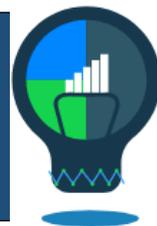


CoV-/N-SIGHTS: Evidence-Based Answers to FAQs Director General Medical Services (Navy)



FAQ # 03 (05 May 2021): SARS-CoV-2 VIRUS VARIANTS

1. What causes virus to change to a new variant?

Mutations are minor changes in the viral genome which occurs due to DNA copying mistake during replication of the virus. The more a virus replicates, as during community transmission, higher are the chances of mutation and creation of new variant.

2. How does the variants change the properties of the virus?

Depending on where the changes are located in the virus's genetic material, the properties of the virus may be affected, such as transmission (for example, it may spread more or less easily) or severity (for example, it may cause more or less severe disease), immune escape (evading immunity), re-infection or effect on vaccine efficacy.

3. What impact do the new variants of the COVID-19 virus have on vaccines?

The COVID-19 vaccines that are currently approved elicit a broad immune response involving a range of antibodies and cells and are expected to provide [some protection against new virus variants](#).

4. How can the vaccine variants be detected?

The variants are usually detected by genomic sequencing available at specialised molecular laboratories e.g NIV and CCMB.

5. Do vaccines protect against the virus variants?

The COVID-19 vaccines are expected to provide at least some protection against new virus variants and any virus change or mutation should not make vaccines completely ineffective. If any of these vaccines become less effective against one or more variants, it will be possible to change the composition of the vaccines to protect against these variants.

6. What are the common COVID variants of concern detected and what are their potential concerns?

(a) As per CDC, SARS-CoV-2 variants are classified as follows:-

(i) **Variant of Interest (VOI)** - **associated** with reduced neutralization by antibodies generated against previous infection or vaccination, reduced efficacy of treatments, potential diagnostic impact, or predicted increase in transmissibility or disease severity.

(ii) **Variant of Concern (VOC)** - there is **evidence of** increase in transmissibility or disease and severity, reduced efficacy of treatments and reduced neutralization by antibodies.

(iii) **Variant of High Consequence (VOHC)** - **clear evidence of reduced effectiveness** relative to previously circulating variants.

(b) Following table is a reference guide to SARS-CoV-2 variants and their potential concerns²:-

Variant Name(s) VOI/ VOC/ VOHC	Potential Concerns			VOI/ VOC/ VOHC
	Transmissibility	Virulence (Disease Severity)	Vaccine Efficacy or Immune Evasion	
B.1.1.7, 501Y.V1, VOC- 202012/01 (UK variant)	Increased transmissibility	Some evidence of potential increased disease severity	Little to no concern of vaccine efficacy	VOC
B.1.351, 501Y.V2 (South African variant)	Increased transmissibility	No evidence of increased disease severity	Potential for immune escape and possible effect on vaccine efficacy	VOC
P.1, P.2 (Brazilian / Amazonas variants)	Potentially more transmissible	No evidence of increased disease severity	Increased propensity for reinfection , but potential for immune escape unknown	VOC
B.1.525, B.1.526 (New York variants)	Potentially more transmissible	Potentially more virulent	Concerns about vaccine efficacy and immune escape	VOI
P.3 (variant originating in the Philippines)	Potentially more transmissible	No evidence of increased disease severity	Effect on vaccine efficacy or immune escape requires investigation	VOI
B.1.617	Potentially more transmissible	Effect on disease	Effect on vaccine efficacy or	VOI

(Indian variant – Double mutant)		severity unknown	immune escape requires investigation	
B.1.618 (Indian variant – Triple mutant)	Potentially more transmissible	Effect on disease severity unknown	Effect on vaccine efficacy or immune escape requires investigation	VOI

References

1. World health organisation. Available at [The effects of virus variants on COVID-19 vaccines \(who.int\)](#)
2. CDC Atlanta. Available at [Surveillance for SARS-CoV-2 Variants | CDC](#)
3. [Emerging Mutations & Variants | Thermo Fisher Scientific - IN](#)
4. [The S Gene Advantage: TaqPath COVID-19 Tests May Help Early Identification of B.1.1.7 - Ask a Scientist \(thermofisher.com\)](#)
5. World Health Organisation. [Coronavirus disease \(COVID-19\): Vaccines \(who.int\)](#)

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