

COVID-19 Pandemic Explained  
A Family Physician's perspective on a new disease  
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### **The Short Version:**

COVID-19 is real. It is not a media hoax. I know saying this should not be necessary, but there are those who would like to convince others that this virus is under control and will be over soon. A simple glance at the world map and perusal of the Lancet Resources (a reliable and revered medical journal) should be enough to convince us that those sentiments are wishful at best and deadly at worst. The World Health Organization declared COVID-19 a Pandemic on March 11, 2020.

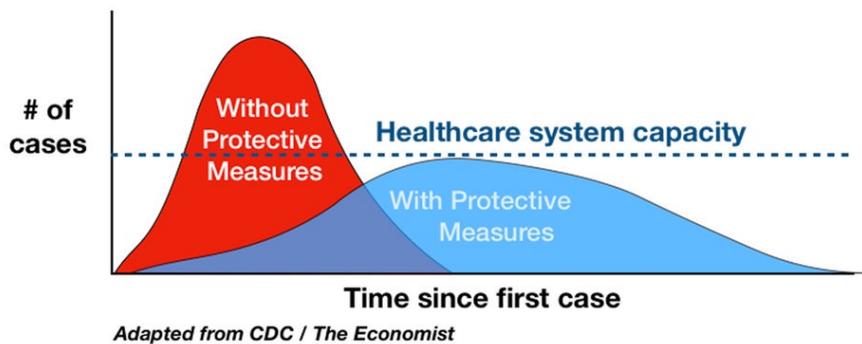
COVID-19 is a virus, not a plague. Like the many other epidemics and Pandemics we have seen in the past and will see in the future, it has characteristics that can be and are being identified, and will run its course. Its spread is adversely affected by our present travel patterns, but our knowledge of it is positively affected by our unprecedented access to information. Of course early inconsistent information creates fear and perhaps overreaction in the short run, but in the long run it provides us with the tools we need to make decisions to protect our loved ones and ourselves. And surprisingly, the Internet can provide ways for us to interact with others and to maintain our "villages" without running as much of a risk of becoming infected.

COVID-19 cannot be contained by isolating only people with symptoms, because it can be spread by infected people who do not yet have any symptoms. It will therefore require much more testing to discover the scope and spreading patterns, development of treatment for the very ill, and ultimately a vaccine. We need to make sure that we all practice a number of things such as these:

What to do now?

1. Wash your hands after touching public or work surfaces and before eating or touching your face, mouth, nose or eyes! Soap and water is best, since the soap dissolves the covering of the coronavirus. If you can't get to soap, use a hand disinfectant.
2. Disinfect surfaces frequently. Wet all surfaces with bleach, peroxide or alcohol cleanser and allow to dry, Frequent disinfecting is better than a single deep clean.
3. Hunker down and observe social distancing. If you attend gatherings try to maintain a 6 foot distance from the person you are talking to. Stop shaking hands.
4. If you are at higher risk, that is if you are over 60 or you are chronically ill, stay home and avoid gatherings and avoid travel on public transportation, cruise ships, or commercial airlines.
5. If you are sick with a cough and fever, stay home. Call your clinic and see what options you have for getting tested and for being seen if you are very sick.
6. If your workplace or city or state makes rules, follow them. Currently in the State of Washington there are restrictions limiting gatherings to less than 250 people in King, Snohomish and Pierce counties, and anyone with symptoms is asked to self-quarantine.
7. More testing has been made available, so that those with cough and fever and a negative flu test can be tested for COVID-19. If you think you should be tested, it is best to call your clinic for instructions, as different health systems have different protocols for testing. Increasingly, drive through or "parking lot" triage is being developed to minimize the chance of infecting others in the waiting room.
8. Nursing home residents are especially vulnerable to COVID-19, and visitor restrictions are being implemented, but that may not be enough. It is likely that stricter regulations will be imposed to try to prevent spread of the virus to the nursing home population.

9. Even if you are younger and healthy, look carefully at the world map while considering whether or not to travel right now. You may have difficulty returning home if the situation in the country you are visiting worsens. If you do become infected, you could bring it back home and infect family, friends and colleagues. Many corporations are putting a halt to all non-essential travel since employee illness and quarantine affects the bottom line.



The reason for these recommendations and restrictions is not so much to prevent infection; since many of us will be infected eventually due to the fact that infected people without symptoms can spread the virus. Rather, it is to slow the spread of the virus to avoid overwhelming our medical systems with a sudden flood of cases. (see above diagram)

These protective measures will give us more time to develop training and protocols and to increase capacity to handle ill patients. Also, in prior pandemics, viruses such as the 1918 Spanish Flu affected the first victims more severely; as time went on and the virus spread, it tended to attenuate, or to weaken, so that later victims became less ill.

Slowing the spread of the virus also gives society time to organize testing, to learn more about the virus and to educate people about how to best protect themselves, to develop effective treatments, and to work on a vaccine.

Just remember that as with all epidemics and pandemics, this too shall pass!

**\*This information is a compilation from numerous sources and is accurate as of March 12. It will change and I will send out a revised version in a few weeks.**

## **The Long Version:**

### **What is COVID-19?**

COVID-19, popularly known as Coronavirus, is a new (novel) virus that was first identified December 31, 2019 in Wuhan, China. It is now renamed SARS-CoV-2. The term ‘coronavirus’ actually refers to a broader category of viruses that include the common cold as well as COVID-19.

Like many new viruses, it had its origin in animals; this one most likely started in bats, but since no bats were sold at the seafood market in Wuhan at the disease epicenter, it is hypothesized that there may have been an intermediate animal that brought the virus to market. This intermediary may have been the Pangolin, a rare animal that is illegally trafficked.

This virus, unlike many animal viruses, can infect humans and does so by binding to ACE2 receptors in cells along the body’s airways. (See link below showing how the virus infects cells.) It incubates for about 5-6 days before causing symptoms, but one of the problems with controlling its spread is that the incubation period can vary from 1-14 days, and some studies show that in some people it may incubate for up to 24 days before symptoms appear. This makes it hard to define exactly how long quarantine should be.

The length of time that a person can transmit the virus to others (the infectious period) is longer with COVID-19 than with influenza – it may be 10 days or more, compared with 4-6 days for Influenza A. In addition it appears that, like Influenza A, people who have not yet developed symptoms may infect others, 1-2 days before symptoms begin. This distinguishes COVID-19 from SARS, in which only symptomatic people spread the virus.

The virus is spread mostly through large droplets via coughing or sneezing, but has also been found in blood and stool. Infected people without symptoms or with very mild symptoms do appear to be able to spread the disease to others. So far it appears that spread from a pregnant woman to her fetus is not likely.

The virus can also live on household surfaces for days, possibly as long as 9 days, (though this depends on the temperature and other environmental conditions, so in most cases it will die before 9 days.) In contrast, if the surface is disinfected with bleach, peroxide, or a cleanser containing more than 70% alcohol, (see links to EPA and CBC lists below) the virus is killed quickly as long as enough cleanser is used to wet the entire surface, and it is left to dry on the surface.

Since the virus may be on surfaces in public areas, (and this goes for the flu and cold viruses too!) it is important to wash your hands after touching surfaces and before eating or touching you face, eyes, nose or mouth. Soap and water is best, but hand disinfectants with at least 60% alcohol work too. Right now, price gouging on these is happening, so I’ve included a recipe for making your own below.

## What are the symptoms of COVID-19?

80% of infected people have mild or no symptoms  
14% of infected people have more severe symptoms  
6% become critically ill

The above numbers are based on the Chinese experience and appear to vary.  
In South Korea the disease appeared to be milder. There is also significant variation by age group.

When people develop symptoms, they are:

Fever	83-98%
Dry cough and shortness of breath	76-82%
Fatigue and muscle aches	11-44%

The death rates (Case Fatality Rates) in China by patient age are:

Under 10 years of age	0%
10-39 years of age	0.2%
40-49 years of age	0.4%
50-59 years of age	1.3%
60-69 years of age	3.6%
70-79 years of age	8%
80 and older	14.8%

In addition, younger patients with underlying medical conditions such as chronic bronchitis, emphysema, heart disease, chronic kidney disease, cancer and diabetes, have a higher chance of more severe disease and mortality.

Overall the mortality of COVID-19 is estimated to be about 1 %, roughly 10 times higher than the 0.1% mortality rate seen with Influenza A.

When death occurs, it is usually caused by pneumonia. Unlike the pneumonia that complicates Influenza, which is caused by bacteria, the pneumonia caused by COVID-19 is caused by the virus itself. For this reason, antibiotics don't work, so support measures and oxygen, and perhaps a ventilator, may be needed in more severe cases while the virus runs its course.

Work is being carried out to find anti-viral mediations that might be used to treat more severe cases of COVID-19, and a vaccine is under development but will likely take a year or more.

## Testing:

Much more testing needs to be done, but at present, although WA State imposes no limitations on who can be tested, Medical centers such as Providence do not test unless a patient has a fever of 100.4 or greater **and** a cough, **and** a negative flu test. Furthermore, to obtain a test order, there are barriers. This is related to the shortage of test kits but will have to change if we are to successfully slow the spread of COVID-19.

It will be necessary to ramp up our community surveillance very soon to avoid the rapid spread of cases that has been seen in Europe. South Korea has led the world in its testing efforts, creating infrastructure adequate to test 10,000 people **per day** using temporary drive-up labs. As of today, 3/12/20, only 11,000 tests have been done in the United States TOTAL! There is no reason that we as a nation cannot meet or exceed the capability developed by South Korea..

## **Preventing coronavirus: Wash hands**

According to the CDC, this is how to properly clean your hands.

### **With soap and water:**

- Wet your hands with warm water. Use liquid soap if possible. Apply a nickel- or quarter-sized amount of soap to your hands.
- Rub your hands together until the soap forms a lather and then rub all over the top of your hands, in between your fingers and the area around and under the fingernails.
- Continue rubbing your hands for at least 15 seconds. Need a timer? Imagine singing the “Happy Birthday” song twice.
- Rinse your hands well under running water.
- Dry your hands using a paper towel if possible. Then use your paper towel to turn off the faucet and to open the door if needed.

### **With an alcohol-based hand sanitizer:**

- Put product on hands and rub hands together
- Cover all surfaces until hands feel dry
- This should take around 20 seconds

### **How to make your own hand sanitizer:**

- There are multiple recipes circulating about how to make your own sanitizer. One posted on [ThoughtCo.com](https://www.thoughtco.com) by chemistry expert Anne Marie Helmenstine, requires two ingredients: isopropyl alcohol (99% rubbing alcohol) and aloe vera gel.
- The ThoughtCo recipe calls for two-thirds of a cup of rubbing alcohol or ethanol and a third-cup of aloe vera gel. According to the reference site, essential oils can also be added to it.

## **Helpful Links**

Lancet Resource Center:

[https://www.thelancet.com/coronavirus?dgcid=kr\\_pop-up\\_tlcoronavirus20](https://www.thelancet.com/coronavirus?dgcid=kr_pop-up_tlcoronavirus20)

Lancet article on COVID-19 Disease Mitigation:

[https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)30567-5/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30567-5/fulltext)

Link showing the coronavirus and how it infects cells:

<https://www.nytimes.com/interactive/2020/03/11/science/how-coronavirus-hijacks-your-cells.html?action=click&module=RelatedLinks&pgtype=Article>

World Map Link for keeping track of the global spread of COVID-19:  
<https://gisanddata.maps.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6>

Technique on how to disinfect surfaces:  
<https://multco.us/novel-coronavirus-covid-19/cleaning-and-disinfecting>

List of disinfectants approved by the EPA for killing COVID-19:  
[https://www.epa.gov/sites/production/files/2020-03/documents/sars-cov-2-list\\_03-03-2020.pdf](https://www.epa.gov/sites/production/files/2020-03/documents/sars-cov-2-list_03-03-2020.pdf)

List of disinfectants recommended by The Center For Biocide Chemistries:  
<https://www.americanchemistry.com/Novel-Coronavirus-Fighting-Products-List.pdf>

Comparison with 1918 Spanish Flu:  
<https://www.theatlantic.com/ideas/archive/2020/03/were-not-facing-second-spanish-flu/607354/>

WA Department of Health COVID-19 page:  
<https://www.doh.wa.gov/Emergencies/Coronavirus>

Northeast Washington Tri-County Health District website:  
<https://www.netchd.org/illness-disease/coronavirus/?fbclid=IwAR2Z22ugfc1L0jFkp3njuliOdguOETpVS7C3jO4-IWTX7GdHZkn8Pn2mA3g>

Super-interesting long story of the evolution of influenza (especially the first few articles):  
<https://www.ncbi.nlm.nih.gov/books/NBK22148/>

3/10/20 Podcast interview with Anthony Fauci MD, NIAID  
<https://podcasts.jwatch.org/index.php/podcast-256-anthony-fauci-talking-with-patients-about-covid-19/2020/03/10/?query=RP>