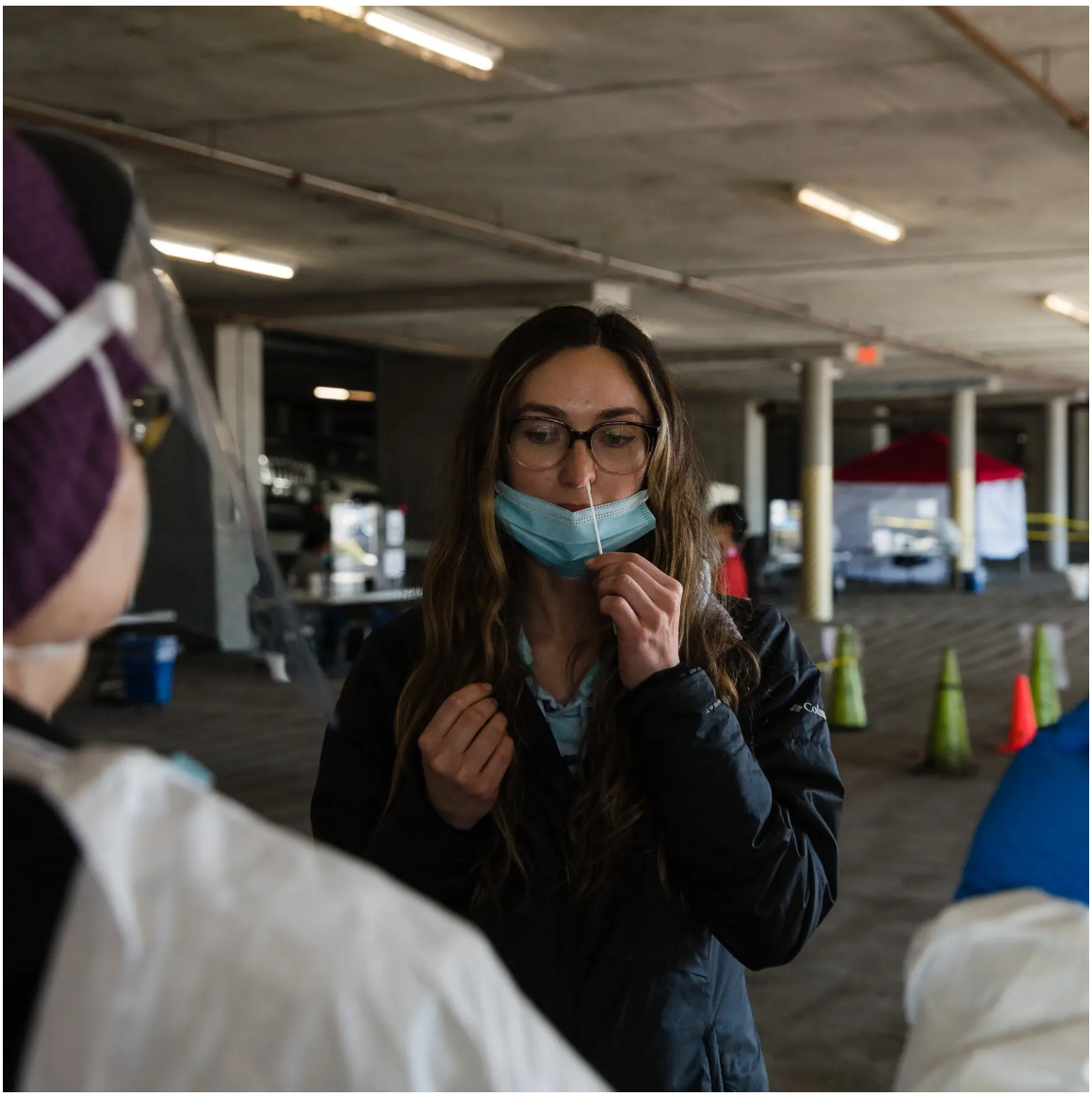
How Often Can You Be Infected With the Coronavirus?

The spread of the Omicron variant has given scientists an unsettling answer: repeatedly, sometimes within months.



A Covid testing site in San Diego last year. Earlier in the pandemic, experts thought that immunity from vaccination or previous infection would forestall reinfections, but Omicron has changed that. Ariana Drehsler for The New York Times

By Apoorva Mandavilli

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A virus that shows no signs of disappearing, variants that are adept at dodging the body's defenses, and waves of infections two, maybe three times a year — this may be the future of Covid-19, some scientists now fear.

The central problem is that the coronavirus has become more adept at reinfecting people. Already, those infected with the first Omicron variant are reporting second infections with the newer versions of the variant — BA.2 or BA2.12.1 in the United States, or BA.4 and BA.5 in South Africa.

Those people may go on to have third or fourth infections, even within this year, researchers said in interviews. And some small fraction may have symptoms that persist for months or years, a condition known as long Covid.

"It seems likely to me that that's going to sort of be a long-term pattern," said Juliet Pulliam, an epidemiologist at Stellenbosch University in South Africa.

"The virus is going to keep evolving," she added. "And there are probably going to be a lot of people getting many, many reinfections throughout their lives."

It's difficult to quantify how frequently people are reinfected, in part because many infections are now going unreported. Dr. Pulliam and her colleagues have collected enough data in South Africa to say that the rate is higher with Omicron than seen with previous variants.

This is not how it was supposed to be. Earlier in the pandemic, experts thought that immunity from vaccination or previous infection would forestall most reinfections.

The Omicron variant dashed those hopes. Unlike previous variants, Omicron and its many descendants seem to have evolved to partially dodge immunity. That leaves everyone — even those who have been vaccinated multiple times — vulnerable to multiple infections.

"If we manage it the way that we manage it now, then most

people will get infected with it at least a couple of times a year," said Kristian Andersen, a virologist at the Scripps Research Institute in San Diego. "I would be very surprised if that's not how it's going to play out."

The new variants have not altered the fundamental usefulness of the Covid vaccines. Most people who have received three or even just two doses will not become sick enough to need medical care if they test positive for the coronavirus. And a booster dose, like a previous bout with the virus, does seem to decrease the chance of reinfection — but not by much.

At the pandemic's outset, many experts based their expectations of the coronavirus on influenza, the viral foe most familiar to them. They predicted that, as with the flu, there might be one big outbreak each year, most likely in the fall. The way to minimize its spread would be to vaccinate people before its arrival.

Instead, the coronavirus is behaving more like four of its closely related cousins, which circulate and cause colds year round. While studying common-cold coronaviruses, "we saw people with multiple infections within the space of a year," said Jeffrey Shaman, an epidemiologist at Columbia University in New York.

Clem Williams, 76, received a booster shot in Durham, N.C., this month. Veasey Conway for The New York Times

If reinfection turns out to be the norm, the coronavirus is “not going to simply be this wintertime once-a-year thing,” he said, “and it’s not going to be a mild nuisance in terms of the amount of morbidity and mortality it causes.”

Reinfections with earlier variants, including Delta, did occur but were relatively infrequent. But in September, the pace of reinfections in South Africa seemed to pick up and was markedly high by November, when the Omicron variant was identified, Dr. Pulliam said.

Reinfections in South Africa, as in the United States, may seem even more noticeable because so many have been immunized or infected at least once by now.

“The perception magnifies what’s actually going on biologically,” Dr. Pulliam said. “It’s just that there are more people who are eligible for reinfection.”

The Omicron variant was different enough from Delta, and Delta from earlier versions of the virus, that some reinfections were to be expected. But now, Omicron seems to be evolving new forms that penetrate immune defenses with relatively few changes to its genetic code.

“This is actually for me a bit of a surprise,” said Alex Sigal, a virologist at the Africa Health Research Institute. “I thought we’ll need a kind of brand-new variant to escape from this one. But in fact, it seems like you don’t.”

An infection with Omicron produces a weaker immune response, which seems to wane quickly, compared with infections with previous variants. Although the newer versions of the variant are closely related, they vary enough from an immune perspective that infection with one doesn’t leave much protection against the others — and certainly not after three or four months.

Still, the good news is that most people who are reinfected with new versions of Omicron will not become seriously ill. At least at the moment, the virus has not hit upon a way to fully sidestep the immune system.

“That’s probably as good as it gets for now,” Dr. Sigal said. “The big danger might come when the variant will be completely different.”

Each infection may bring with it the possibility of long Covid, the constellation of symptoms that can persist for months or years. It’s too early to know how often an Omicron infection leads to long Covid, especially in vaccinated people.

To keep up with the evolving virus, other experts said, the Covid vaccines should be updated more quickly, even more quickly than flu vaccines are each year. Even an imperfect match to a new form of the coronavirus will still broaden immunity and offer some protection, they said.

“Every single time we think we’re through this, every single time we think we have the upper hand, the virus pulls a trick on us,” Dr. Andersen said. “The way to get it under control is not, ‘Let’s all get infected a few times a year and then hope for the best.’”