

# OMICRON: SEPARATING THE FACTS FROM THE HYPE

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The Omicron variant of COVID-19 has now spread to multiple nations, after being first identified by South African researchers in November 2021. Ever since the discovery of this new variant, there has been a wide range of speculation about its immune evasion properties, severity and the ability to spread.

The Omicron variant, like Delta, is yet another variant of the same SARS-CoV2 virus that started the COVID-19 pandemic in December 2019. It is important to emphasise this because a large section of the public believes that this might be a new virus.

It is the nature of certain viruses to cause cyclical infection in large geographic sections of the globe. For those who study viruses, it all seems too familiar; examples include parainfluenza 1, 2, and 3, parvovirus, rotavirus, etc. There are multiple reasons for the cyclical pattern of such viruses. The most common is that these viruses have the ability to breach the immune system—developed either in response to natural infection or vaccination, or both.

## Immune response

Viruses vary in their ability to infect, cause illness, and elicit an immune response. Some viruses infect humans only once, conferring lifelong immunity. These viruses include measles, mumps, mono, etc. The same principle applies to certain vaccines. For example, the hepatitis B vaccine, which is a subunit vaccine based on the surface antigen of the hepatitis B virus, confers lifelong immunity. In addition, in the case of hepatitis B, we have a clear correlate of immune protection. If a vaccinated individual has an anti-HBs antibody titre of greater than 10 mIU/ml, this indicates lifelong immunity at 100 percent. Unfortunately, in the case of the SARS-CoV2 virus, such an immune correlate could not be found. It is important to appreciate that each virus is a dif-



**Vaccination drive.** Picture by Gayan Pushpika

ferent organism, and the immune response they generate is also varied. In fact, a vast majority of viruses are harmless to humankind.

There are various reasons that explains the difficulty in finding immune correlates for SARS-CoV2 virus. The first is that it belongs to a family of viruses, which by default is known to cause recurrent infections. The second is that there is considerable variation between individuals in their immune response to the same virus. This can be put into perspective with the following example.

We can assume that the average height of an adult male is 5'5, with a range of 5 feet to 6 feet which covers approximately 95 percent of the individuals. This means that the average value of 5'5 closely represents the height parameter for almost all individuals in the population. Unfortunately, in the case of the SARS-CoV2 virus, the range of antibodies produced is so varied, that it is impossible to create a reasonable average level—one above which there is protection, and below which the person remains susceptible.

The third reason is that immunity against this virus is along two platforms. The first, is the ability to stop the virus from infecting the individual, which loosely correlates with overall neutralising antibody levels, and the second is protection from serious disease and organ damage resulting from the infection, which has no known correlates.

In terms of the ability to prevent infection or transmission, the existing COVID-19 vaccines are not very effective. In fact, although protection from severe disease is maintained, their ability to prevent infection drops from the third month onward to near zero in about six months. In addition to a decline in antibodies, the virus is also able to change itself in ways where immune evasion is possible. Thus, there are at least two reasons why the SARS-CoV2 virus is capable of causing cyclical disease.

When we look at South Africa, a clear pattern is evident. There are four equally spaced waves, each of which was caused by a different variant. These waves are spaced



**PCR testing.**

Picture by Sulochana Gamage

exactly six months apart. However, the same pattern is not replicated in each country. This variation is perhaps due to the geographical and population characteristics, vaccination coverage, natural infection rates, and adherence to COVID-appropriate behaviour.

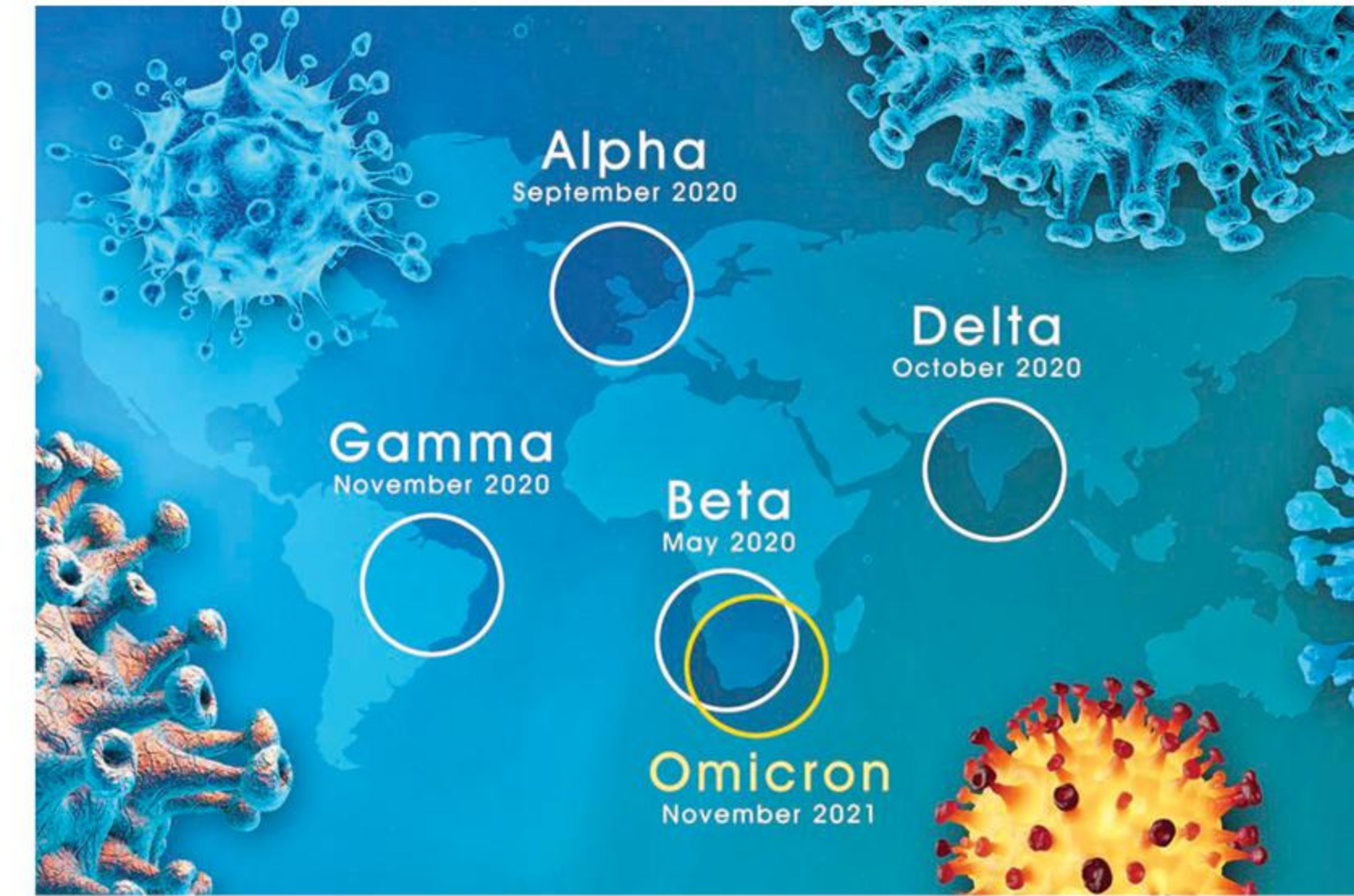
## How severe is Omicron?

Looking at the clinical profile of Omicron, there is a widespread belief that this is a milder variant. This may not be factually correct; it is perhaps more scientific to call it a less severe variant—until more comprehensive data is available.

It is now confirmed that breakthrough infections amongst fully vaccinated and boosted individuals are common with Omicron. In Faroe Islands, near Norway, two-thirds of a group of 33 boosted healthcare workers who attended a social gathering developed symptomatic breakthrough infections.

Some people who get such infections report rather severe symptoms such as exhaustion, fatigue, dehydration, fever, and body ache. Fortunately, the majority of these individuals do not require hospitalisation. However, this does not mean that these are mild symptoms.

There is a growing consensus



amongst the scientific community that the apparent lower severity of Omicron might be more a function of the host (human being) rather than the agent (virus). In other words, widespread vaccination and waves of infections have created memory B and T cells in large sections of the population. This means that even though the virus infects more efficiently and spreads more readily, the immune response is more prompt and coordinated, resulting in far fewer instances of organ damage and its consequences, including death.

## Infectious disease

The basics of infectious disease epidemiology are worth remembering here. This virus spreads through aerosols—which are tiny weightless particles that remain suspended in the air and circulate for hours in closed spaces, generated in copious amounts when people speak. While vaccination will provide temporary and partial protection lasting a few weeks, it is also our responsibility to make sure that our body does not get exposed to these virus-laden aerosols. Herein lies the importance of COVID-appropriate behaviour, the most important of which is to stay away from indoor social gatherings—particularly during times of a surge.

One of the problems of the ongo-

ing pandemic is the bias that occurs from perception. For instance, someone who only attends patients in the ICU might feel that the vast majority of Omicron patients are critically ill. A doctor who only sees patients in outpatient clinics might believe that most of them have mild symptoms. Airport staff who screen incoming passengers might conclude that the vast majority have no symptoms. This is called ascertainment bias, which is basically from failure to sample a wide representative of the population.

This highlights the need for systematically collected and published data, which fortunately is available from South Africa. We now know that the fourth wave in South Africa had a near-vertical and rapid climb, followed by an equally fast decline. The South African data also reveals that the average age of hospitalised patients was two decades younger than the previous Delta wave.

The percentage of individuals who required oxygen was only 17 percent compared to 74 percent of the previous wave, and the hospital-based mortality was only 3 percent compared to 29 percent of Delta. This is perhaps the most reliable data we have at this time that will give us an idea of how this variant will behave in communities with similar demography.

- Observer Research Foundation