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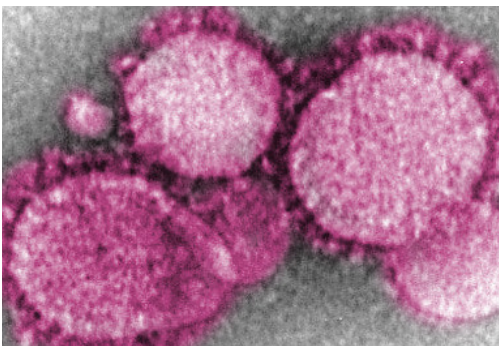
## Public Health and Covid-19

In December of 2019, in Wuhan China a novel coronavirus crossed the **species threshold** from bats to humans. Humanity has lots of practise dealing with new diseases when they emerge, and luckily we are getting better.

Viruses and bacteria do not recognize the borders between countries or care which language you speak. To minimize the damage that Covid-19 does to the human population, people from all over the world are going to have to work together. This article will explore the systems that governments and in international organizations have built to keep everyone healthy.

### *A Brief history of Disease*

Humans have been fighting disease



since before there was civilization, but civilization made diseases much more potent. The more people and animals squeeze into one spot, the easier it is for diseases to cross the species threshold. (Diseases don't only cross from animals to humans; leprosy crossed from humans to armadillos).

Generally, a new disease will emerge by crossing the species threshold and it will spread rapidly along trade routes or with marching armies. When diseases travel they can become more deadly because the new population has no **immunity** to them. This was especially true when Europeans came to the Americas. The diseases they brought, including smallpox and tuberculosis, killed more than 90% of the indigenous population.

## Novel Coronavirus Facts

The Virus SARS-CoV-2 emerged from the animal markets in Wuhan China. It is called a Coronavirus because of its crown like appearance. Like the flu, it affects different people differently. Some are **asymptomatic**, some experience a dry cough, fever, and shortness of breath. People who are already **immunocompromised** may require hospitalization. The fatality rate is unknown because we don't know how many people experienced mild symptoms and went untested.

The best things you can do is cough into your sleeve, avoid touching your face, and, in the words of one health worker, wash your hands like you just chopped jalapenos and you need to change your contacts.

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One of the worst disease outbreaks in history was the plague, or Black Death, which killed approximately 100 million people over two outbreaks in the 1340s and 1660s. At the time, people didn't know what caused the disease. Theories included the alignment of Jupiter in the stars, the disease travelling along eyesight, and bad miasmas making people sick.

The fear this disease inspired was startling if understandable. People, neighborhoods, and even entire villages were quarantined.

By 1918 humanity's medical knowledge had improved a great deal, but not enough to stop the Spanish Flu pandemic.

Though the outbreak lasted only a few months, it killed between 50 and 100 million people. More soldiers in the First World War died of Spanish Flu than from enemy fire.

In the 21st century two other novel Corona viruses have crossed the species threshold to infect humans: Middle East Respiratory Syndrome and Severe Acute Respiratory Syndrome. Fortunately, modern medical knowledge was able to contain and treat the diseases.

### *Public Health*

The study of **epidemiology** started with John Snow in London in 1854. At the time there was an outbreak of Cholera, a terrible disease that causes diarrhea and dehydration and has very high fatality rate. The outbreak started on Fleet Street when some contaminated water got into a popular well. At the time, people doctors had no idea that the disease was caused by a bacteria in the water. They thought it was caused by bad air or poor morals. Doctor Snow **meticulously** went to every home where there was an infected patient and recorded where they got their water from until he could prove that all the homes that were infected came from

### What's in a Name?

According to the Assistant director General of the World Health Organization the name of a disease can have serious consequence. Choosing the name Swine Flu led to the widespread slaughter of pigs, even though pigs did not transmit the disease. Naming the disease after a geographic location can lead to unfair blame and travel restrictions.

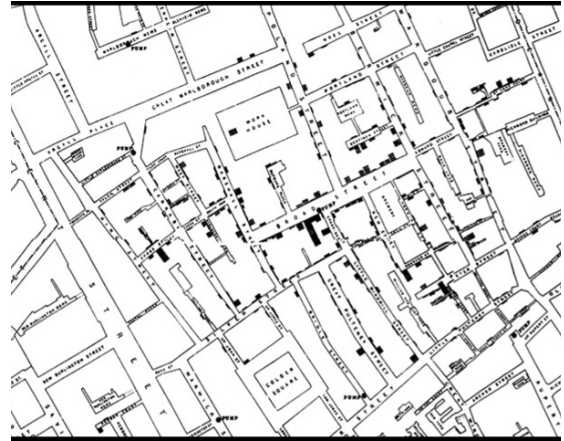
The WHO official guidelines say that new diseases should consist of generic descriptive terms, based on the symptoms that the disease causes and the pathogen that causes the disease. So, Covid-19 comes from **CoronaVirus Disease of 2019**.

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the same source - a water pump.

His efforts led to massive upgrades to the sewer and water systems first in London, and then around the world.

Modern doctors have more tools than ever before in the fight against disease. To illustrate this, let us compare the Spanish Flu outbreak to COVID-19. In 1918, doctors did not know the class of organism causing the disease because viruses were not discovered until 1933.



In contrast, within two weeks of the Novel Coronavirus appearing, we not only knew what it was but had sequenced its DNA, the first step in finding a cure or a vaccine.

Today we are using **antiviral** medication to fight the disease and a battery of **antibiotics** to fight the follow-up infections. In 1918 some doctors attempted bleeding the patient to make them better.

### *What is the WHO?*

What is responsible for this leap in understanding? In large part, it is due to scientific progress in general, but it is also due to increases in public health infrastructure. Public health infrastructure includes hospitals, health labs, and the doctors, nurses, and other professionals that make it work.

In more developed countries, public health agencies, like the US Center for Disease Control, are responsible for building and maintaining public health infrastructure. They

### Social Distancing

As Covid-19 has infect more people, health agencies have asked people to practise social distancing, that is to avoid large groups of people and to avoid unnecessary proximity and physical contact. To that end, several large gatherings such as festivals and professional sports have been postponed.

These measures will slow down the pace of the infection. When fewer people are infected doctors and nurses can give those that are sick more attention and medicine. This means that social distancing will save lives, no matter how inconvenient it is.

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coordinate sanitation, quarantines, testing, and the flow of information.

In less developed countries the World Health Organization can help fill the role. The WHO is a branch of the United Nations that was established in 1948. They are a collection of experts that coordinate global health and help countries fight disease. For example, they are on the ground in Iran to help coordinate with local officials and help stop the spread of the disease.

There are currently dozens of Covid-19 vaccines in development, but it will take a long time for them to go through development. In the meantime the director of the WHO is calling on all countries to activate an energetic response to contain the virus. Countries have been preparing for this for decades.

### Questions

#### *Comprehension*

1. Use a dictionary or another source to find the definition for all of the bolded words.
2. Why is social distancing important?

#### *Extending*

3. Is there a link between John Snow's Cholera Map and efforts to contain Covid-19?
4. What effect does global travel have on disease control?
5. Especially in contrast with a disease like Ebola, Covid-19 cases can be mild. What effect does this have on how the disease spreads?
6. Why should richer countries contribute to public health efforts in poorer countries?