

It's summer, it's hot and sunny, and COVID-19 didn't go away. Why not?

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It's the first week of summer, and despite rumors and proclamations from some public figures, the coronavirus is still here despite the warmer weather.

As summer plans adjust to a growing pandemic, it's important to

understand why people still need to take caution against COVID-19.

Many [infectious diseases](#) are seasonal, so it's not unreasonable to wonder if COVID-19 could be as well. Flu famously begins to increase in the fall and spike in the winter. When polio was still a widespread [disease](#), the worst outbreaks were in the summer. But understanding why a disease is seasonal can be hard work.

Popular culture started to associate polio outbreaks with summer swimming after Franklin Roosevelt caught the disease on vacation, but chlorine would kill the virus in the water. Widespread vaccination banished polio from most of the world before the cause of polio season was understood.

The cause for the flu season is still not fully understood. Some doctors attribute it to [human behavior](#), as people spend more time closer together indoors in colder weather. Other theories suggest the weather causes important physical changes.

For instance, studies show flu viruses are more easily spread in colder, drier air. But there's some doubt over whether this is because of a trait of the flu virus or because the lungs may be more vulnerable to infection in those conditions. And in tropical environments, flu is actually a year-round disease, and may spread more easily in moist air.

Some [early studies](#) on the [coronavirus](#) responsible for COVID-19 saw that, like the flu virus, it does have a harder time surviving in hotter, wetter environments. But this doesn't make it much safer to gather closely with other people, according to Timothy Sheahan, a virologist at the University of North Carolina at Chapel Hill.

New studies show breathing in the coronavirus is the main way it spreads, and touching contaminated objects is less likely to infect

someone. If two people are close together, breathing in the same air, it doesn't give a hot day much time to kill the virus.

This is also the problem with sunlight. While it's thought that ultraviolet, or UV, light can kill the virus, a sunny day won't stop COVID-19. The most energetic kind of UV light that could kill the virus in a short amount of time is also the UV light most blocked out by the atmosphere.

While hospitals and labs use specialized UV light sources to sterilize equipment, they're very powerful compared to daylight. "If you shined that light on your skin, you'd get torched," Sheahan said.

Humans having no previous exposure, and therefore no immunity, to the coronavirus is likely to be more important for how the pandemic plays out in the next few months. This is also why the H1N1 flu pandemic in 2009 broke out in summer, because the strain was one most people had never been exposed to before.

The COVID-19 virus' closest-known relative caused SARS, which didn't get a chance to become seasonal because traditional public health measures easily contained it. "With the original SARS coronavirus, you were contagious on the onset of symptoms," Sheahan said.

Two different coronaviruses that cause colds are seasonal. According to Sheahan, this is because they don't provide lifelong immunity. The cold-causing coronaviruses are globally spread, so people routinely get reinfected after their immunity fades away over time.

Depending on how the pandemic plays out, there's a chance COVID-19 could end up becoming a seasonal disease. This may depend on how long immunity against the disease lasts.

"Say someone designs a vaccine that gives you lifelong immunity. Great!

But that might not be possible," Sheahan said. This may be because immunity fades away. And coronaviruses easily mutate, so it's possible COVID-19 could mutate to dodge the original immunity a vaccine provides, similar to how seasonal flu changes.

The more widespread and established COVID-19 becomes, the harder it will be to eliminate. Sheahan is especially concerned about stories of humans spreading COVID-19 to other animals. If the coronavirus becomes established in other species, they could act as a reservoir that reinfects people even after the current pandemic of human-to-human transmission ends.

If COVID-19 can't be eliminated and becomes a seasonal disease, it's hard to predict what it may look like. The seasonal cold-causing coronaviruses started to infect humans in the 1800s. Sheahan is curious to know what the diseases they caused looked like back then.

"Was it a more severe respiratory disease, like COVID-19, or was it just a common cold?" he asked. "Do these things tell us about our future by looking at our past?"

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