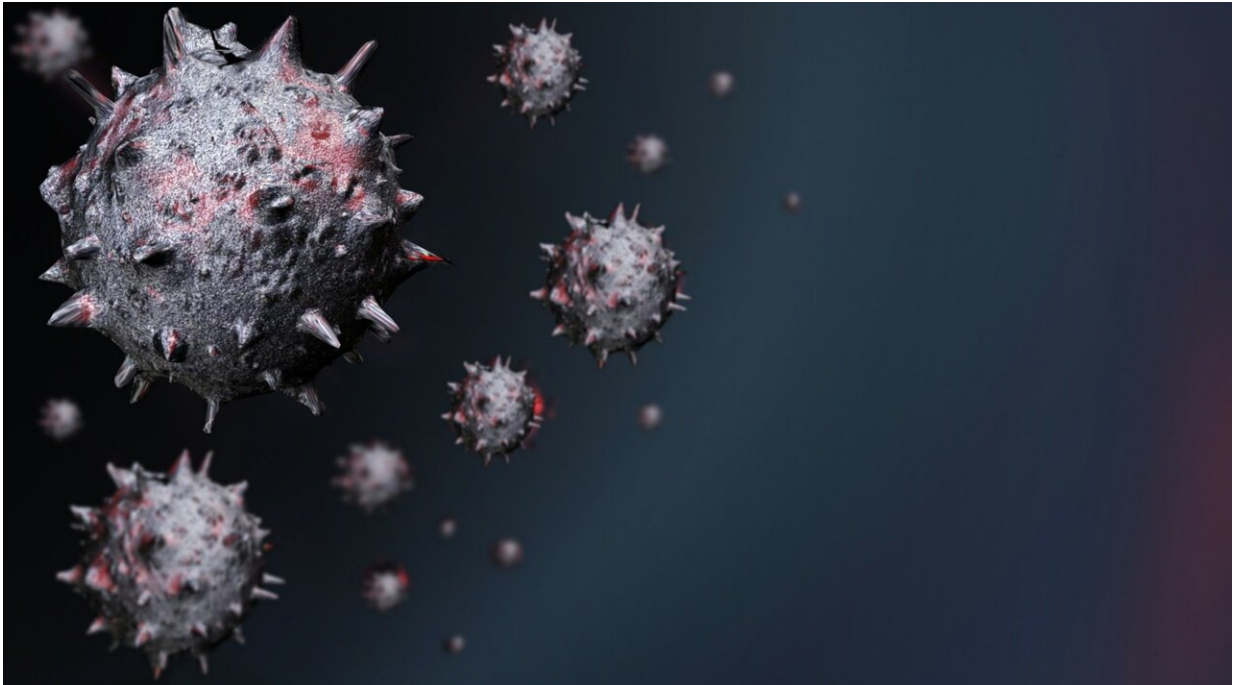


Experts discuss coronavirus variants

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Omicron is the latest COVID-19 variant of concern, and it is expected to change the course of the pandemic. But how are variants formed, and what's the threat level for people who are fully vaccinated? Kelly Grindrod, a pharmacist and professor, and Trevor Charles, a professor in the University of Waterloo's Department of Biology, provide answers to these questions.

How are COVID variants formed?

Variants are formed through the natural process of evolution. Every time the virus makes a copy of itself, there is a chance mistakes occur. These mistakes result in mutations, which are detected through genetic sequence analysis, and allow the designation of variants that carry shared mutations. While many of those mutations do not change the virus characteristics, some of the mutations can change the virus properties such as transmissibility, disease severity, and immune escape. The resulting variants that carry these mutations are classified as variants of concern.

With these new variants, what does it mean for people already fully vaccinated?

Every time a variant of concern is found, we need to answer three questions:

- Is the variant more transmissible (meaning does it spread more quickly or more easily)?
- Does the variant cause more severe or less severe illness?
- How well do our vaccines protect against the variant?

The [omicron](#) variant of concern appears to be much more contagious than delta. We will not know with any certainty if it is more or less severe for a few weeks.

The vaccines offer good protection against severe illness, hospitalization, and death from COVID, including the variants of concern such as delta. The hope is that the vaccines will continue to protect us from [severe illness](#) with omicron.

However, with each variant, the vaccines appear to be getting less effective at protecting against symptomatic illness—which means protecting us from being infected and having mild to moderate symptoms. Many people will need a third dose of the vaccine to protect against omicron. Similarly, the reinfection rate with omicron is higher. This means that people who had natural immunity from a previous COVID infection will also benefit from at least two doses of the vaccine to protect against omicron.

It's important to note that we are not starting from scratch, even with a [variant](#) of concern like omicron. Each dose of [vaccine](#) helped our immune systems recognize the virus—even variants. So being vaccinated will still offer more protection than staying unvaccinated and unprotected.

Will we likely continue to see new variants over a prolonged period?

Looking to the future, all we can know for sure is that more variants will arise since [mutations](#) are constantly occurring. It is impossible to predict the outcome, just as no one could have predicted delta or omicron variants. Keeping track of the [virus](#) through sequencing (both clinical specimens and wastewater) will continue to provide information about the evolution of variants.

Provided by University of Waterloo

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