The Current State of the Coronavirus (COVID-19)

March 2, 2020 by Rob Beatty, MD FACEP

There is much misinformation going around about the novel Coronavirus pandemic gripping the world right now. With significant economic downturns already occurring as a result of financial panic and uncertainty, and unclear reporting relating to the true current state of cases, this is a great time to review what we know, don't know, and can likely expect.

What We Know About (COVID-19)

As of today, there are a total of three confirmed community-acquired cases that have tested positive in the United States. These cases do not have known risk factors or travel history, suggesting that transmission is community-based without a clear source. This is to be expected with this virus, and related to its known transmissibility.

Data from the Chinese center for disease control and prevention (CDC), which has been validated by the World Health Organization (WHO) and the US CDC has confirmed the following statistics:

Mortality Rates of Coronavirus

Age of Coronavirus Deaths

Based on all 72,314 cases of COVID-19 confirmed, suspected, and asymptomatic cases in China as of February 11, a paper by the Chinese CCDC released on February 17 and published in the Chinese Journal of Epidemiology [1] has found that the risk of death increases the older you are, as follows:

COVID-19 Fatality Rate by AGE:

***Death Rate** = (number of deaths / number of cases) = **probability of dying if infected by the virus** (%). This probability differs depending on the age group. The percentage shown below does **NOT represent in any way the share of deaths by age group**. Rather, it represents, for a person in a given age group, the **risk of dying** if infected with COVID-19.

AGE	DEATH RATE*
80+ years old	**14.8%**
70-79 years old	**8.0%**
60-69 years old	**3.6%**
50-59 years old	**1.3%**
40-49 years old	**0.4%**
30-39 years old	**0.2%**
20-29 years old	**0.2%**
10-19 years old	**0.2%**
0-9 years old	**no fatalities**

***Death Rate** = (number of deaths / number of cases) = **probability of dying if infected by the virus** (%).

In general, relatively few cases are seen among children.

Sex ratio

COVID-19 Fatality Rate by SEX:

*__Death Rat__e = (number of deaths / number of cases) = **probability of dying if infected by the virus** (%). This probability differs depending on sex. When reading these numbers, it must be taken into account that **smoking** in China is much more prevalent among males. Smoking increases the risks of respiratory complications.

SEX	DEATH RATE *
Male	**2.8%**
Female	**1.7%**

*__Death Rat__e = (number of deaths / number of cases) = **probability of dying if infected by the virus** (%).

Pre-existing medical conditions (comorbidities)

Patients who reported no pre-existing ("comorbid") medical conditions had a case fatality rate of 0.9%. Pre-existing illnesses that put patients at higher risk of dying from a COVID-19 infection are:

COVID-19 Fatality Rate by COMORBIDITY:

*__Death Rate__ = (number of deaths / number of cases) = **probability of dying if infected by the virus** (%). This probability differs depending on pre-existing condition. The percentage shown below does **NOT represent in any way the share of deaths by pre-existing condition**. Rather, it represents, for a patient with a given pre-existing condition, the **risk of dying** if infected by COVID-19.

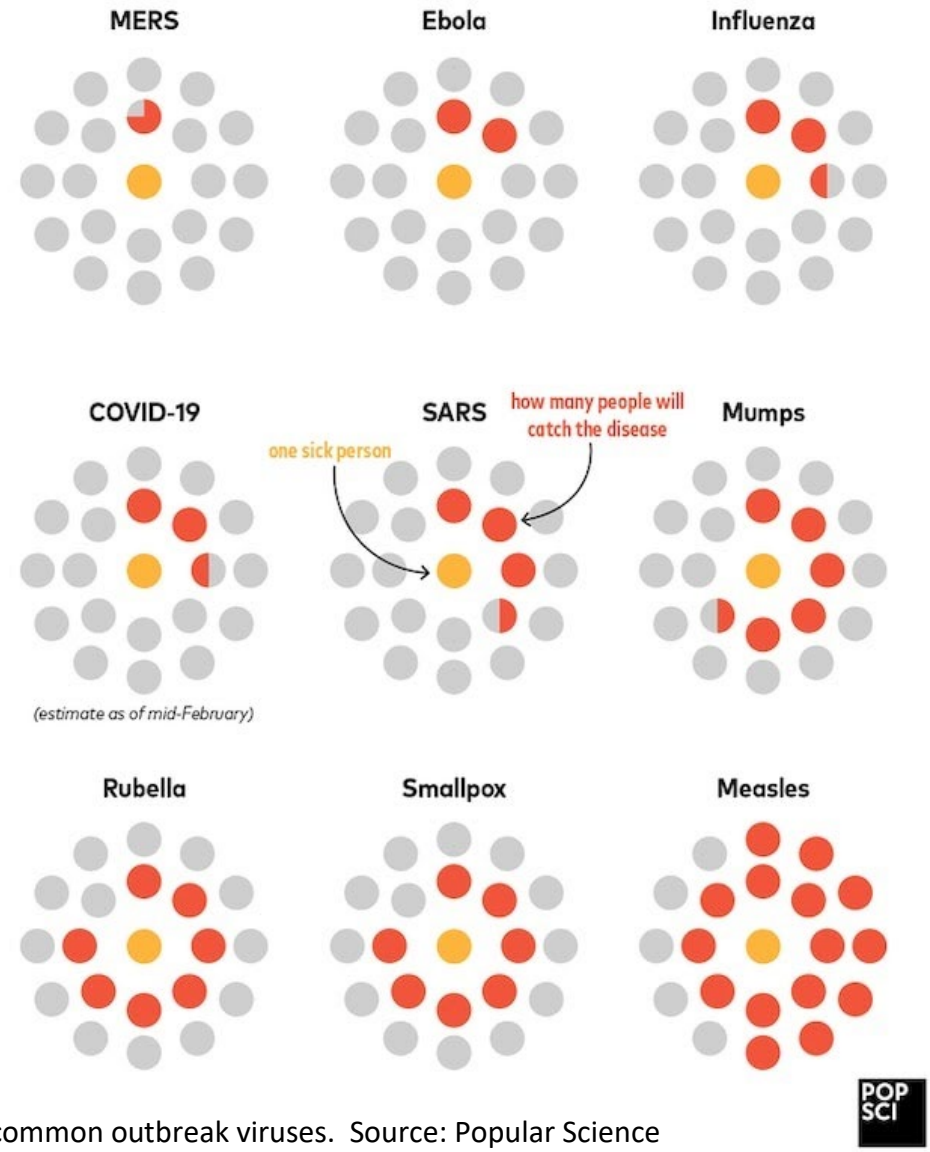
PRE-EXISTING CONDITION	DEATH RATE*
Cardiovascular disease	**10.5%**
Diabetes	**7.3%**
Chronic respiratory disease	**6.3%**
Hypertension	**6.0%**
Cancer	**5.6%**
no pre-existing conditions	**0.9%**

*__Death Rate__ = (number of deaths / number of cases) = **probability of dying if infected by the virus** (%).

Source:. Chinese CDC

This data, while encouraging, suggests that overall, this virus has a 0.9% mortality, and that the risk factors of cardiovascular disease, diabetes, chronic respiratory disease, hypertension, and cancer are the most significant risk factors enhancing the lethality of the disease. There appears to be a male predominance in mortality.

In addition to the outcome data, epidemiological data suggests that the R0 (R-naught) data of transmissions which is basically defined as the expected average number of people who can be infected by a single carrier of the disease, is between 1.4 and 3.0, placing it in line with influenza transmissibility.



R0 values of common outbreak viruses. Source: Popular Science

With greater than 80% of patients who have Covid-19 showing mild symptoms, this virus is essentially on par with influenza and less lethal. Children appear to handle the virus extremely well, and elderly adults with comorbidities appear to be at highest risk.

What We Don't Know About (COVID-19)

It is difficult to understand the source of international transmission, and because the virus is well-tolerated by the vast majority of those it infects, it is likely to be transmitted on a large scale without confirmed testing in the US. It is also important to place treatment access and resources in a clinical context and consider that the United States is better-equipped on a national scale to provide resources to patients than some other nations. As a result, the data that we do have may be entirely different in our nation compared to others once outcomes become more widespread and understood.

We do not fully understand the source of this virus, although it has been suggested that bats in Wuhan China may be the vector. Regardless of the root cause, it is not uncommon for viruses to mutate or adapt to different hosts, leading to changes in their genetic composition or transmissibility. These variations are responsible for most of the major outbreaks and pandemics that have occurred throughout history.

The US Centers for disease control and prevention have identified the following clinical scenarios that are considered high risk for testing based on the data compiled from known outbreak centers. It is important to consider that the symptoms of COVID-19 are not easy to distinguish between the common cold and the influenza virus, which are also in peak season at this time. The CDC does not recommend formal testing in patients who are afebrile, have not had contact with known COVID positive patients, or recently traveled or been exposed to people with the disease within 14 days. Patients who have symptoms and have severe lower respiratory diseases such as pneumonia or ARDS should be tested and are at risk of having the disease with or without a known exposure or a travel history. These guidelines are likely to change as more is learned about the disease.

How to Handle Your Patients

It is important to remember that media hype, election politics, and general misinformation can lead to community instability and fear. Our biggest responsibility to our patients is to care for the sick, and educate the walking Ill. Supportive treatment still rules the day, and explaining the need for contact precautions and isolation will be helpful in reducing the number of sick contacts in our communities. If you are not familiar with your local screening options, check with your local health department for screening locations and confirmatory testing.

In times of community fear or outbreaks it can be very easy to frighten the local community or defer to local emergency departments for evaluation. With the vast majority of positive patients requiring only mild supportive care, it is very unlikely that a local emergency department will provide anything that is not available in other outpatient settings for routine management. Emergency department management should be reserved for unstable patients who require admission. Lab confirmation of COVID-19 can take 48 to 72 hours and still be non diagnostic.

Ask yourself what value, other than epidemiology, a positive test will bring to the table once your patient has been tested. While finding positive patients when the n is low as it is now will garner attention and study, it is a matter of time before the positive cases begin to burden our system and become superfluous.

Controlling the Public Trust

Fortunately, the COVID-19 virus does not appear to be the global killer we all fear will eventually overtake our species. However, diseases like it and the media coverage they receive are likely to instill fear in our population. Any review of the stock market's performance over the past week can be a testament to human emotion and fear.

COVID has demonstrated that it does not cause a critical illness in the majority of patients. As a result, there will be more people who may be unknowingly COVID POSITIVE walking around the community and unknowingly spreading the disease. In the majority of patients it will be impossible to distinguish COVID from the common cold or influenza, and guidance from the CDC may not recommend routine testing.

It is important to counsel your patients about the current state of the virus, techniques for containment, and when specific treatment is necessary. As providers we play a much bigger role in the general public sentiment of fear than in the treatment of the virus itself.

I have heard of private practice offices having their front doors broken down for people to steal face masks! While the public desire to protect themselves and their family is noble, there is little utility for community face mask protection for a virus of this nature. It is already too late. Anyone with a cough or a sneeze may have COVID and be afebrile. Transmission in the community is inevitable. Please save the masks for the healthcare workers who will have a cumulative viral exposure far beyond the general public.

By definition, a pandemic is a widespread outbreak of a disease in a specific region or country. The pandemic we are experiencing is unavoidable, but in strict terms only a definition. Fortunately, the condition this time around is a mild disease, and not a population killer. While this data can change, it is highly unlikely that we will see a significant decimation of our population. Our duty is to understand this reality, educate our patients, and remain vigilant for the next outbreak that could redefine our global population. As has been suggested in numerous reports, that reality is not a question of "if," but of "when."

For more information, check out this page:
https://www.cdc.gov/coronavirus/2019-ncov/community/index.html

About Rob Beatty, MD FACEP

Dr. Beatty received his Bachelor's of Science in Biological Sciences from Clemson University and earned his Doctorate in Medicine from the University of South Carolina School of Medicine. He completed his residency training in Emergency Medicine at the Johns Hopkins Hospital in Baltimore, Maryland. Dr. Beatty has extensive experience as a clinician, medical leader, department chairman, medical director, regional medical director, and Chief Medical Officer. In addition to his clinical and administrative roles, Dr. Beatty has spoken at several national conferences and is an active expert medical witness. He is an avid teacher, and regularly supervises Physician Assistants, Nurse Practitioners, and fellow physicians. He has served as a physician mentor to his medical staff, and as a member of hospital credentialing, medical executive and peer review committees. Having extensively recruited, interviewed, hired, and reviewed countless numbers of healthcare providers, his expertise in team building, recruitment, and the hiring process helps to deliver the message of our programs in a way that other courses can't match. In addition, having established an Advanced Practice Provider residency program in multiple hospitals, Dr. Beatty understands the key concepts needed to prepare Nurse Practitioners and Physicians Assistants for their transition to independent clinical practice.