COVID-19

What do we know about the Arcturus XBB.1.16 subvariant?

The “Arcturus” subvariant of SARS-CoV-2 has been making headlines for weeks. Mun-Keat Looi reports what we know so far

Mun-Keat Looi

What is XBB.1.16?

XBB.1.16 is yet another in the line of omicron subvariants that began with BA.2. It follows on from XBB and XBB.1 and is related to the XBB.1.5 subvariant (“Kraken”) that began to dominate at the start of the year. Some have nicknamed this new subvariant “Arcturus” (meaning “Guardian of the Bear” in Greek) to distinguish it from the confusing number of other omicron versions. The X signifies that these subvariants came about through a recombination of two or more sublineages (in this case BA.2.10.1.1 and BA.2.75.3.1.1).

Francois Balloux, professor of computational systems biology at University College London, says, “XBB.1.16 is very closely related to XBB.1.5, the currently dominant variant in the UK.”

Maria Van Kerkhove, World Health Organization (WHO) covid-19 technical lead, said in a press briefing that it has “one additional mutation in the spike protein, which in lab studies shows increased infectivity, as well as potential increased pathogenicity.”

Where is XBB.1.16 spreading?

First reported in India in January 2023, WHO has since found XBB.1.16 present in at least 33 countries. Alarm has been raised in Asia: at one point in April India was seeing 10,000 confirmed cases a day—nearly two thirds of all covid-19 in the country, and necessitating the return of mask mandates. Case numbers are now receding.

The latest UK Health Security Agency (UKHSA) technical briefing (21 April) had the variant making up 2.3% of all covid-19 cases sequenced in the UK. The agency has sequenced 105 cases of patients testing positive and five people have died from their infection. UKHSA says that, based on the available epidemiological and laboratory data, it is “unclear” whether the spread seen in India and elsewhere will be replicated in the population immunity landscape of the UK. “XBB.1.16 is currently at a low prevalence in the UK, showing some early evidence of growth advantage (low confidence due to low sample numbers), and will be monitored,” its report stated.

The US Centers for Disease Control and Prevention’s latest figures (22-29 April) have XBB.1.16 accounting for about 11% of all US covid cases.

Does it cause more severe illness?

WHO said on 17 April 2023 that, thus far, “no changes in severity have been reported in countries where XBB.1.16 are reported to be circulating...Disease severity is not higher compared to previously circulating variants” (in pre-immune populations).

In terms of clinical considerations, WHO did note a slight rise in bed occupancy in some states in India (2-4%) but emphasised that “these levels are much lower compared to the level recorded during the delta wave or omicron BA.1/BA.2 waves.”

Van Kerkhove said, “It’s been in circulation for a few months. We haven’t seen a change in severity in individuals or in populations.”

An early study, posted as a preprint to medRxiv and yet to be peer reviewed, looked at over 300 cases in India from December 2022 to April 2023. It found mild symptoms similar to those from earlier omicron variants, with few hospitalisations and deaths.

WHO notes that the antiviral monoclonal antibody sotrovimab exhibits antiviral activity against XBB.1.16, similar to other XBB subvariants.

Do current covid vaccines protect against XBB.1.16?

It’s too early to say definitively because no data are available on vaccine efficacy against XBB.1.16 yet. Studies have found that the neutralising properties of vaccine induced antibody responses against the closely related XBB and XBB.1 were significantly poorer than against other variants. In India over 70% of the population has had a booster dose.

Hybrid immunity in those who have been both vaccinated and previously infected with XBB.1.5 should offer stronger protection. Given the dominance of omicron and XBB.1.5 in many countries today, such immunity is likely to cover most individuals.

Is XBB.1.16 a cause for concern?

On the whole no, at least not at the moment for those who have been vaccinated (as with any form of covid, the risk is still severe for the unvaccinated).

On the one hand, it is showing signs of stronger growth, hence its advantage over other variants in circulation. But this has not so far caused more severe disease.

The European Centre for Disease Prevention and Control has XBB.1.6 as a “variant under monitoring,” its third level (under variant of concern and variant of interest). So do WHO and the US Centers for Disease Control and Prevention.
Balloux says that in places that didn’t have an XBB.1.5 wave (for example, India or China), XBB.1.16 is expected to “do well.”

“Conversely, in places like the UK, it is not expected to have much of an impact on case numbers, and even less so on hospitalisations and deaths,” he says. “XBB.1.16 is still at low frequency here in the UK, but it may become the next dominant variant in the future.”

Competing interests: none.