

SARS-CoV-2 variants: National definitions, classifications and public health actions

Preamble

The Public Health Agency of Canada, in collaboration with provincial and territorial public health authorities, established the Canadian SARS-CoV-2 Variant Surveillance Group (CSVSG) to monitor and assess the impact of variants of SARS-CoV-2 on viral transmissibility, disease severity, and efficacy of vaccines, therapeutics, and diagnostics. Drawing on published classifications and definitions by the World Health Organization (WHO)¹ and the US Centers for Disease Control and Prevention², the CSVSG has developed draft national definitions, classifications, and public health actions for SARS-CoV-2 Variants of Interest (VOI) and Variants of Concern (VOC).

The document also provides lists of designated VOI and VOC. These lists will be regularly reviewed and updated. Variant status may be escalated or de-escalated based on scientific evidence.

Variant of interest

Definition

A SARS-CoV-2 variant is a VOI if it

has a genome with mutations associated with changes in epidemiology, antigenicity, or virulence, or changes that potentially have a negative impact on available diagnostics, vaccines, therapeutics, or public health measures;

and

is known to cause community transmission/multiple COVID-19 cases/clusters in Canada or has been detected in multiple countries;

or

is otherwise assessed to be a VOI by WHO;

or

is otherwise assessed to be a VOI by the CSVSG.

Actions

If a variant is determined to be a VOI, actions may include the following:

- Perform enhanced genomic and case-based surveillance.
- Submit complete genome sequences and accompanying contextual data to public sequence repositories (e.g., GISAID, INSDC).
- Perform epidemiological investigations that include appropriate disaggregation by age, sex, gender, race/ethnicity, Indigeneity, socioeconomic status, and geography/place of residence as data is available to improve understanding of the potential impacts of the VOI on COVID-19 spread, severity, the effectiveness of public health measures, or other relevant characteristics.

- Perform laboratory investigations to assess the impact of the VOI on diagnostic methods, immune responses, antibody neutralization, or other relevant characteristics.

The current list of Variants of interest can be referenced at:

<https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/health-professionals/testing-diagnosing-case-reporting/sars-cov-2-variants-national-definitions-classifications-public-health-actions.html#a2>

Variant of concern

Definition

A SARS-CoV-2 variant is a VOC if, through a comparative assessment, it has been demonstrated to be associated with one or more of the following:

increased transmissibility or detrimental change in COVID-19 epidemiology;

increased virulence or change in clinical disease presentation;

decreased effectiveness of available diagnostics, vaccines, therapeutics, or public health measures;

or

is otherwise assessed to be a VOC by WHO;

or

is otherwise assessed to be a VOC by the CSVSG.

Actions

If a variant is determined to be a VOC, actions may include the following:

- Notification to WHO under the International Health Regulations.
- Perform enhanced genomic and case-based surveillance.
- Submit complete genome sequences and accompanying contextual data to public sequence repositories (e.g., GISAID, INSDC).
- Perform epidemiological investigations that include appropriate disaggregation by age, sex, gender, race/ethnicity, Indigeneity, socioeconomic status, and geography/place of residence as data is available to improve understanding of the potential impacts of the VOI on COVID-19 spread, severity, the effectiveness of public health measures, or other relevant characteristics.
- Perform laboratory investigations to assess the impact of the VOI on diagnostic methods, immune responses, antibody neutralization, or other relevant characteristics.

A Table of Variants of concern can be referenced at:

<https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/health-professionals/testing-diagnosing-case-reporting/sars-cov-2-variants-national-definitions-classifications-public-health-actions.html#a3>

References

1. World Health Organization. COVID-19 Weekly Epidemiological Update.
<https://www.who.int/publications/m/item/covid-19-weekly-epidemiological-update> (2021).
2. US Centres for Disease Control. SARS-CoV-2 Variant Classifications and Definitions.
<https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/variant-surveillance/variant-info.html>
(2021).