Summary on SARS-CoV-2 variants of concern for increased infectivity/transmissibility and antigenic changes (No. 25)

Updated February 10, 2023, at 9:00 am
National Institute of Infectious Diseases, Japan

*This is a provisional translation of the summary of the report entitled "*kansen-denpasei no zoukaya kougenseino henkaga kenensareru SARS-CoV-2 no henikabunituite (dai25hou)* (https://www.niid.go.jp/niid/ja/2019-ncov/2551-cepr/11749-sars-cov-2-25.html)". In the case of any dispute over translation, the Japanese text prevails.

Overview of SARS-CoV-2 variants

The Omicron, the B.1.1.529 lineage and its descendent lineages are still dominant globally among SARS-CoV-2 variants with no significant changes in epidemiological trends compared to the No. 24 report. They accounted for 99.9% of sequences submitted to GISAID from December 30, 2022, to January 30, 2023, with few reports of other lineages (WHO, 2023a). Among Omicron descendent lineages, BA.5 and its descendent lineages remain dominant, followed by BA.2 and BA.4 (including their descendent lineages), accounting for 65.7%, 14.6%, and 0.3%, respectively, of sequences, reported globally during epidemiological week 2, from January 9 to 15, 2023 (WHO, 2023a). The top three variants globally in January 2023 were BQ.1.1 (28.2%), BQ.1 (14.1%), and XBB.1.5 (11.5%) (WHO, 2023a). In Japan, BA.5 replaced BA.2 around July 2022, and relative sequence prevalence among circulating variants has been dominated by BA.5, followed by the increasing proportion of BQ.1 (a sub-lineage of the BA.5.3 lineage) and BA.2.75 (a sub-lineage of the BA.2 lineage) since October 2022. The World Health Organization (WHO) refers to all B.1.1.529 sub-lineages and recombinants as Omicron, while several sub-lineages and recombinants (BF.7, BQ.1, BA.2.75, and XBB) as "Omicron subvariants under monitoring" since January 13, 2023.

Some subvariants, such as BQ.1 and XBB, exhibit characteristic mutations in the spike protein that allow the virus to evade neutralizing antibodies through vaccination, infection, and/or show growth advantage. Some subvariants, such as XBB.1.5, are increasing in North America and may have a growth advantage over existing sub-lineages in certain regions. However, there are no findings that they spread rapidly compared to other variants.

Omicron subvariants have emerged with specific characteristics that primarily

contribute to immune escape. There are no significant differences from other variants except for them. Global immune status and some public health interventions in each country have resulted in less influence of variant-specific natures on epidemic dynamics. It is crucial to determine appropriate interventions based on regular monitoring of variant prevalence and changes in variant-specific features, including virulence, transmissibility, vaccine and antiviral resistance and clinical presentation, and rapid risk assessments for each variant.

COVID-19 surge has been reported in China since November 2022. China has decided to cease the zero-COVID-19 policy on December 7, 2022. The number of daily cases started increasing in late December 2022, and then there was a late increase in the number of severe or hospitalized patients in early January 2023. Recent reports show a decreasing trend in the number of daily cases. According to sequences submitted to GISAID from China, BA.5.2 and BF.7 are considered dominant, which have already been detected in Japan. Japan has been conducting screening tests for all passengers who have a travel history of China (excluding Hong Kong and Macau) (within seven days) and all passengers directly from China (excluding Hong Kong and Macau) as they arrive since December 30, 2022. These test results have revealed that BA.5.2 and BF.7 are dominant in these passengers from China. The number of passengers to or from China during and around the Lunar New Year in late January is expected to increase, and besides, this trend would be driven by easing travel restrictions for citizens by the China Government. Thus, it is crucial to monitor the situation in China carefully.