USET Tribal Epidemiology Center

Recommendations for Tribal Consideration

USET TEC COVID-19 Guidance 2021-03: SARS-CoV-2 Variants of Concern

Background

SARS-CoV-2, the virus that causes COVID-19 disease, has been circulating globally since December 2019. With increased spread of the virus, there is risk that the virus will change, or mutate, into more dangerous forms. These changed forms of the virus, known as variants, may be more easily spread between persons and may also reduce the effectiveness of public health interventions.

Explanation of Virus Variants

Virus variants are genetic mutations to some part the original virus. Mutations are actually normal and extremely common as they are a product of environmental adaption. The virus's job is to survive and spread but as treatments become more effective and vaccines make more people immune, that gets harder. That is why it must change or mutate in order to keep spreading.

The more the virus spreads, the more likely it is that variants will emerge. Although most variants are harmless, some can pose serious challenges to public health efforts. Variants are often more easily spread (transmissible) than the original virus, leading to larger outbreaks at a faster rate. Variants may also be better at escaping the antibodies produced by the immune system to fight it, making vaccines less effective. In addition, treatments developed to fight COVID-19 may be less effective on the new variants, increasing the risk of severe disease or even death.

Classifying Variants

There are several different systems used to name virus variants once they have risen to a level where they need to be monitored.

- Variants are often referred to by their place of discovery by the media. However, this can lead to stigmatization of the people who reside where those variants emerged. These labels also become confusing when multiple variants are discovered from the same places.
- There are multiple scientific systems used to classify variants that are used throughout research fields.
- To lessen the confusion, the World Health Organization (WHO) has recently begun classifying variants using the letters of the Greek alphabet.

The Centers for Disease Control and Prevention (CDC) monitors SARS-CoV-2 variants and classifies them according to international standards:

1. Variant of Interest (VOI): A Variant of Interest is associated with mutations that may possibly cause increased transmissibility, weaker immune response and reduced efficacy of treatments. VOIs are monitored by the CDC but not considered a huge threat to public health efforts.
2. Variant of Concern (VOC): A Variant of Concern is more transmissible and/or causes more severe disease. It significantly reduces the body's protective immune response and is much less responsive to treatments or vaccines. As of June 25, 2021, the CDC is monitoring six VOCs in the US.
3. Variant of High Consequence: A Variant of High Consequence displays all the previous effects of a VOC but to a greater extent. Such a variant would significantly reduce the effectiveness of prevention measures, particularly treatments and vaccine effectiveness, and would be cause for a change to current prevention efforts. No variants currently circulating have been classified as Variants of High Consequence by the CDC.

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Current Variants of Concern

Name	Origin	Characteristics
Alpha – B.1.17	Detected in US in December 2020, initially detected in the UK. Often referred to as the "UK variant" in media.	The Alpha variant is more transmissible and increases severity of disease. It does not increase the chance of getting COVID-19 again (reinfection) and does not significantly reduce the effectiveness of vaccines.
Beta – B 1.351	Detected in the US in January 2021, initially detected in South Africa. Often referred to as the "South African variant" in media.	The Beta variant has increased transmissibility and may increase the risk of dying once hospitalized. It reduces the natural immune response and increases the risk of reinfection. It has reduced effectiveness of vaccines.
Gamma – P.1	Detected in the US in January 2021, initially detected in Brazil. Often referred to as the "Brazil variant."	The Gamma variant is more transmissible and increases the risk of hospitalization. Gamma increases the risk of reinfection with COVID-19 in persons who have already survived the disease and may also weaken the effectiveness of vaccines.
Epsilon – B.1.427 and B.1.429	Detected in California in February 2021.	The two Epsilon variants both increase the rate of transmission although not as much as the other VOCs. They do reduce the effectiveness of some treatments but do not seem to impact the effectiveness of vaccines.
Delta – B.1.617.2	Detected in the US in March 2021. Initially detected in India in December 2020.	The Delta variant significantly increases transmissibility. It may increase risk of hospitalization due to severe disease. It increases the risk of reinfection, but it does not seem to lessen the protection offered by vaccines.

Delta Variant

The Delta variant was first identified in India. Delta is 40% to 60% more transmissible than the Alpha (B.1.17) variant and is likely associated with a higher risk of hospitalization. Hospitalizations with Delta are seen in younger people aged 40 and under with an increased infectious rate. This means it can infect and replicate faster, and even evade the body's natural disease-fighting immunity more efficiently.

Importantly, most patients that become infected with the Delta variant exhibit symptoms that vary slightly from the usual presentation of COVID-19. The most common symptoms include runny nose, headache, and sore throat, replacing cough and loss of taste and smell.

Vaccines are still Effective against Variants?

- Effectiveness of vaccines vary against different variants. Currently, the Pfizer vaccine shows to be effective against the Delta variant, although the exact rate of effectiveness is still being studied.
- Research is currently being conducted to determine the effectiveness of the single-dose Johnson and Johnson/Janssen vaccine.
- Vaccine offers the best protection against all variants of COVID-19
- Most people that are becoming infected with COVID now are unvaccinated

Recommended Actions

- Ensure those who are not fully vaccinated adhere to current public health measures including wearing mask over both the nose and mouth, practicing social distancing, and appropriate handwashing or sanitizing hands.
- Monitor the local situation and keep current with updates
- Encourage vaccination as much as possible

Further Resources

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