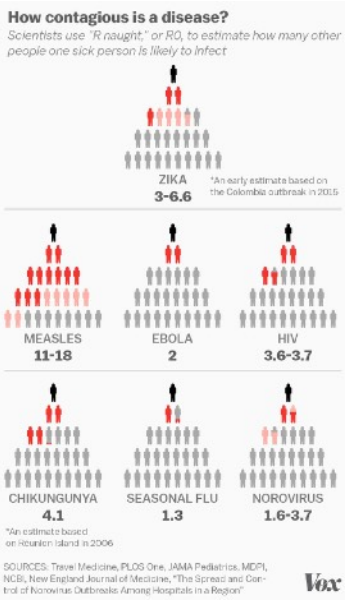
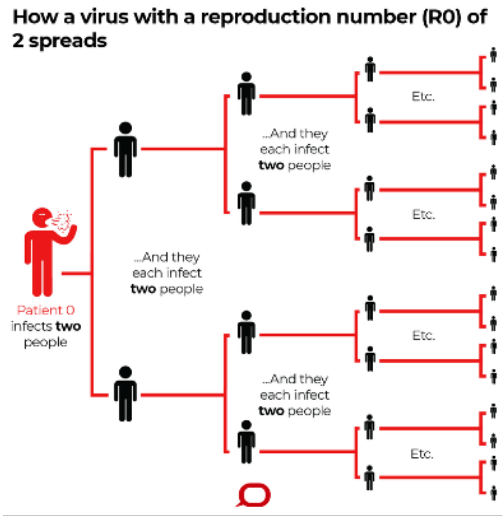
Why we should all take the coronavirus (covid19) seriously:

I am surprised at how many people I am talking to are repeating the partial sound bites present in the media: I have had many conversations with patients that focus on incorrect or irrelevant facts that actually pull their attention away from the seriousness of this virus- as well as other people who exhibit partial understanding, but then panic for their family or immediate family members. I am writing this with the hope that this will heighten knowledge and increase vigilance, while hoping to reduce unreasonable fear.

Firstly: the biggest sound byte that i am hearing is : “ The corona virus has killed less people than the influenza this year”. Yes . This is unequivocally true. Because in the United States alone: the influenza virus infects roughly 9 to 45 million people annually. It becomes severe in approximately 1.5-1.8% of cases requiring hospitalization, and results in approximately .1% fatalities. That is approximately 12000 to 61000 deaths annually in the United States alone . https://www.cdc.gov/flu/about/burden/index.html. This study: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6815659/ estimates the 2017 seasonal influenza worldwide deaths to be an average of 389,000. (Still estimating about .1 %of global influenza cases) . This is a retroactive look at a virus once it has finished spreading. Covid19, however, is still in the very early stages of spread. We should instead look at other factors when comparing the two.

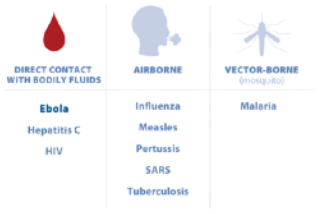
There are three major factors to take into account when discussing the significance of a virus: basic reproductive number, virulence, and how difficult it is to contain(type of spread) . The basic reproductive number(R0) is essentially- how many people a single infected person is likely to infect. If an R0 is 1, it means essentially, that one sick person is likely to infect or transmit their virus, to one other person. If an R0 is less than 1, it means the virus has difficulty transmitting from person to person, and will likely not infect others, therefore dying out. If an R0 is higher, it means that it is more infective, and the likelihood of it transmitting from person to person is much higher. This scale is logarithmic- and graphing these numbers can really show the incredible difference between a low R0 and a high R0:

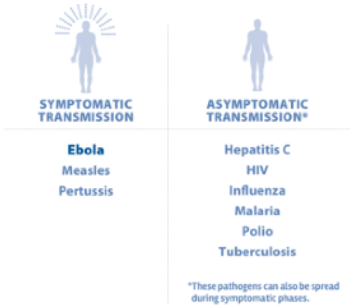




The virulence of a disease, is how many people it kills (mortality rate) and how quickly the body succumbs to the illness. Diseases like Ebola are highly virulent- mortality rate is about 50%, with an incubation period of 2-21 days. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5175058/

The last factor is just as important as the previous two: how difficult is it to contain? Factors that make it more difficult are: long asymptomatic infective stage, long incubation period and type of spread, and the disease generation time- or, the time it takes for a doubling of Infection numbers. The following graphs show some examples: (https://www.kff.org/infographic/ebola-characteristics-and-comparisons-to-other-infectious-diseases/)





So, looking at above- Ebola is currently one of the most deadly viruses we fight, and it is very infective (it has an estimated R0 of anywhere from 1.3 to 2, depending on the strain. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4347917/
BUT- it is spread only in the symptomatic stage, and is only spread via blood and fluids. This allows it to be found and contained more easily than something that is airborne, or something that transmits asymptomatically, when a person can infect without knowing they are ill. Another trait with a severely virulent virus such as Ebola is that people who are infected get struck so quickly, that they don't have much of a chance to infect others. With proper gear, and handling techniques, Ebola is containable.

Here is a chart that outlines some major past epidemics, for comparison.

Virus	R0	Spread type	Mortality rate	Number of people infected/ deaths	Percent of cases with severe or critical illness	Vaccine or reduced infectivity?
Spanish flu (pandemic of 1918	EST. 1.5-2.1	Not fully known, assumed to be similar to common influenza	2.5%	20-40% of world population: Killed 40,000,000 people worldwide	25-30% of cases	Not at the time- this was a new virus for most of the world.

Virus	R0	Spread type	Mortality rate	Number of people infected/ deaths	Percent of cases with severe or critical illness	Vaccine or reduced infectivity?
Common flu	Est 1.27	Asymptomatic spread , airborne spread, possible vector spread (ability to live on surfaces for a time (24-48 hours)	0.1%	9% of world population (up to 1 billion) (389,000 deaths in 2017 (300,000-500,000 deaths on average	5 million severe cases yearly worldwide	Yes- previous infection can reduce reproductive rate of individuals
SARS	EST 1.1	Same as coronavirus	12.4%	8098/774	20-30%	No
Measles	12-18	Asymptomatic spread , airborne spread	0.2%	Prevaccine: (US figures: 3-4 million annually, /500,000	25%	Yes- widespread vaccines
Ebola	2	Symptomatic spread, bodily fluid spread.	>50%	2014-2017, approx 28,000 cases/ 11,300 deaths	All	No

So, how does coronavirus compare to the above diseases?						
Coronavirus	2.28	Asymptomatic spread , airborne spread, possible vector spread (ability to live on surfaces for a time) (Anywhere from 2 hrs to 9 days)	Possibly 3%? Between 1-5%	N/a	15-20%	No

*most above studies directly regarding coronavirus are not peer reviewed yet.

The one that Coronavirus most closely resembles is Spanish flu.

Spanish flu vs Coronavirus: Spanish flu was striking in that over half of all deaths were young adults (between 20-40 years of age (. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2720273/) This is not the case with coronavirus, which follows the typical influenza type Model: most patients exhibiting severe complications are immunocompromised, and have underlying comorbidity, with cardiovascular diseases and diabetes being a significant factor. https://www.medscape.com/viewarticle/925681 Another difference in Coronavirus: there have been no known reported deaths in children under the age of 9. Children get this virus, but it is mild, and similar to the common cold for them.

Can we contain coronavirus at this point?

Coronavirus is severely infective, and is serious in a large percentage of cases. The virus is also shown to be able to live on surfaces, for up to 9 days. At this point worldwide containment is unlikely. There are a few major reasons why this is unlikely to be contained:

1) highly infective
2) able to live on surfaces for up to 9 days https://www.journalofhospitalinfection.com/article/s0195-6701(20)30046-3/fulltext?mobileUi=0
3) No person has effective immunity to this virus
4) Asymptomatic spread for possibly up to 24 days https://jamanetwork.com/journals/jama/fullarticle/2762028 (but more likely 2 weeks)
5) Draconian containment measures have been shown (by China) to be effective at reducing spread of this virus: this is good news. But ask yourself: is every country capable of halting ALL business, trade and travel for 2 months? Are people of other countries as disciplined as the Chinese at maintaining a 2 month in home quarantine?
6) Countries that are not open about spread numbers are already pockets of vector spread (Ie: Iran)
7) Health insurance: countries that do not have universal health care will have serious problems- there was already a case in the USA of a person who underwent an enforced quarantine, and then got a $ 3900 medical bill (this is a news article) https://www.nytimes.com/2020/02/29/upshot/coronavirus-surprise-medical-bills.html. Extrapolate this: if a person has no medical insurance, and they risk quarantine if they get tested and a subsequent medical bill- how likely will it be that they will attempt to hide symptoms rather than be subject to a potential astronomical bill?
8) There are already cases in many countries and community spread appears fast once initial spread sets in.

At this point, medical officials are already starting to change strategies from “containment” to “slow spread”. Why is this? Because hospitals can’t possibly keep up with the 15-20 percent critical cases that will require oxygen to get them through the severe and critical phase of illness.
What does this mean?
China was incredibly responsive at handling the massive number of severe cases- by building hospitals to accommodate them. Which basically means that any person who required supportive care in China received it… And the mortality rate was still 3% (ish). **This will be a problem for other countries unless the health care system can keep up!** Without supportive care, I would highly speculate mortality rate will increase substantially.

So slowing down spread will be essential going forward.

When WHO mentions that we need to “prepare”, they don’t explain how to prepare or what that means.

Let’s go over some stats again, to clarify some points:
1: your kids will be fine. This applies to athsmatic kids, already sick kids, etc...
2. Most people under 50 will be fine- the healthier your immune system, the better for this virus. (One thankful difference from the Spanish flu)
3. If you are immunocompromised, or are taking steroids, or are over 60, more caution should be taken. (Steroids depress immune system and may be why Iran’s initial

Mortality rate was much higher than China- Doctors there may have been giving steroids to hospitalized patients) https://www.sciencedaily.com/releases/2020/02/200206110703.htm
3. Mentally prepare, for the following potential things to happen in north America and worldwide (remember: these measures may be taken to slow the virus spread, so hospitals are not overwhelmed. It is likely assumed that over time a large population number will still contract this disease. So these measures may be implemented for a while, until either a vaccine is produced, or more beds and ability to provide supportive care are in place. This is currently a massive potential issue, so **expect this will happen!**

- your work may be shut down or you will have to work remotely
- Your kids schools may be shut down
- Gatherings of all type are likely to be cancelled, including conventions, seminars, sports games, dance events, music concerts, etc...
- Airplanes may be grounded
- Non essential travel will likely be halted
- Restaurants, gyms etc... may close for a time

So how do you "prepare" ?

- Don't book vacation. Save that money for the potentiality that you might not work for a period of time.
- Think about how to entertain kids stuck at home for a period of time.
- Stock up on a month supply of food (there is no reason to think that water or electricity will be affected, so hoarding water makes no sense). Toilet paper, activities, etc...
- Contemplate cancelling travel in the near future (remember if you do travel, there is a risk that you may end up being quarantined at wherever you go for 14 days.

Alternatives to protect yourself if you must travel: Drive instead of fly. Wear a n95 face mask (if you can find one at this point), and disposable latex gloves. The masks likely won't protect you from a virus, but they WILL remind you not to touch your face- and if a virus can live on surfaces, you touch the surface then touch your face- you have the virus. So the mask will definitely help for that purpose (in which case any mask will help for this).

How to protect yourself from the virus?

As previously stated: you are likely to get it, either this year or next year. So you want to delay getting it until a vaccine is produced, or until supportive care is sufficiently mobilized in case you need critical care. Until then: most importantly-

- Wash your hands often
- Don't touch your face (masks may help to remind you of this)
- Wear gloves, or have tissue in your pocket for touching public surfaces
- Clean public surfaces with alcohol or disinfectant.
- Use your tap card instead of money
- Avoid public locations, airports, places where people gather
- Get plenty of sleep, try to keep your immune system up as much as possible.
- Avoid drinking, as it reduce your immune system and ability to fight disease
- Keep up to date with news on spread, and locations of covid19.
- Talk to your doctor if you are a steroid user, to see if it is an option to reduce its use.
- Reduce your comorbidity factors as much as possible
- Unfortunately, if the virus is contracted, not much is possible to reduce the severity or course of illness, except oxygen support via hospital care. What is known- don't take corticosteroids to treat this virus. Tylenol may bring down a fever, but impede your bodies effectiveness at fighting. If you contract covid19, isolate yourself from family members for 14 days. Call your medical link number for advice. Do not go to the hospital unless they tell you

to. Wear a mask to avoid spreading infection. Cough into your elbow, dispose of all used tissue in double plastic bags. Your medical link or doctor can help advise you on this.

- If you have to care for a sick individual- wear goggles/ mask or face shield and disposable latex gloves. Double bag infective tissue. Wash your hands frequently, and all surfaces that may be infected with Alcohol (isopropyl) works. Encourage person to remain isolated, and self isolate assuming you may be infected without symptoms for the entire time your family member is sick plus14 days (See why this is going to be impossible to contain?)

Please note: I am not an epidemiologist, but I am in a medical field and have the ability to do research. I have tried to quote only research papers here, but some information is not peer reviewed and Covid-19 is very new, so there will likely be variability in these findings going forward.

TL;DR:
Coronavirus is already spread past containment unless unlikely draconian measures are implemented immediately. This is likely the single-most important event of our lifetime ,similar to the impact of the Spanish flu pandemic in 1918. There are tips provided above in how to help yourself, to prepare both mentally and physically.

Hope this helps people. Please share if you want.

References to broken links for table :

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