

- Variation (Biology) / Virus

What is Deltacron, and should you be worried?

Variant Alphabet Soup: Deltacron redux, AY.4/BA.1, BA.2.2 nightmare in Hong Kong, and the truth about BA.2.3

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Deltacron! As if Delta or Omicron wasn't bad enough on its own, this hodge-podge of a virus is now a thing. Or is it? The initial report of a "Deltacron" virus came from the University of Cyprus, which reported that they had sequenced a virus that had Omicron and Delta genetic elements.



Mainstream and social media picked up the creature known as "Deltacron" and plastered alarmist headlines stating that the next variant of concern was upon us. WHO and other scientists quickly jumped on the case and debunked the Frankenstein virus as a possible product of sample contamination. One other possibility was that these were either Delta-like mutations in an Omicron virus or vice versa. The University of Cyprus scientists promptly withdrew their sequences from the Covid-19 database for reanalysis. Two months later, another "Deltacron" discovery has been making the rounds in media. This time, there is no question of contamination, and it seems to be a true combination of the two variants of concern.

Recombinant viruses occur in nature when a person is infected with two separate lineages simultaneously, and the genetic material from each lineage gets incorporated into a hybrid virus. If the hybrid virus is viable and transmitted to another person, the recombinant virus is born. The correct designation for these SARS-CoV-2 recombinants is the two lineage names with a slash mark in between. This is likely what occurred with the AY.4/BA.1 recombinant virus. Two variants circulating in the community can do this from time to time, especially if there is a high degree of transmission.

In the field of molecular epidemiology (the study of the relatedness of organisms by comparing their genetic sequences), recombinant forms have been known to occur for different kinds of viruses. It was just a matter of time that this happened for SARS-CoV-2 given the millions of people who have been infected. Recombinant forms are well documented in HIV. In fact, the current predominant HIV subtype in the Philippines is a recombinant virus termed CRF01_AE, which stands for circulating recombinant form number 01, which is a hybrid of subtypes A and E.

SARS-CoV-2 AY.4/BA.1 has been reported in several countries, including France, Denmark, Germany, the Netherlands, Brazil, and the US. The number of cases remain small and do not seem to be outcompeting the dominant Omicron BA.1 lineage. This means that so far, it does not look like AY.4/BA.1 has any survival advantage over Omicron.

It is not accurate to call AY.4/BA.1 "Deltacron" because Delta and Omicron refer to not just single lineages but include different descendant sublineages. The lineage B.1.617.2 and sublineages AY (whether AY.1, AY.4 and so on) are all considered Delta. The lineage B.1.1.529 and sublineages BA (BA.1, BA.2 etc.) are all considered Omicron. Therefore, any combination of these sublineages would theoretically be a "Deltacron" and because these can have many configurations, the term is not very informative or accurate.

Moreover, the designation of Delta and Omicron refers to the ability of these variants of concern to cause more severe disease and/or immune escape. There is currently no evidence that AY.4/BA.1 shows either of these characteristics compared to other variants. AY.4/BA.1 infections showed up as early as January 2022 and there is no indication it is taking over as the dominant virus. Even if AY.4/BA.1 does turn out to be a variant of concern, it would likely be called Pi, which is the next letter in the Greek alphabet, and not Deltacron which is a made up term.

Just because AY.4/BA.1 has genes from Delta and Omicron doesn't mean it will behave the same way or worse than either Delta or Omicron. A good analogy is that children have genes from both parents, but they can behave very differently from either parent. WHO is keeping close track of the spread of this recombinant virus, and the Philippine Genome Center continues to do sampling of positive cases to detect this recombinant.

In the meantime, BA.2 Omicron is continuing to wreak havoc across the world. BA.2 is the more transmissible version of Omicron, which is causing a renewed spike of cases in Europe following the initial BA.1 Omicron wave. Since these spikes are coincident with the removal of mask mandates in many countries, it is unclear if BA.2 is truly driving the resurgence in infections. It does seem, however, to be around 30 percent more transmissible than BA.1.

In the Philippines, BA.1 cases were found mostly in returning travelers undergoing quarantine. BA.2, on the other hand, was the predominant Omicron variant that circulated in the community during the January 2022 spike. This made the Philippines one of the few countries in the world that saw BA.2 as its initial Omicron wave compared with most countries that had predom-

inantly BA.1 infections. BA.2 in the Philippines caused a very rapid rise in cases, which peaked at nearly 39,000 infections. This is of course an underestimate, as many more patients tested positive with antigen or did not get tested at all.

Due to our high vaccination rate, continued masking, and the recent Delta wave, however, the BA.2 wave quickly peaked and dropped. We have been below 1,000 cases for several weeks now. Healthcare capacity was not overwhelmed since most cases turned out to be mild, especially among the vaccinated population. One other possibility is that the diversity of vaccines we use in the Philippines may have made us more resilient toward variants. Inactivated vaccines in particular target many parts of the virus they say, always manage your emotions. Of course, there are times it is easier said and done, especially if these are negative emotions such as anger, resentment, hate, fear, regret, shame, or sadness. Emotions do not usually subside quickly, especially for those who have had unpleasant experiences or traumas who at times carry them for the rest of their lives. Unfortunately, negative emotions can bring other negativity in your life too, like cancer.

Cancer is not a word that triggers a happy emotion. It is a word that brings fear, worry, and sadness to all of us. There is at least one person in your life who has been afflicted with this disease, and we all know what it feels to have a loved one go through it or succumb to it.

In fact, the World Health Organization (WHO) states that cancer is the second leading cause of death around the world with one in six deaths in 2018. In the Philippines, seven people pass away per hour, according to the Department of Health, and are more resilient to antigenic escape.

BA.2 in the Philippines has developed its own set of signature mutations to the point of being given its own sublineage, known as BA.2.3. This is in contrast to the BA.2.2 that is currently wreaking havoc in Hong Kong. Hong Kong has the highest case fatality rate in the world during this Omicron wave. It is likely because 66 percent of the elderly population above 80 years old is unvaccinated rather than BA.2.2 being more virulent. Even though BA.2.2 and BA.2.3 are distinct descendant sublineages of BA.2, it is unlikely that the entry of BA.2.2 would cause another spike.

One other possibility is that the diversity of vaccines we use in the Philippines may have made us more resilient toward variants. Inactivated vaccines in particular target many parts of the Covid-19 and are more resilient to antigenic escape. locally since the similarity of the two lineages means that hybrid acquired immunity against BA.2.3 would still be protective against BA.2.2.

Whatever the variant, whether AY.4/BA.1, BA.2.2 or BA.2.3, we expect vaccines to continue to protect against severe disease and death. Masks and public health measures will likewise remain effective in slowing down infection and spread. There is no need to panic even as these new lineages evolve and spread as a result of continued transmission. Trusting vaccines and continuing to protect one another is the best way to remain resilient as the Covid-19 pandemic marches toward endemicity.

Cancer Coalition of the Philippines. Because cancer is brought by different types, it is hard or even impossible to find a cure. So how can we beat cancer? With prevention.

In her book *Yes, You Can Prevent and Control Cancer: A Personal Journal for Daily Living and Total Wellbeing*, educator and researcher Dr. Christine E.V. Gonzalez, NMD, PhD enumerates the underlying causes of cancer. After all, if you know what causes it, then you also have the power to stop or prevent it. The author indicates that an unhealthy diet, toxic water and dehydration, chemicals, stress, mental and spiritual toxins, and environmental toxicity may all contribute to the big C. But did you know that deadly emotions may be linked to cancer too?

It's true. According to Dr. Gonzales, deadly emotions are those you have been carrying for quite some time. Since we encounter a lot of things every day, our emotions can vary and change in a day as well. Unfortunately, there are some emotions that linger longer and, when left unaddressed or suppressed, they can affect the body too.

Here are some tips on how to manage your emotions and take care of emotional health. After all, self-care is not just about looking good, but it is also about feeling good too.

- Keep a journal. Writing them down can help you assess and see patterns on why you felt a certain way at a certain time.