



Unveiling the Eris Subvariant: The Next Challenge in the COVID-19 Pandemic?

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Abstract

Since the COVID-19 pandemic's onset, the SARS-CoV-2 virus has displayed remarkable mutation abilities, resulting in distinct variants. Alpha, Beta, Gamma, Delta, and Omicron are major World Health Organization (WHO)-identified variants of concern. The Omicron variant and its sub-lineages dominated globally in 2022. A novel strain, EG.5.1 (Eris), originating from Omicron's XBB sub-lineage, has recently sparked a significant COVID-19 surge across continents. Detected since June 2023, EG.5.1 is linked to increased cases in Europe, the Americas, and Asia. Factors like waning immunity, overcrowding, and poor air quality contributed to its rise. This variant is likely to prevail over other circulating variants and become dominant in UK by September 2023. Surveillance of its global epidemiology and implementing preventive measures have become imperative in light of the current situation.

Keywords

- ▶ EG.5.1
- ▶ Eris subvariant
- ▶ SARS-CoV-2

Since the onset of global pandemic of coronavirus disease 2019 (COVID-19), severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has shown extraordinary ability to mutate during its replication creating numerous variants with distinct characteristics. Alpha, Beta, Gamma, Delta, and Omicron are the five major variants that have been identified as variants of concern (VOC) by the World Health Organization (WHO).¹ Following the Delta variant, a new heavily mutated variant known as Omicron emerged as a new VOC on November 2021.² Throughout 2022, Omicron and its sublineages remained predominant on a global scale.

A novel variant, EG.5.1, also referred to as Eris, originated from the XBB sublineage of Omicron and has recently caused a substantial surge in COVID-19 cases across multiple countries. Its presence has been detected in Europe, America, and 11 Asian countries since June 2023 onward.³ China reported a share of approximately 30% of cases, while Thailand confirmed five cases associated with this variant.³ As per

an estimate, 11.8% of COVID-19 cases in the United Kingdom were attributed to EG.5.1 in the first week of July 2023.⁴ Likewise, Italy recorded 8.8% of SARS-CoV-2 strains as EG.5.1 in July 2023.⁵ This surge in cases has been attributed to factors such as waning immunity, overcrowding, and poor air quality. The decline in neutralizing antibodies due to lack of vaccination or recent infection might have contributed to this rise. Additionally, adverse weather conditions confining people indoors could have facilitated the spread of EG.5.1 in the United Kingdom. Furthermore, mutations in EG.5.1 genome could have implications on its transmission, immunity, and vaccine effectiveness. Notably, EG.5.1 carries two extra mutations, namely S:F456L and S:Q52H, compared to XBB.1.9.2. F456L is a T22928C mutation, characterized by a substitution at the amino acid position 456 of spike protein.⁶ It is believed to substantially reduce the binding of previously acquired neutralizing antibodies. Consequently, EG.5.1 has been shown to have 45% greater transmission speed than

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XBB.1.16.³ Although the EG.5.1 variant exhibits a high transmission, there have been fewer reported cases of severe disease associated with this variant.⁴ According to experts, this variant is likely to prevail over other circulating variants and become dominant in the United Kingdom by September. Despite concerns over its spread, the likelihood of it evolving into a global pandemic seems low, especially in countries like India where weaker XBB subvariants have contributed to a degree of herd immunity in the population.⁷ Moreover, F456L point mutation has been shown to reduce the binding affinity of SARS-CoV-2 receptor-binding domain to ACE2.⁶ Despite its growth advantage over other variants, its epidemiological impact remains unclear. Consequently, the WHO has designated EG.5.1 as a variant under monitoring, with ongoing surveillance of its global epidemiology, characteristics, and genome sequences.⁴

Since subvariants like EG.5.1 remain a constant threat for public health, preventive measures have become imperative in light of the current situation. It is crucial for everyone to adhere to proper COVID-19 guidelines while in public places to minimize the risk of infection. Additionally, improving indoor air quality and administering booster vaccination, especially among the elderly, are expected to mitigate its impact.

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Conflict of Interest

None declared.

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