

Emerging outbreak of XBB, and BA.5: An insight into Omicron subvariants

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Omicron (B.1.1.529) remains the dominant variant since it was labeled as a Variant of Concern (VOC) on November 26, 2021. A large number of mutations were observed in Omicron (Lineage and additional mutations), which evolved, namely BA.2, BA.4, BA.5, BA.2.75(X), BQ.1, and XBB(Z). On October 24, 2022, TAG-VE discussed the evolution and the immune landscape of the new subvariants XBB and BQ.1 and its sublineages XBB* and BQ.1* this zoonotic virus raised the alarm because of its global dominance. Recent evidence suggests a huge surge of XBB reached more than 20 percent in the United States. XBB* is currently prevalent in regional genomic surveillance, but still more data is required. In some countries, although the rate of hospitalization increased exponentially, the fatality rate has not increased. BQ.1 and BQ.1.1 were first identified in Nigeria in early July and then expanded dramatically in Europe and North America, now accounting for 67%, 35%, and 47% of cases in France, the United Kingdom, and the United States, respectively.

Genetic and mutation analysis suggests that XBB* and BQ.1* do not significantly differ from each other and are categorized as an Omicron subvariant. More than forty countries have already reported the presence of XBB*, a recombinant of BA.2.10.1 and BA.2.75 sublineages, with a global prevalence of 1.3%.

BQ.1* is a sublineage of BA.5, which has multiple spike mutations in antigenic sites like K444T and N460K and has a prevalence of 6% with a presence in 65 countries. XBB and XBB.1 were first detected in India in mid-August 2022 and quickly became predominant in India, Singapore, and other regions in Asia (Figure 1).

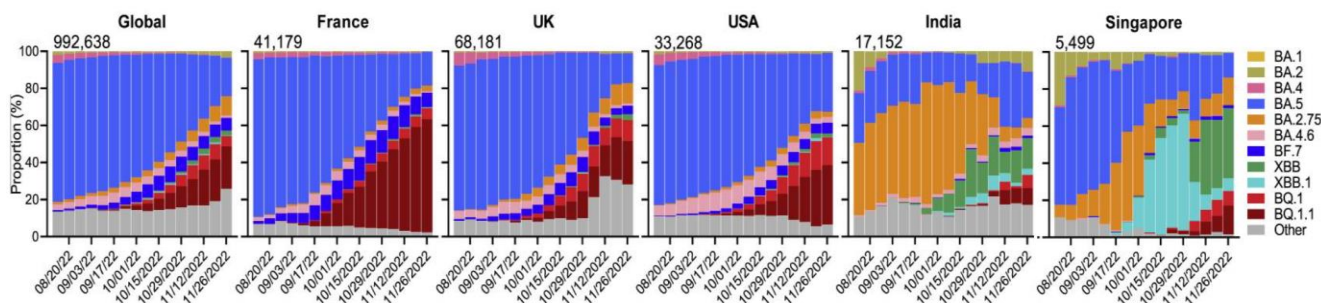


Fig. 1 Frequencies of Omicron subvariants from the Global Initiative on Sharing All Influenza Data (GISAID). [1]

BQ.1 and BQ.1.1 evolved from BA.5, whereas XBB and XBB.1 resulted from recombination between two BA.2 lineages, BJ.1 and BA.2.75. Current evidence suggests that 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. Symptoms are similar to previous variants e.g. upper respiratory tract infections like fever, cough, sore throat, runny nose, and fatigue. VOC lineages require constant attention, monitoring, and bivalent booster immunizations program.

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Infection, mutations, Omicron, symptom, variant

Abbreviations

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