

Omicron subvariants XBB, and BA.5: Current perspective

Bedanta Roy^{1*}, Sellaiah S. Pillay²

*Corresponding author:

¹Dr. Bedanta Roy, Ph.D., Associate Professor, Department of Physiology [\[ORCID\]](#)

Email: bedanta.roy@qiu.edu.my

²Prof. Dato' Dr. Sellaiah S. Pillay, AMP; DPMP MBBS; M.MED Radiology; FAMM Dean & Consultant Radiologist [\[ORCID\]](#)

^{1,2}Faculty of Medicine, Quest International University, No. 227, Plaza Teh Teng Seng (Level 2), Jalan Raja Permaisuri Bainun, 30250 Ipoh, Perak Darul Ridzuan, Malaysia

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The highly divergent B.1.1.529 (Omicron) Variant of Concern (VOC) remains the dominant variant circulating globally since WHO's Technical Advisory Group on Virus Evolution (TAG-VE) declared Omicron a VOC on November 26, 2021. [1]

Omicron VOCs (Lineage and additional mutations) are BA.2, BA.4, BA.5, and Variants of Interest (VOI) are BA.2.75(X), BQ.1, and XBB(Z). [2] Persisting dominance along with intense viral diversity WHO has introduced a new category to its variant tracking system, "Omicron subvariants under monitoring," to ring the alarm to the global health authorities. [1]

On October 24, 2022, TAG-VE discussed evolution and country differences in the immune landscape, the latest evidence on the Omicron VOC. The focus of the meeting was on the two new subvariants XBB and BQ.1 and its sublineages XBB* and BQ.1* due to global public health implications. According to recent evidence, the phenotype of XBB* and BQ.1* does not diverge sufficiently from each other in terms of immune escape mutations and necessary public health response. Hence XBB and BQ.1 is considered a subvariant of Omicron, also as a VOC. Thirty-five countries have reported the presence of XBB*, which is a recombinant of BA.2.10.1 and BA.2.75 sublineages with a global prevalence of 1.3%. [3]

CDC reported on December 23, XBB surged by 18 percent in the United States, and more than half of the new infections in the Northeast, US Centers for Disease Control and Prevention. [4] A broad increase in the prevalence of XBB* in regional genomic surveillance is well observed, but more data is required to point to substantial differences in disease severity for XBB* infections by the circulating Omicron sublineages. XBB was detected in Malaysia, but it has not resulted in an increase in hospitalization rates and deaths. [5]

BQ.1* is a sublineage of BA.5, which has undergone spike mutations in antigenic sites like K444T and N460K has a prevalence of 6% with a presence in 65 countries. BQ.1* is currently showing a significant growth advantage compared to existing Omicron sublineages in Europe and the US; hence a matter of concern and kept under close observation. Additional mutations have proven beneficial for immune escape compared to other circulating Omicron sublineages, which is a potential risk for reinfection and requires further study. [3]

Multiple Omicron variants have been detected in recent months in China, spreading COVID-19 infections. Variant BF.7 (BA.5.2.1.7), which is a sublineage of BA.5 – along with BA 5.2, is currently driving the surges. BF.7 is the most transmissible variant, with a reproductive number of

between 10 to 18.6 in Beijing, comparable to 5 to 6 as seen in the Delta variant. [6] As of December 20, 2022, the U.S., the UK, and several European countries, such as Belgium, Germany, France, and Denmark. has also reported cases of the Omicron sub-variant BF.7.

The symptoms of BF.7 infections exhibited similar to other Omicron subvariants, mainly infections in the upper respiratory tract. Fever, cough, sore throat, runny nose, and fatigue are the other symptoms reported by the patients. Relatively fewer patients are experiencing gastrointestinal symptoms like vomiting and diarrhoea. [7]

Regarding the vaccine efficacy, a recent report shows that persons who received either one or two monovalent Covid-19 vaccine boosters showed less neutralization activity against omicron subvariants (especially against BA.2.75.2, BQ.1.1, and XBB) than that against the WA1/2020 strain. BA.5-containing bivalent boosters showed better neutralizing activity against all omicron subvariants (especially against BA.2.75.2, BQ.1.1, and XBB) comparing those who received either one or two monovalent boosters. [8]

In light of the widespread global transmission of the Omicron, VOC lineages require prioritized attention and constant monitoring and bivalent booster immunizations program.

Regards,

Dr. Bedanta Roy, Ph.D. Associate Professor, Department of Physiology, Faculty of Medicine, QIU
Editor-in-Chief, Quest International Journal of Medical and Health Sciences

Prof. Dato' Dr. Sellaiah S. Pillay, AMP; DPMP
MBBS; M.MED RADIOLOGY; FAMM
Dean & Consultant Radiologist, Faculty of Medicine, QIU
Co-Editor-in-Chief, Quest International Journal of Medical and Health Sciences

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