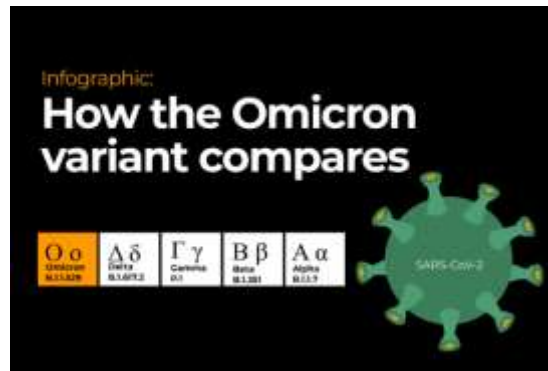


## Omicron Variant: What Makes it Undetectable through RT-PCR?

Omicron Variant is classified as a new SARS-CoV-2 variant, identified in South Africa, regarded as a 'variant of concern'.



### How is this Omicron Variant of Covid-19?

As per the early indications, it is possibly even more transmissible than the highly infectious Delta variant. Hence health experts suggest that current vaccines may be less effective against it.

### Mutations that characterize this variant are:

- With 30 mutations in the region that encodes the spike protein, B.1.1.529 has a very unusual constellation of mutations.
- The region with 30 mutations encodes the spike protein, and preliminary analysis suggests that these are responsible for the virus's entry into human cells.
- It is highly infectious.

### What is the potential impact of the Omicron Variant?

- The phenotypic impact of the mutation is known to affect transmissibility and cause immune evasion.

**Note:** Among these mutations already been detected in Delta as well as Alpha variants.

### Mutations of concern are:



- As per the research, a cluster of mutations, known as H655Y + N679K + P681H, is associated with more efficient cell entry. Hence, indicating enhanced transmissibility.
- Not only additions but deletions in the mutations are also a cause of concern, and one such is "nsp6," which is similar to a deletion in the Alpha( $\alpha$ ), Beta( $\beta$ ), Gamma( $\gamma$ ), and Lambda( $\delta$ ) variants.

**Note:** This may be associated with evasion of innate immunity and could enhance transmissibility and increased effectivity.

## The information available on Omicron Variant

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- As of now, not much is known as more investigations are underway:
- To determine the possible impact of these mutations on the capacity of the virus to transmit more efficiently
- To impact vaccine effectiveness and evade the immune response, and to cause more severe or milder disease
- In the last two weeks, South Africa has reported a four-fold increase in new cases, coinciding with the emergence of B.1.1.529.

**Note:** Rapidly increase in the cases was found in the Gauteng province, including Pretoria and Johannesburg.

- Worldwide, the health authorities need to constantly watch to identify which ones are more important than others.
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## How WHO regards Omicron variant?

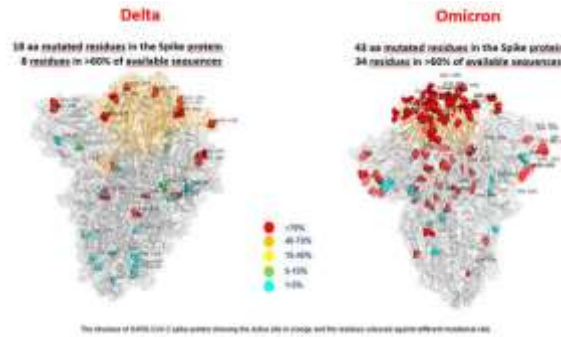
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- This effectively means that Omicron has been demonstrated to be associated with one or more of the following changes:
  - increase in transmissibility
  - decrease in the effectiveness of diagnostics, vaccines, therapeutics.

## Differential Symptoms of Omicron Variant

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- No unusual symptoms" have been reported so far by the B.1.1.529 variant infection.
- In fact, as with other infectious variants such as Delta, some individuals are asymptomatic.



## Which Tests can be performed to detect Omicron variant infection?

- Tests like *Reverse transcription-polymerase chain reaction* (RT-PCR) can only confirm whether a person has an infection or not. RT-PCR does not determine which variant has infected the person. To assess and confirm that a genome sequencing study must be done.

**Note:** Not all infected samples are sent for genome sequencing. The reason is that it is a slow, complicated and costly process. Generally, a very small subset of all positive samples — about 2 to 5 % — is sent for gene analysis.

- When there is a mutation in the spike protein (as with the Omicron variant), then there is a possibility that RT-PCR tests would not recognize the mutation and give a negative result.

**Note:** The problem is that Omicron is not the only variant with mutations in the spike protein.

## Three prominent aspects of Omicron Variant



### a. Good at spreading

- Omicron has around 50 mutations, which potentially make the variant more transmissible.
- Out of these 50 mutations, 32 are in spike proteins, which the virus uses to enter the human cells, and 10 are mutations of high relevance.

### b. Not very severe

- As per some of the experts, the variant will not cause a more severe disease.
- The new variant may reduce the effectiveness of vaccines, but they will not be rendered ineffective.

### c. This indicates that Covid is becoming endemic

- Based on the history of all the infectious diseases, it does happen that viral disease, particularly initially, causes pandemics and over some time they become endemic."

**Note:** Endemic means when a disease or infection keeps coming every year but in a milder form.

### Inputs from WHO:

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- WHO is coordinating with a large number of researchers around the world to understand Omicron better.
- Studies currently underway or underway shortly include: -
  1. assessments of transmissibility,
  2. the severity of infection (including symptoms), the performance of vaccines and diagnostic tests, and
  3. effectiveness of treatments

### Some of the recommended actions from countries:

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WHO recommends countries to undertake,

- including enhancing surveillance and sequencing of cases
- Sharing genome sequences on publicly available databases, such as GISAID
- Reporting initial cases or clusters to WHO
- Performing field investigations and laboratory assessments to understand better if Omicron has different transmission or disease characteristics,
- Impacts effectiveness of vaccines, therapeutics, diagnostics, or public health and social measures.