



COVID-19 Weekly Epidemiological Update

25 February 2021

Special edition: Proposed working definitions of SARS-CoV-2 Variants of Interest and Variants of Concern

This special edition is supplementary to the [23 February Weekly Epidemiological Update](#), which included a global and regional overview of COVID-19 case and death trends, and special focus updates on SARS-CoV-2 variants of concern, and WHO COVID-19 vaccine policy recommendations.

In the following, we provide working definitions for SARS-CoV-2 variants of interest and variants of concern and the associated actions WHO will take to support Member States, their national public health institutes and reference laboratories, along with the recommended actions Member States should take. It includes general and non-exhaustive guidance on the prioritization of variants of greatest public health relevance in the context of wider SARS-CoV-2 transmission, and established response mechanisms and public health and social measures (PHSM).

- The threshold for determination of a variant of interest is relatively low in order to maintain sensitive surveillance for potentially important variants.
- The threshold for determination of a variant of concern is high in order to focus attention and resources on the variants with the highest public health implications, while reducing noise and unwarranted diversion of limited resources.

These definitions will be reviewed regularly and updated as necessary.

Working Definition of “SARS-CoV-2 Variant of Interest”

A SARS-CoV-2 isolate is a variant of interest (VOI) if it is phenotypically changed compared to a reference isolate or has a genome with mutations that lead to amino acid changes associated with established or suspected phenotypic implications¹;

AND

has been identified to cause community transmission²/multiple COVID-19 cases/clusters, or has been detected in multiple countries;

OR

is otherwise assessed to be a VOI by WHO in consultation with the WHO SARS-CoV-2 Virus Evolution Working Group.

¹ Phenotypic changes include changes in the epidemiology, antigenicity, or virulence or changes that have or potentially have a negative impact on available diagnostics, vaccines, therapeutics or public health and social measures. WHO will provide guidance on amino acid changes with established or suspected phenotypic implications, and may be informed by a database on key amino acid changes, or as reported in the scientific literature.

² See WHO public health surveillance for COVID-19: interim guidance for definitions

Main actions by a Member State, if a potential VOI is identified:

- Inform WHO through established WHO Country or Regional Office reporting channels with supporting information about VOI-associated cases (person, place, time, clinical and other relevant characteristics).
- Submit complete genome sequences and associated metadata to a publicly available database, such as [GISAID](#).
- Perform field investigations to improve understanding of the potential impacts of the VOI on COVID-19 epidemiology, severity, effectiveness of public health and social measures, or other relevant characteristics.
- Perform laboratory assessments or contact WHO for support to conduct laboratory assessments on the impact of the VOI on diagnostic methods, immune responses, antibody neutralization or other relevant characteristics.

Main actions by WHO for a potential VOI:

- Assessment by WHO in consultation with the SARS-CoV-2 Virus Evolution Working Group, and if meets criteria, designation as VOI.
- If determined necessary, coordinated laboratory investigations with Member States and partners³.
- Review global epidemiology of VOI.
- Monitor and track global spread of VOI.

Working Definition of “SARS-CoV-2 Variant of Concern”

A VOI (as defined above) is a variant of concern (VOC) if, through a comparative assessment, it has been demonstrated to be associated with

- Increase in transmissibility or detrimental change in COVID-19 epidemiology;
- Increase in virulence or change in clinical disease presentation; or
- Decrease in effectiveness of public health and social measures or available diagnostics, vaccines, therapeutics.

OR

assessed to be a VOC by WHO in consultation with the WHO SARS-CoV-2 Virus Evolution Working Group.

Main actions by WHO for a potential VOC:

- Assessment, and if meets criteria, designation as VOC.
- Assessment by Virus Evolution Working Group and, if determined necessary, coordinate additional laboratory investigations with Member States and partners³.
- Rapid risk assessment, as warranted.
- Communicate new designations and findings with Member States and public through established mechanisms.
- Evaluate WHO guidance through established WHO mechanisms and update, if necessary.

³ The WHO SARS-CoV-2 Reference laboratory system will be made available to support Member States that cannot perform laboratory investigations in their country, when needed.

Main actions by a Member State, if a VOC is identified:

- Report initial cases/clusters associated with VOC infection to WHO through the IHR mechanism.
- Submit complete genome sequences and associated metadata to a publicly available database, such as GISAID.
- Where capacity exists and in coordination with the international community, perform field investigations to improve understanding of the potential impacts of the VOC on COVID-19 epidemiology, severity, effectiveness of public health and social measures, or other relevant characteristics.
- Perform laboratory assessments or contact WHO for support to conduct laboratory assessments on the impact of the VOC on diagnostic methods, immune responses, antibody neutralization or other relevant characteristics.

WHO Recommendations

WHO, in collaboration with national authorities, institutions and researchers, continues to monitor the public health events associated with SARS-CoV-2 variants and provides updates as new information becomes available. Further information on the background of the variants of concern is available from previously published [Disease Outbreak News](#) and recent publications of the [Weekly Epidemiological Update](#).

National and local authorities are encouraged to continue strengthening existing disease control activities, including epidemiological surveillance, strategic testing, and increased routine systematic sequencing of a representative sample of SARS-CoV-2 isolates from across each country, wherever feasible. WHO is working to increase sequencing capacities globally and has published [a comprehensive implementation guide and risk-monitoring framework](#) to support countries set up high-impact sequencing programmes for SARS-CoV-2 variants and maximize public health impact. Where sequencing capacity is limited, WHO encourages countries to reach out through existing regional systems and laboratory networks to support and build capacity. WHO has been tracking mutations since the beginning of the pandemic. In June 2020, WHO established the SARS-CoV-2 Virus Evolution Working Group to specifically assess new variants. Together with Member States and partners, a global risk monitoring framework has been established to:

- Coordinate and harmonize a global system for monitoring and assessing SARS-CoV-2 variants and their impact;
- Identify critical priorities, thresholds, and triggers for decision-making;
- Define a multi-disciplinary coordination mechanism to collect, analyze, and share data to inform decision-making, including on vaccination programs; and,
- Leverage and enhance existing technical networks and expert groups.

A holistic response should continue to be taken against all SARS-CoV-2 transmission. PHSM and current infection prevention and control (IPC) measures in health facilities and outside of health facilities have proven to remain effective against VOCs to date. WHO continues to advise that the application and adjustment of PHSM and IPC measures should be driven by detailed data analyses of epidemiological indicators at the most local level possible and by research studies and outbreak investigations carried out by Member States (for more information, please see our [technical guidance](#)).

Technical guidance and other resources

- [COVAX Statement on New Variants of SARS-CoV-2](#)
- [SARS-CoV-2 genomic sequencing for public health goals: Interim guidance, 8 January 2021](#)
- [Genomic sequencing of SARS-CoV-2: a guide to implementation for maximum impact on public health](#)
- [Q&A on Coronavirus disease \(COVID-19\): Virus Evolution](#)
- [Disease Outbreak News - SARS-CoV-2 Variants- 31 December 2020](#)
- [Weekly Epidemiological Updates – From 12 January to date](#)