

OUTBREAKS, EPIDEMICS, & PANDEMICS

Including the Worldwide COVID-19 Pandemic

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Science / History
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For ages 9-up

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Books



PART ONE

An Overview of Pandemics—Today & Yesterday

WHAT JUST HAPPENED?

Hey, isn't an outbreak of disease uncommon?

Isn't it rare for it to turn into an epidemic, much less a pandemic?

Aren't pandemics something that happened long ago...in countries far away?

Good questions! Let's learn some answers.



Something Germy This Way Comes!

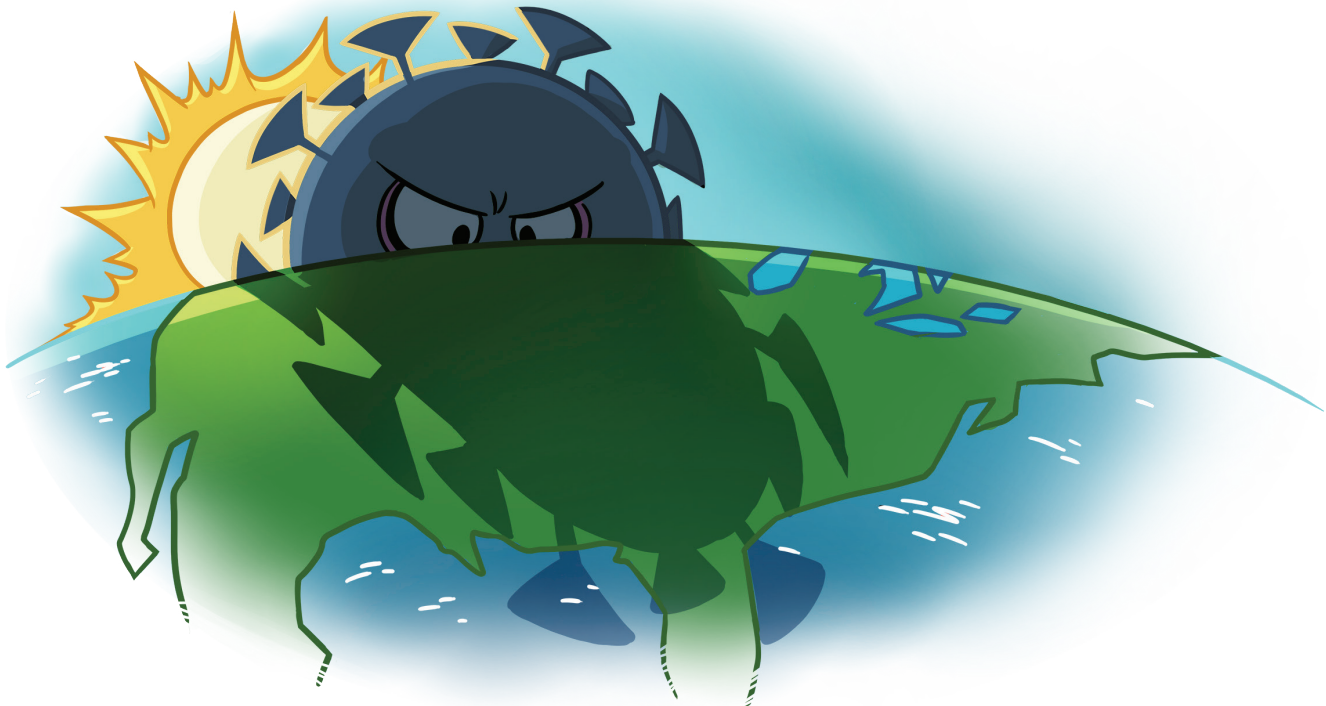
In early 2020, we began to see and hear news of an outbreak of a disease in Wuhan, China. Diseases are common and outbreaks happen all the time. But pretty soon we learned that this outbreak might be different.

In America, we were busy heading into the last few months of the school year. People were at work. Some places were still snowy, while others were already having spring warm-up. The annual flu season was on the wind down. And China seemed very far away.

As the news cycled—on television, in newspapers, and online—people began to talk about this disease being new, very contagious, and deadly; some of us paid attention. When photos of bats in Wuhan food markets were said to have been where the disease started, we thought one thing: “Ewwwww!” When elderly people began to die of the disease, we felt bad. But China still seemed very far away.

Soon, there was news of the spread of this strange new virus in other Chinese towns. Before long, the virus spread across China’s borders to other countries. The virus was given a long name soon shortened to COVID-19. When infected travelers showed up on cruise ships and airplanes, we began to worry. It’s a small world, after all. And COVID-19 had no cure.

Hmmm...



A Germy Glossary

While it might seem odd to have the glossary at the front of this book, if you learn a few words and terms, it will help you understand the rest of the story a lot faster and a lot better. Let's go for it!

disease: an illness; often caused by a germ or microbe

bacteria: microscopic, one-celled living organisms; some are good, some bad

virus: an organism much smaller than bacteria that invades cells

pathogen: the germ or microbe that causes a disease

vector: the original source of a disease, such as a bat

index case: the first person known to get a specific disease

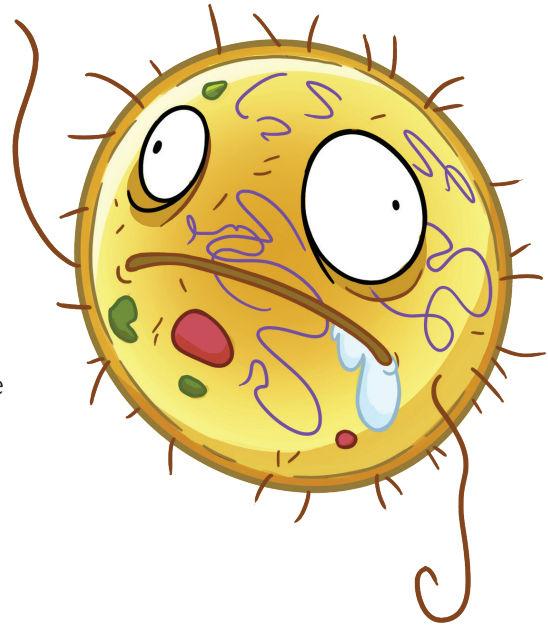
outbreak: the sudden occurrence of a disease

epidemic: the rapid spreading of a disease

pandemic: a worldwide epidemic or outbreak of disease

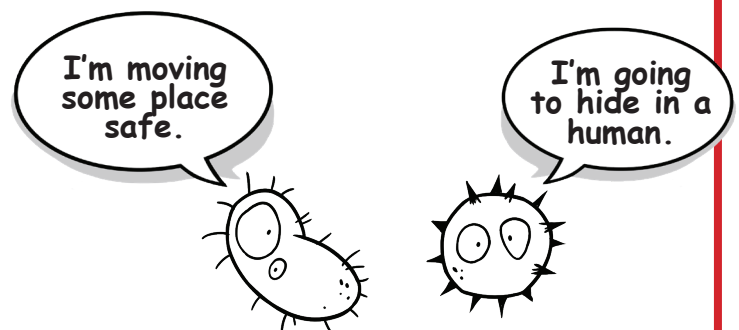
immune: protection against a disease

vaccine: a medication that can create immunity to a disease



So...*bacteria* and *viruses* can infect you. You might get a *disease*. If you have had a *vaccine* against a disease, you probably won't get it because you'll be *immune* to it. If there is an *outbreak* of a disease and it spreads, it can create an *epidemic*. If the disease jumps the border of a country where it began, it may grow into a *pandemic*.

Got it? Good! Let's move on!



A Little History Might be in Order?

Have there been pandemics in the past? Oh, yes!

Some germs are a lot like tourists—they love to travel! Take a germ that usually sleeps deep in the rainforest. Let it get stuck on the sole of a boot of an anthropologist. Then let this person hop on an airplane and fly halfway around the world. A new germ in a new place. This would be a germ that people may have no immunity to. If you get infected by that germ, you may get very sick. If the disease spreads, well, you could end up with a pandemic.

Talk about a lesson in current events: In 2020 (perhaps even earlier) a real, live PANDEMIC showed up at America's front door! While we may never know exactly how it got here, or where the first case occurred, one thing was certain: it was here to stay!

The first cases in the United States most likely:

- ➡ came to New York City with passengers aboard international flights, or cruise ships from other countries.
- ➡ came to California, perhaps the same way, and infected an individual, and later a lot of elderly people in a nursing home.

Even while doctors, the government, hospitals, governors, and others were trying to figure out what was happening and what best to do about it, the infection spread rapidly and the number of cases increased.

Pretty soon, hospitals in some places (especially New York City) were filling up their emergency rooms and ICUs (Intensive Care Units) with those infected with COVID-19. Many of these patients died.

IS THIS HOW MOST PANDEMICS START?



Oh, yes. The germs know what they are doing. They are doing what germs do. That they are invisible does not help anything. That a person can be infected and not have any symptoms (be *asymptomatic*) does not help. Why? Because in the meantime, they are going about their everyday activities, possibly infecting others.

I guess Sherlock Holmes said it best: “*THE GAME IS ON!*”

Pandemics have happened before and will happen again. It's how we respond to them—especially how fast and effectively—that makes all the difference in the world.

Pandemics from the Historical Past

Let's look at a list of some of the outbreaks, epidemics, and pandemics that happened long ago. As you see, the world has been plagued by plagues since the earliest times.

NAME	DATE	TYPE	DEATH TOLL
Antonine Plague	165-180 BCE	Smallpox or measles	5 million
Japanese Epidemic	735-737 BCE	Smallpox virus	1 million
Justinian Plague	541-542 BCE	Bacterial	30-50 million
Black Death	1347-1351 CE	Bacterial	200 million
New World Smallpox	1520 CE-on	Viral	56 million
Great Plague, London	1665 CE	Bacterial	100,000
Italian Plague	1629-1631 CE	Bacterial	1 million
Cholera Pandemics	1817-1923 CE	Bacterial	1 million+
Third Plague	1885 CE	Bacterial	12 million
Yellow Fever	Late 1800s	Viral	100,000-150,000
Russian Flu	1889-1890	Viral	1 million

This list is of only some pandemics over the years, the more deadly ones. But outbreaks and epidemics are not uncommon. In fact, they can occur almost anywhere, at any time. All do not reach the category of pandemic, thank goodness.

However, as people in small hunting and gathering tribes shifted to more agrarian (farming) communities, there was more opportunity for people and animals to interact. And so, there were more chances for germs to jump from animals to humans and create more epidemics.

As civilization advanced, larger cities, trade across nations and seas, and more interactions between people, animals, and ecosystems created an almost constant guarantee for germ spread, epidemics, outbreaks, and pandemics.

Today, we struggle with how to learn from past pandemics, implement new strategies, and respond quickly to help stop an outbreak from getting away from us.

BCE: Before the Common Era
CE: Common Era

