

Comparing omicron and delta: What we know about infectiousness, symptoms, severity and vaccine protection

March 2 2022, by Sanjaya Senanayake



Credit: AI-generated image ([disclaimer](#))

Since Omicron was [detected in South Africa in late November](#), the SARS-CoV-2 variant has [spread](#) to more than 165 countries and is now the [dominant strain](#).

Omicron has more mutations than other strains: [72 in total](#), the most concerning of which make the virus more transmissible and [better able](#) to evade the immune system and vaccines.

So how does Omicron differ to Delta in infectiousness, symptoms, severity and vaccine protection.

How contagious is it?

The basic reproduction number (R_0) is one gauge of the infectiousness of a virus. It tells you how many susceptible people a single infected person will themselves go on to infect.

Danish researchers [estimate](#) the effective reproduction number of Omicron is 3.19 times more than that of Delta, which had an average [R0 of 5](#) (ranging from 3.2 to 8).

Similarly, Japanese research [concludes](#) Omicron is 4.2 times more transmissible than Delta early on.

Another practical indicator of a virus's infectiousness is how easily it spreads within households. This is known as the secondary attack rate.

[Studies](#) from [various countries](#) have consistently [shown](#) Omicron has a higher secondary attack rate in [households](#) than Delta. In a household with Omicron, householders have a 14-50% chance of getting infected.

Why is Omicron more infectious?

Omicron's varied mutations allow it to evade the immunity generated by both previous infections and vaccination.

[Studies have also shown](#) Omicron infects and multiplies in the upper airways 70 times faster than Delta.

There also seems to be [more asymptomatic infections](#) with Omicron. This probably facilitates transmission, as people don't realise they're infected and will move around normally.

How long does it take to become sick?

The incubation period of Omicron—the period from being infected to getting symptoms—is [around three days](#), with the person often becoming infectious a day or two before symptoms emerge.

This is shorter than with Delta and earlier variants.

The average [duration of illness](#) is shorter with Omicron than Delta: five days compared to six.

With new isolation rules implemented during the Omicron wave, seven days after [testing positive](#) to COVID, those who are symptom-free will no longer have to isolate.

What are the symptoms?

The five most common symptoms of [Delta and Omicron](#) are:

runny noseheadachefatiguesneezingsore throat.

Compared with Delta, Omicron is [more likely to cause a sore throat](#) and less likely to be associated with the loss of taste or smell.

In children, Omicron [may be more likely to cause croup](#), which leads to

a distinctive barking cough. Croup is associated with other viruses, but Omicron's ability to infect the upper airways so efficiently may allow it to cause croup more than previous COVID variants.

Is it less severe?

Yes, Omicron causes [less severe disease](#) than Delta. Part of this may be due to Omicron being less able to infect lungs as it does the upper airways.

The risk of [hospitalisation and ICU admissions](#) from Omicron are 40-80% lower than with Delta.

The risk of death is [about 60% less](#) with Omicron than with Delta.

Yet despite the reduced severity, this wave of Omicron has been associated with [higher rates of hospitalisations](#) in many countries because of the sheer numbers of those infected.

The only silver lining has been how the Omicron wave [peaked within a few weeks](#) in numerous countries, with hospitalisation and daily case numbers quickly coming down.

Can you be reinfected with COVID?

Yes, people who have previously had COVID from earlier variants are [at risk of getting infected with Omicron](#), particularly in regions with low vaccination rates.

Analysis of 116,683 cases early in the UK's Omicron wave [found](#) 9.5% of Omicron cases were reinfections.

It's too early to know the risk of a person previously infected with Omicron getting Omicron again.

How effective are two doses of vaccine?

After 20 weeks, two doses of either mRNA vaccine (Pfizer or Moderna), reduced the risk of infection with Omicron by only [around 10%](#).

By the same point in time, two doses of AstraZeneca essentially provide no protection against infection with Omicron.

However, two doses of vaccine still prevent severe disease, with a vaccine effectiveness against hospitalisation of up to 35% six months later. This is less than [half as effective](#) as the protection offered against hospitalisation with Delta.

How effective are three doses of vaccine?

A booster dose of vaccine improves your protection against Omicron. [Vaccine effectiveness against hospitalisation](#) is 83% ten or more weeks after the booster.

Protection against symptomatic disease increases too. [Vaccine effectiveness](#) is 65-75% two to four weeks after the booster, reducing to 45-50% ten weeks after the booster.

Pfizer and Moderna have also [developed an Omicron-specific vaccine](#) which they are about to test in clinical trials and could be available in the second half of 2022.

Correction: this article previously estimated Omicron had an R0 of around

20, making it one of the most infectious agents known. This has now been removed.

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