

What science says about the future of COVID-19



With pandemic fatigue becoming more intense, there is increasing speculation about when the SARS-CoV-2 virus, which causes COVID-19, might become “endemic” – a time when outbreaks will be more modest and manageable and we can “coexist” with the virus. A recent [article](#) in the Wall Street Journal described that juncture as when the virus has become “annoying but rarely deadly or disruptive.” That’s a difficult judgement, however, because there are no quantitative milestones that tell us when we’ve arrived; it’s really a judgement by individuals and society.

Many observers cite influenza – the “flu” – as an example of an endemic infectious disease, so perhaps it’s useful to examine its impacts. According to the [CDC’s statistics](#) for the U.S., from 2012-2019 the flu virus annually caused roughly 31 million symptomatic illnesses, about 400,000 hospitalizations, and 39,000 deaths. Those large numbers are in spite of moderately good vaccines, with efficacy in the range of 40-60 percent, and which need to be administered each year.

Apparently, that’s what we, as a society, consider manageable and acceptable; after all, we don’t impose lockdowns, mask mandates, or widespread vaccine mandates during the annual flu outbreaks.

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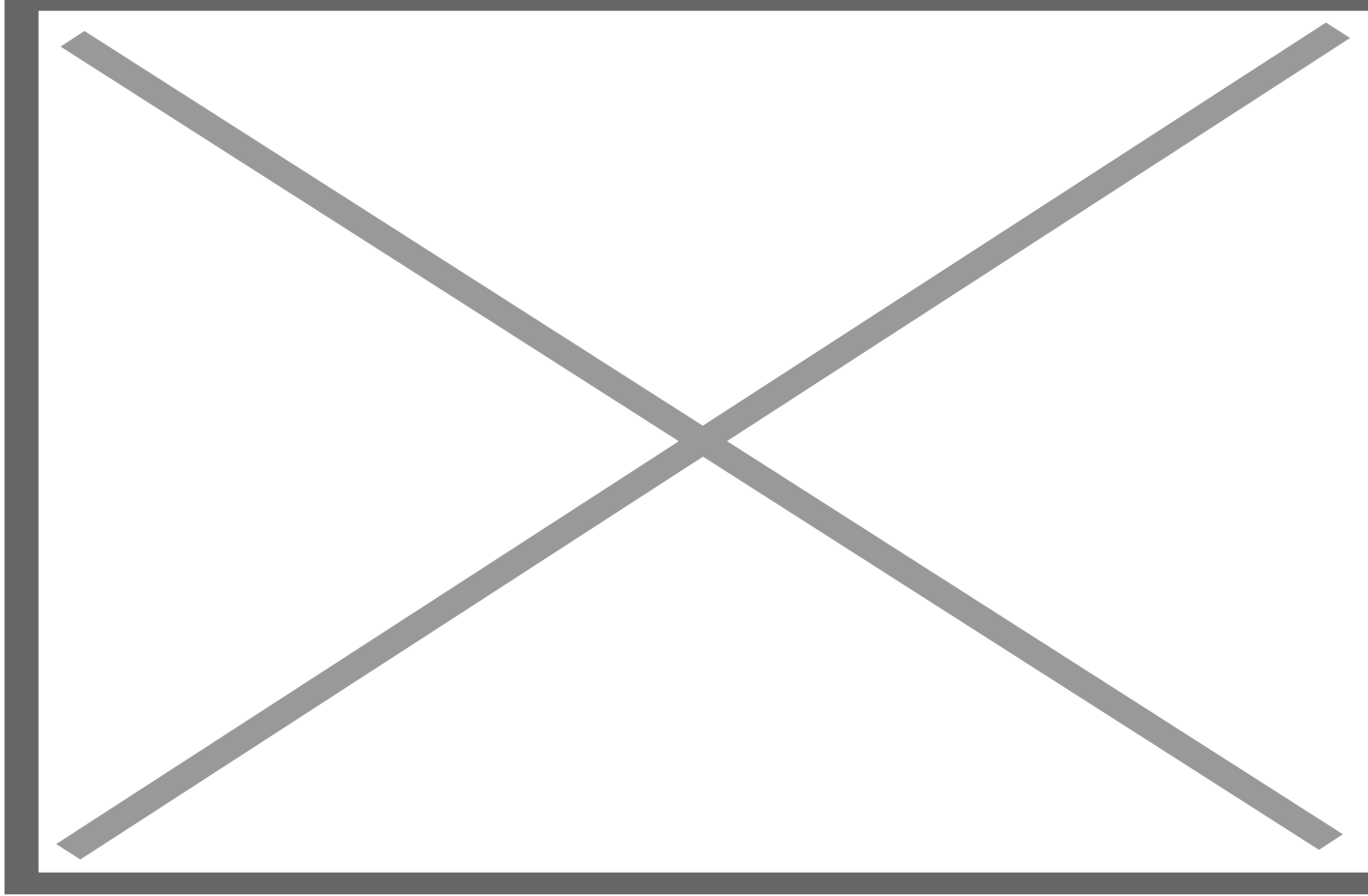
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It’s not quite that simple, however, because flu isn’t the same as COVID-19. For one thing, there’s the phenomenon of [post-COVID-19 syndrome](#), or “Long COVID”, which is marked by signs or symptoms that persist for more than four weeks, and often much longer, after the diagnosis of infection. It’s still too soon to know what percentage of the hundred million-plus Americans infected with Omicron will progress to Long COVID, but if the incidence is anywhere near the 10-30% following Alpha or Delta SARS-CoV-2 infections, our healthcare system will be stressed to the breaking point (to say nothing of the suffering of afflicted individuals).

Leaving aside Long COVID, the price we are already paying for the possible progression of COVID-19 to endemic, from pandemic, is horrific. In addition to over 900,000 U.S. fatalities, as of February 3, the 7-day daily average of new COVID-19 hospital admissions in the U.S. was about [16,000](#), down 18% from the week before.

But pandemics do end eventually. The Spanish Flu of 1918-1920 is thought to have killed around 50 million people, including an estimated 675,000 Americans — at a time when the U.S. population was only about a third as large as it is today. Finally, the virus became unable to find many new targets, the pandemic subsided, and flu became the endemic infection it is today.

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Credit: APIC

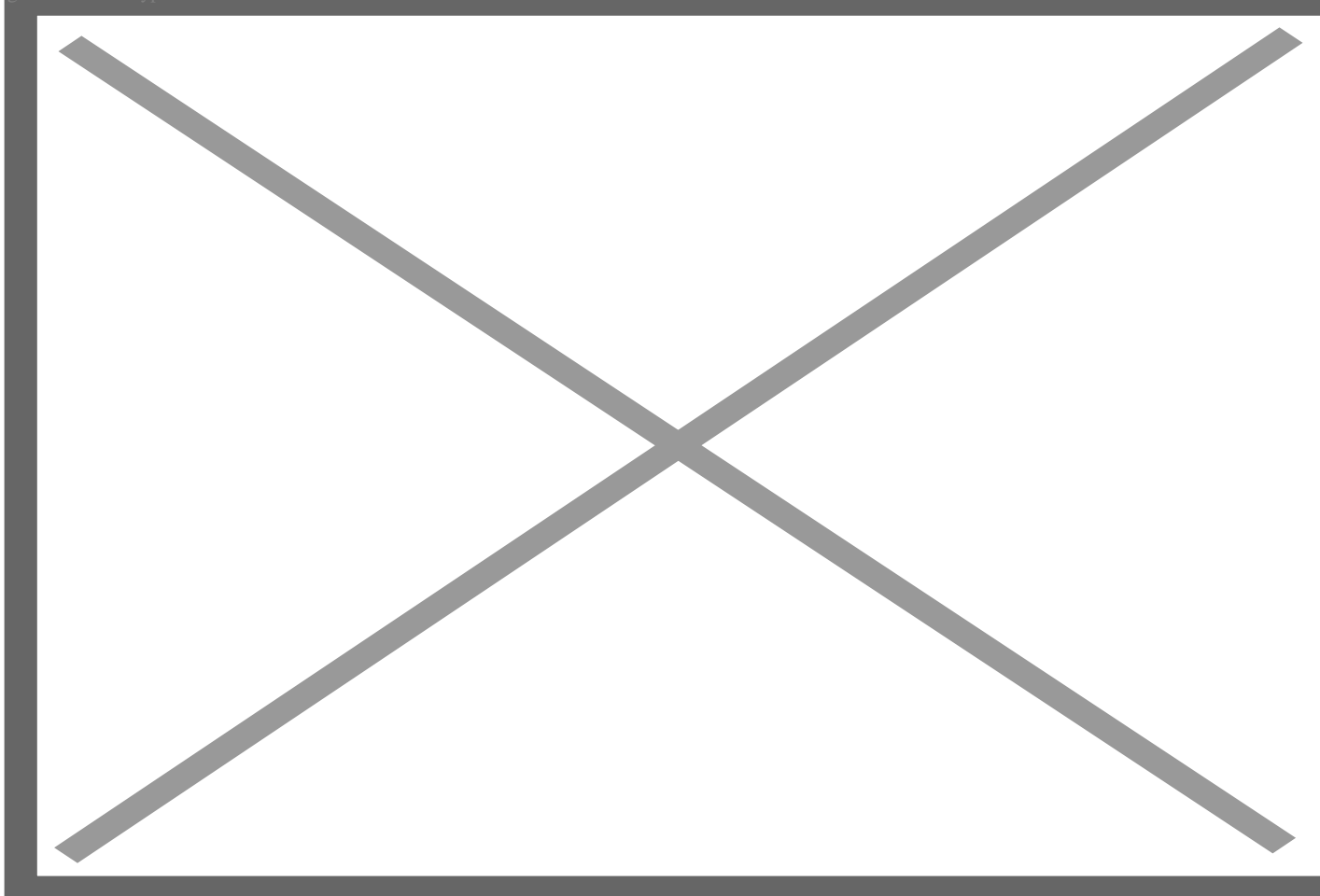
We need to keep in mind that every SARS-CoV-2 infection results in viral replication, the creation of new mutants and the opportunity for Darwinian evolution to test them for “fitness” – that is, for greater transmissibility and ability to evade immune defenses. Therefore, as Dr. Céline Gounder, a professor and infectious disease expert at New York University’s medical school, [said](#) recently, “I would be very careful about jumping to the conclusion that after this Omicron surge, we’re going to hit ‘endemic,’ or we’ll all have enough immunity that it’s just a common cold. I just don’t think we know that right now.”

In addition to what might be called the “known unknowns,” or hard-to-predict probabilities of the various events described above, there are also “unknown unknowns” in the world of viruses. Coronaviruses are commonplace in animals, and there is a disturbing example of a variation on the “Long COVID” phenomenon, which is found in cats. They can develop a deadly disease called Feline Infectious Peritonitis (FIP), which occurs long after cats are exposed to a coronavirus, usually at a young age while still in the shelter or cattery.

Feline coronaviruses [infect 40%–80% of all cats worldwide](#), most commonly in animals under two years of age. It typically causes only mild diarrhea or no symptoms at all, and usually goes away as young cats

mature and develop immunity. However, in [5% to 10% of cases](#), a mutation occurs in the virus, which then infects the cat's white blood cells, carrying the infection throughout the body and triggering an intense immune system response of the tissues affected, such as the brain or gastrointestinal system. Untreated, the disease has a near 100 percent mortality rate.

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Credit: Getty Images

There is an interesting nexus to COVID-19 in humans. An experimental drug, GS-441524, that has shown [significant efficacy](#) in reversing the symptoms of FIP, is closely related to remdesivir, a drug that is approved by the FDA for hospitalized COVID-19 patients. (Both are produced by Gilead Sciences.)

We suggest that there is an important lesson to be drawn from what we know about both SARS-CoV-2 variants and feline coronavirus. The best strategies are those that prevent becoming infected in the first place, so for now, the most prudent course is still to get vaccinated, boosted, and take other reasonable precautions to “flatten the curve” of infections. The fewer infections, the less viral replication, the fewer mutants, and the less likelihood of a new, more evil variant.

Henry I. Miller, a physician and molecular biologist, is a senior fellow at the Pacific Research Institute. He is the [co-discoverer of a critical enzyme](#) in the influenza virus. Follow Henry on

Twitter [@henryimiller](#)

Melissa Hart, DVM, is a practicing veterinarian in Sonoma, California.