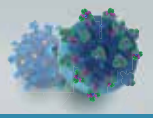
Omicron Subvariants: BA.4 and BA.5



Throughout the first half of 2022, the COVID-19 Omicron variant has comprised the vast majority of cases of COVID-19 worldwide, including in Canada. This variant is well-known for its quick evolution of new subvariants each with their own genetic features, including BA.4 and BA.5. But what are these subvariants and how do they differ from previous ones?

The COVID-19 Omicron variant has evolved over time and now includes various sub-lineages, also known as subvariants. These subvariants are not given new Greek names as they are so similar in structure to the primary lineage, and are instead referred to as BA.1, BA.1.1, BA.2, BA.2.75, BA.4, BA.5, and so on.

Both Omicron subvariants BA.4 and BA.5 were first detected in samples in January 2022. The COVID-19 Omicron variant has been designated a Variant of Concern (VOC) since November 2021 and this designation includes all subvariants such as BA.4 and BA.5.

Between July 1 to August 1, 2022, Omicron accounted for approximately 99% of cases of COVID-19 globally. By the end of July, BA.4 and BA.5 were the most prominent subvariants circulating globally, accounting for 69.6% and 11.8% of sequenced cases, respectively. Meanwhile, other subvariants have declined as they are replaced by BA.4 and BA.5.

While originally thought to have stemmed from the earlier Omicron BA.1 strain, researchers have since discovered that they are more genetically similar to BA.2, and many samples previously thought to have been from cases of BA.2 were actually found to be BA.4 or BA.5. As such, many jurisdictions may not know when cases of BA.4 and BA.5 started to overtake BA.2.

As subvariants of Omicron, BA.4 and BA.5 carry many similar mutations to other Omicron subvariants, however, they have additional genetic mutations within the spike protein. Mutations are common and to be expected in all viruses. They are important to note because certain mutations may affect characteristics of the virus such as transmissibility and virility of infection. Due to these mutations, Omicron subvariants including BA.4 and BA.5 continue to be even more transmissible.

BA.4 and BA.5 both show increased capacity to reinfect those who were previously infected with other COVID-19 variants, including earlier Omicron variants. Immunity resulting from previous infection is uncertain and may wane quickly. It is important to stay up to date with vaccinations including booster doses to maintain more reliable protection.

COVID-19 vaccines approved for use in Canada provide very good protection against all variants and subvariants, including Omicron. Getting booster doses help to provide even more protection, and current evidence shows that people who are up to date with their COVID-19 vaccinations experience milder symptoms if they do become infected and are less likely to require hospitalization than those who are unvaccinated.

Getting vaccinated with a COVID-19 vaccine authorized for use in Canada is essential and provides the most robust, reliable protection. Real-world data shows that antibodies produced from vaccination are longer-lasting and more effective at protecting against COVID-19 than those produced from infection.

For more information, be sure to follow the science and refer to peer-reviewed, evidence-informed resources such as the BC Centre for Disease Control and the Public Health Agency of Canada.

[i] BC Centre for Disease Control. 'COVID-19 Variants.' Jul 15, 2022.
[ii] World Health Organization. 'Tracking SARS-CoV-2 Variants.' Jul 19, 2022.
[iii] World Health Organization. 'Tracking SARS-CoV-2 Variants.' Jul 19, 2022.
[iv] World Health Organization. 'COVID-19 Weekly Epidemiological Update, Edition 103.' Aug 3, 2022.
[v] World Health Organization. 'COVID-19 Weekly Epidemiological Update, Edition 103.' Aug 3, 2022.
[vi] Callaway E. Nature. 'What Omicron's BA.4 and BA.5 variants mean for the pandemic.' Jun 23, 2022.
[vii] Geddes L. Gavi Vaccine Alliance. 'Five things we've learned about the BA.4 and BA.5 Omicron variants.' May 12, 2022.
[viii] Wang Q, Guo Y, Iketani S, et al. Nature. 'Antibody evasion by SARS-CoV-2 Omicron subvariants BA.2.12.1, BA.4, & BA.5.' Jul 5, 2022.
[ix] Callaway E. Nature. 'What Omicron's BA.4 and BA.5 variants mean for the pandemic.' Jun 23, 2022.
[x] BC Centre for Disease Control. 'COVID-19 Variants.' Jul 15, 2022.
[xi] BC Centre for Disease Control. 'COVID-19 Variants.' Jul 15, 2022.
[xii] Geddes L. Gavi Vaccine Alliance. 'Five things we've learned about the BA.4 and BA.5 Omicron variants.' May 12, 2022.

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