, and that "The Government" is not a panacea or limitless money-bag. Also, those who pay attention are noting that the horrific increase of cases and high death rates in Italy and Spain are taking place in two of the socialized-medicine countries. Sounds good, but when the chips are down, it isn't. Whereas the Spain and Italy death rates are above 10% and 8% each, our country has the greatest number of cases in the world, yet the death rate is around 1.7 % now. That is likely to go down considerably, here (and elsewhere) because a death rate comparing number of reported cases versus number of deaths (as done now) depends heavily on the amount of testing done, and does not compare the number of deaths to the actual number of infected people in that society. We know from recent data that there are a great many more C-19 infected Americans than those who are sick or closely exposed and thus got tested. And the data-gathering and analysis is improving literally day by day. The death rate from the flu kills several hundred thousand a year here (estimated) but this is spread over many months and since flu is so common the death rate is believed to be around 0.1%, or one in a thousand cases. C-19 is predicted to have an actual U.S. death rate of perhaps 2 or 3 in a thousand infections. The key factor is slowing

the spread so our health care systems are not overwhelmed, as has happened in New York. Encouragingly, the CDC graph of statistics for the past 7 days are not definitive yet but are highly suggestive that the number of cases by date of illness onset is leveling off.

Potential treatment: A Federal law encourages companies to develop low-usage (“orphan”) drugs. Last week a large U.S. drug company was granted “orphan drug” status for Remdesivir, which formerly had low usage potential. It may well fight C-19, so here that law is possibly paying off. Further, the Infectious Disease expert treating the seriously to severely-ill C-19 patients above has been using the drug hydroxychloroquine for all his patients, and of about 80 now, a few with bad pulmonary progression were intubated after they had just two days of this drug, coupled with a co-drug called azithromycin. But not a one of the patients who got 5 days of such treatment had to be intubated. Other studies have found similar results. So he flatly said yesterday: “I think this is the beginning of the end of the pandemic coming”. Over-stating, or prophetic? The study is small by medical standards, so time will tell. Also, many physicians and other health care personnel at high risk of infection have been taking hydroxychloroquine daily as prophylaxis since mid-March, he reports. (But it is not without risk itself and needs cardiac monitoring to look for cardiac irregularities.) Lastly, a vaccine for this virus is being highly sought all over the world, and medical papers on C-19 rapidly published online about this and other factors now number over 800 already, light-years ahead of formerly published papers in print. So information is flowing vastly faster than in the past, and the world is sharing it in a mutually suffered pandemic. A tested vaccine will likely take at least a year though.

Important links:

1. *Federal Center for Disease Control (CDC): www.cdc.gov/coronavirus/2019-ncov/cases-updates/cases-in-us.html*
2. *Arizona Dept. of Health Services (AZDHS): www.azdhs.gov*
3. *Maricopa County Public Health Dept.: www.maricopa.gov/5460/Coronavirus-Disease-2019*
4. *BMI calculator and info: https://www.cdc.gov/healthyweight/assessing/bmi/adult_bmi/english_bmi_calculator/bmi_calculator.html*