

## COVID-19 Variants Update

### Background:

I have been writing about COVID-19 since late December 2019, before it even had a name. Many times, the information in the articles was just that, informational – something we, at FirstWatch, thought you should know. Other times, I/we thought it was more critical, more crucial, that you really "got" the information. We shared information from others, again viewed as critical, as you prepared for your personal and/or professional response to this new viral disease.

FirstWatch has done that with the utmost care to remain true to the science available on the subject as well as the principles of infection prevention & control, while also considering our mostly First Responder audience and what we know about that large group. Specifically, that First Responders literally respond into the thick of it, without a lot of intel, except what the PSAP Operators and Dispatchers have been able to determine and share. EMS and other First Responders who provide assistance to anyone who has a medical problem, even if they don't know it yet, and even if it's not part of the reason you are there, puts you in a position of risk not seen in hospitals and other medical facilities. That's why we sometimes recommended more diligence, such as assuming everyone may be sick, until you have assessed the situation fully. The atmosphere you may go into may be charged with germs in droplets, aerosols, and on hard & soft surfaces and require more protective PPE, disinfection, and caution. We identified COVID-19 as being transmitted by aerosols over a year before the WHO and CDC formally did. Again, we followed the science and the principles of infection control.

### Intro:

I want you to trust that we are applying those same principles again as we talk about the COVID-19 Variants, particularly the Delta (aka B.1.617.2) and Variant X (which as far as we know doesn't exist yet). As we, in the US are emerging from an ugly year and a half, we have to remember that most of the rest of the world are NOT there yet. In fact, countries in South America, Africa, Asia, and parts of Europe are still suffering from severe outbreaks and surges of COVID. Currently, in the US, we can say that, after a significant decline, the case rate has leveled off, but is no longer decreasing. Canada also showed a decline in cases as they have risen to the top of the field in percentage of population vaccinated with their first shot, after a slow beginning. The US has done a good job of getting those that want to be vaccinated done, but with about half the country not fully vaccinated and 1/3 to 1/5 of the population reluctant or refusing to be vaccinated, it is unlikely that the US will reach the desired 70% of adults fully vaccinated by July 4. Much of the world is way behind in vaccination rates, both because of lack vaccine, as well as less means to performs vaccinations. Recent donations of vaccines and means to other countries, including by the US and others, will help in this endeavor, although there is still a long way to go.

### Details:

**Why does it matter? Because, without a significant portion of any country vaccinated, there will be ongoing COVID infections.** And, with the ongoing infections,

it means ongoing replication of virus, the very real risk of mutations to the virus, and the rise of one or more variants. Some mutations cause the virus to die out; others, which tend to then persist, become stronger and often become dominant.

That is exactly what happened, first with the Alpha (B.1.1.7) variant (UK and much of Europe, Canada, and US), and then with the Delta (B.1.617.2) variant (India, UK, & US). The Delta variant was **just** named a Variant of Concern in the US on June 14, 2021; the WHO named it a VOC on May 11, 2021. The WHO had made it a Variant of Interest (VOI) on April 4, 2021, so it took just 5 weeks to move from one to the other. Canada lists it as a VOI but not a VOC.. There are other VOCs within all 3 agency jurisdictions.

**Click here definitions & lists of the Variants of Interest & the Variants of Concern:**

**U.S. --** <https://www.cdc.gov/coronavirus/2019-ncov/variants/variant-info.html>

**Canada:** <https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/health-professionals/testing-diagnosing-case-reporting/sars-cov-2-variants-national-definitions-classifications-public-health-actions.html>

### **The Need for Sequencing:**

Scientists and Public Health Authorities, often with the help of Universities and Laboratories, monitor the status of the virus by genetically sequencing COVID samples from patients in order to spot circulating viral variants early. Some countries, like in the United Kingdom, sequence many virus samples. Others, like the US, don't do enough sequencing to readily identify early variants or easily know how widespread a variant may be. Sequencing is the only way we'll know if and when the next Variant – Variant X emerges. At the very least, at this time in the Pandemic, it would be important to test all the breakthrough infections (those that have been fully vaccinated and still get COVID).

**Click here for a report on Genetic Sequencing for Variants in the US:**

<https://www.cdc.gov/mmwr/volumes/70/wr/pdfs/mm7023a3-H.pdf>

### **The Risk of Variants Is:**

1. whether COVID in a viral sample is different than previous samples (native or known variants) already circulating in an area/population.
2. if the variant changes the way COVID presents, such as infectiousness, ways of transmitting, incubation period, viral load, symptoms, response or resistance (escape) to diagnostic tests, vaccines, treatments, and any complications or sequela.
3. if certain segments of the population are at greater risk to a specific variant
4. needing to tweak/update vaccines and/or treatments to fight the new variant.

**What We Know** is that decreasing the transmission of the virus decreases the number of replications a virus makes, and decreases the risk of a mutation. Decreasing the risk of transmission and/or mutation can be accomplished by:

1. Becoming fully vaccinated – 2 doses of Pfizer or Moderna or 1 dose of Johnson & Johnson (or other approved vaccine in other countries).

2. Protecting those that cannot be vaccinated for medical reasons (or are not eligible like babies or children younger than vaccinations allow), or those that may not achieve immunity (protection) when fully vaccinated because of some form of immunocompromise. These include those:
  - a. with primary or secondary immune deficiency
  - b. with cancer, especially blood cancers
  - c. with blood disorders
  - d. taking immunosuppressants including corticosteroids
  - e. that had solid organ or blood stem cell or bone marrow transplantation
  - f. the elderly, particularly extreme elderly
  - g. any other person/group added to the guidance or identified by someone's physician
  
- 3) Always, carefully & thoughtfully, following public health techniques with:
  - a. physical distancing (> 6 feet [2 meters])
  - b. hand hygiene (soap & running water (best); hand sanitizer or alcohol wipes with >60% ethanol or isopropyl alcohol)
  - c. use of approved **medical** N95 or better respirators for providing health care, tied surgical, procedure, or 3 layered masks, with tight weave paper or cloth, preferably with an appropriate filter, which counts as a layer.
  - d. isolation or quarantine, if exposed or with symptoms, as guidance applies.
  - e. approved COVID testing, when symptomatic or otherwise indicated; a negative screening test when having any symptoms requires a NAAT or PCR test for definitive positive or negative results.

We realize that the CDC has put out Guidance stating that those that are 'fully vaccinated' can restart those activities, both inside & out, without wearing a face mask in most cases. We are also aware that most scientists, epidemiologists, infectious disease and other medical practitioners, and others have decided that the guidance was too much, too soon. Not wearing a mask in outside areas where they are few people, or where you're sure everyone is vaccinated, is likely fine, including any children or babies. But, in large gatherings or, without knowing everyone's vaccine status, you are trusting each person to be following the rules, wearing masks and social distancing, if they are not **fully** vaccinated.

Many of those against vaccination or those that just don't get vaccinated, perhaps because they already had COVID infection and feel they are adequately immune, may not wear a mask or distance at 6 ft, as the guidance says they should.

**They must understand that they are not just putting themselves at risk but also those that are not fully vaccinated or are potentially immunocompromised and not well protected, at risk.** That may include other family members, including babies & children, not eligible for vaccination, those that have immunosuppression, pregnant & choosing not to get the vaccine, or strangers.

## **What We Don't Know, without Adequate Surveillance & Testing, Is:**

1. how many different variants there are?
2. how many COVID cases are caused by each of the variants?
3. how much and where the variants have spread?
4. how the variant differs from previous native or earlier variants?
5. are the variants being accurately diagnosed with the current COVID tests?
6. do the variants escape the current vaccines or require a booster?
7. do the variants respond to current antivirals, monoclonal antibodies, or other known treatments?

**Globally, lots of countries, the U.S. and Canada included, are at risk for COVID Variants as long as transmission of SARS-CoV-2 is occurring.** So far, in those areas that have adequate coverage with vaccines AND are using a vaccine that has an impact on the original or variant COVID viruses, cases of COVID, as well as the rate of severe illness and deaths can be minimized. But there may come a time when there is more escape of the vaccine by the virus. This is why the entire globe needs to have vaccine, vaccinations testing for COVID cases, and genetic sequencing to know how much COVID is in a particular area and what virus variants are amongst the cases.

## **COVID in Animals**

Also of concern, and being actively studied, goes beyond just human-to-human transmission. The SARS-CoV-2 virus is now found in over a dozen animals, with some being more resistant to transmission and illness than others. So far, testing has revealed domestic and sanctuary animals, including zoos, as having animals & humans occasionally transmitting from human to animal and back, but only minks and fruit bats have been found in the wild with it. Domestic cats and big cats showing some ability to both receive and transmit the virus. The animals that have been shown to harbor COVID-19 include domestic cats, dogs, and ferrets; minks, lions, tigers, pumas, snow leopards, and gorillas.

Human viruses in animals and animal viruses in humans are always a concern because, along with transmissions going on as the virus replicates and mutates, there is also a greater possibility of reassortment when the virus is in animals. This is the same thing that occurs with other viruses, like the Flu, with cases or outbreaks that transfer between wild & domestic birds & fowl and humans, or pigs and humans. You hear about them associated with novel or flu variants, often with fowl or pig farms or fairs that involve animals. That's why veterinarians and other animal husbandry experts are included in public health programs in the US and other countries throughout the world.

## **Conclusion:**

It's been said before, but I'm not sure it has ever been truer; it is truly a race between vaccinations and the variants. Look at places like India, some South American countries, and now many African countries to see what little to no vaccine supply, vaccines that don't protect enough against the COVID virus regardless of its genetic structure, lack of infrastructure to methodically get the vaccines into arms, or resistance by some in the



Helping the Helpers

population to get a vaccination can do. Then, look at countries like the UK, some countries in Asia, the US and Canada, to see the edge that we're on. We have all those things in place and now it's just a race to see if the virus wins or we do.

Please consider getting fully vaccinated ASAP, if you haven't already. Do it for yourself. These variants are causing an increase in cases amongst younger people, with more being hospitalized and needing more intense care than previously. Do it for others. Those you know and those you don't. Remember, some immunocompromised people get vaccinated and never develop enough of an immune response to fight the disease. Some babies & young children (and some others for one reason or another) CAN'T get vaccinated and won't be protected. Talk to someone you trust, your doctor or other health provider, your faith leader, your family or friends. Talk to someone who has been through COVID or lost someone to it. Make sure you have the facts from reliable sources. The same sources that would count in a term paper.

Lastly, instead of writing the story & statistics out, it seemed better to show you from experts in the field. This allows you to see their take on the subject and even "follow" one of them if that interests you. Here are quick, and incomplete, bios on each of them.

**Tim Spector**, (London, England) is the Principal Investigator of the PREDICT studies & the ZOE Symptom Study app. He is a Researcher/Author on microbiome, nutrition and genomics.

**Eric Topol, MD**, (La Jolla, CA) is a Physician/Scientist, Author & Editor. He is a Professor of Molecular Science at the Scripps Research Institute and practices medicine as a Sr Consultant in Cardiology. He has authored many studies and textbooks and books on these subjects.

**Eric Feigl-Ding**, (Washington, D.C) is a Public Health Scientist (PhD). He is currently a Sr Fellow at the Federation of American Scientists and formerly was a Researcher at the Harvard School of Public Health.

This is what is occurring in the UK, where the Alpha variant (Kent, England) was dominant until the Delta variant started. They do the most genetic sequencing and had a large segment of their population vaccinated, many with just one dose of a two-dose series (their Public Health COVID Immunization Plan to have as many people as possible protected). It was working until Variant Delta took hold. Now, there is a rush to complete the vaccinations with the 2<sup>nd</sup> dose.

### Copied from Twitter Feed of



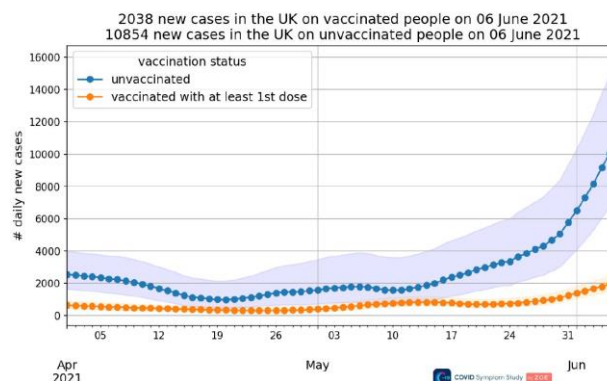
**Tim Spector**

[@timspector](https://twitter.com/timspector)

**Rates of new covid-19 now doubling every 5-6 days according to ZOE covid study - but as you see nearly all infections are in young and unvaccinated. Mainly first dose only still susceptible. This will get worse before it improves. Thanks for logging -**

**[12:02 PM · Jun 10, 2021](#)**

Daily new cases of COVID in UK by vaccination status





**Eric Topol**

[@EricTopol](#)



In the UK, where the delta variant accounts for >90% of new cases, the highest number (>9,000) today in the past 4 months

Testing has increased, and despite the high N of cases, there may be some slowing of the rapid growth rate

[coronavirus.data.gov.uk](https://coronavirus.data.gov.uk) [pic.twitter.com/ZJvC8jFdtN](https://pic.twitter.com/ZJvC8jFdtN)

6/16/21, 1:27 PM



**Tim Spector**

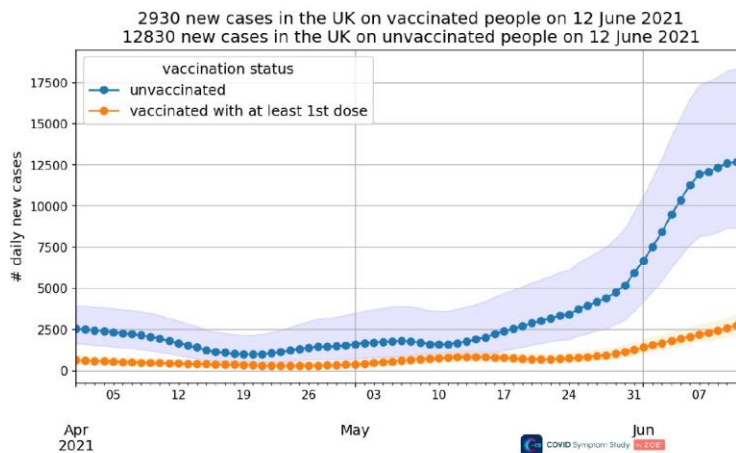
[@timspector](#)



I hope so [@EricTopol](#) - today's data from ZOE suggests a slowing down of the rate though cases are still rising - a warning for the US (and other countries as it opens. Majority of cases are in the under 30s and unvaccinated. [pic.twitter.com/MXL10Lpjh](https://pic.twitter.com/MXL10Lpjh)

6/16/21, 1:45 PM

Daily new cases of COVID in UK by vaccination status



This chart shows the US Variants of Concern (CDC) and the escape (or not) of the Delta Variant from a single shot of a 2 dose COVID vaccine. Pay particular attention to the footnotes.

Copied from the Twitter feed of Eric Topol, MD



**Eric Topol** @EricTopol · 20h

Alpha, beta, gamma, delta variants.

We're lucky to have vaccines that can protect from illness from all of them so far.

The less uptake, the more chance of new ones that could press our luck.

	New WHO Name	Transmissibility	Immune Evasiveness	Vaccine Effectiveness <sup>^</sup>	Which Vaccines Assessed <sup>&amp;</sup>
B.1.1.7	Alpha	+++	—	✓	mRNA, AZ, J&J, Novavax
B.1.351	Beta	+	++++	✓	mRNA, J&J, Novavax
P.1	Gamma	++	++	✓	mRNA, AZ, Sinovac, Sinopharm
B.1.617.2	Delta	++++	++++ <sup>#</sup>	✓	mRNA, AZ, Bharat

\*Relative transmissibility to B.1.1.7 appears to be 60% higher than alpha

<sup>^</sup>Effectiveness from real world evidence vs. severe illness, not all vaccines are effective vs all variants, and importance of 2-doses, especially for B.1.617.2 for which 1 dose of mRNA or AZ is only ~30% effective vs symptomatic infection

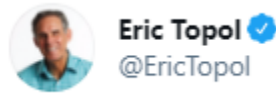
<sup>#</sup>That this variant requires 2-doses of vaccines to preserve their effectiveness, along with lab studies, suggest it is as immune evasive (and possibly more than) as B.1.351 (beta)

<sup>&</sup> Assessed in lab and/or effectiveness studies; absence of evidence does not equal evidence of absence effect

@erictopol




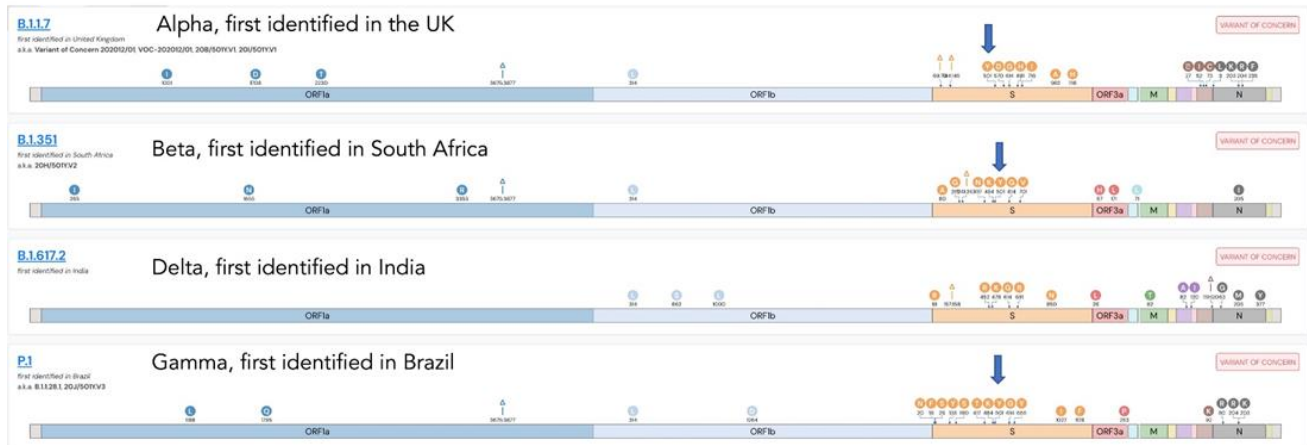
## Discussion on the recent arrival and rapid spread of the Delta Variant.





When the delta (B.1.617.2) variant evolved, unlike the other 3 major variants of concern (alpha, beta, gamma), it took a unique path w/o the N501Y mutation to get to very high transmissibility ( $\geq 40\%$  alpha) & immune evasion ( $\sim$  = beta)

The  showing us new ways to evolve and harm


[pic.twitter.com/ri3arAmL3Q](https://pic.twitter.com/ri3arAmL3Q)



**Eric Topol**  
@EricTopol

Great news for mRNA vaccine protection against the delta (B.1.617.2) variant, just out [@Nature](https://www.nature.com/articles/s4158...)    
[nature.com/articles/s4158...](https://www.nature.com/articles/s4158...)  
potent neutralizing antibody response generated  
[@BioNTech\\_Group](https://www.biontech.com/) [@pfizer](https://www.pfizer.com/) which goes along  
with some clinical effectiveness data  
[pic.twitter.com/X8XeD9peoX](https://pic.twitter.com/X8XeD9peoX)  
6/10/21, 11:41 AM

The Delta Variant (B.1.617.2) was just at 10% in the US just a few days ago. Some experts suggest it will be the US's dominant variant in 3-4 weeks, just as happened in the UK.

 **Eric Topol**  
@EricTopol

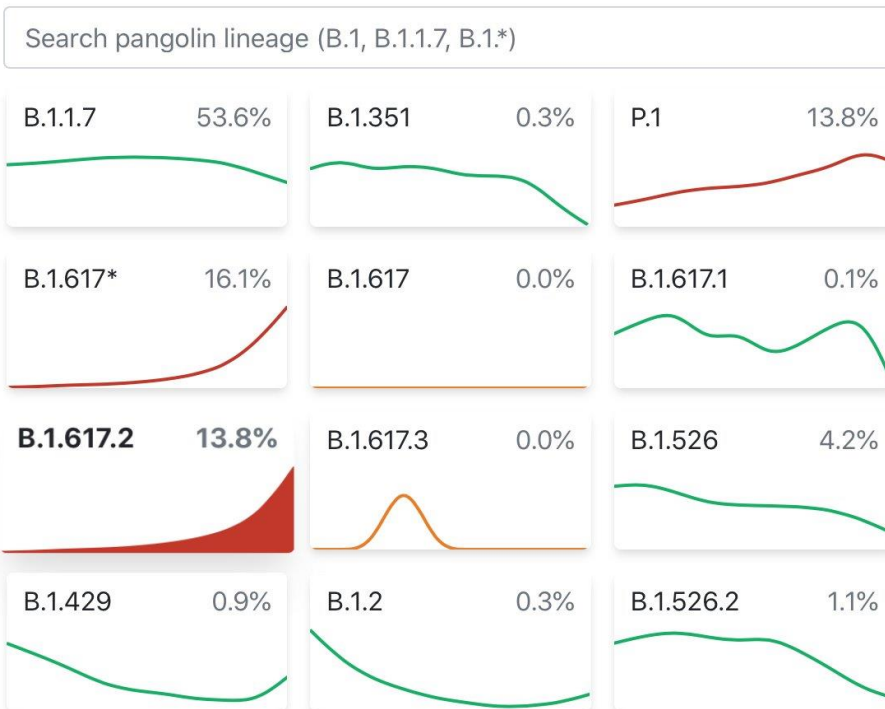
In the US, the Delta variant (B.1.617.2) is now 13.8% of sequenced new infections, the only variant on the rise (included in B.1.617\*)

[cov-spectrum.ethz.ch/explore/United...](https://cov-spectrum.ethz.ch/explore/United...)  
[pic.twitter.com/OXSmN2cblL](https://pic.twitter.com/OXSmN2cblL)

6/17/21, 11:02 AM

**covSPECTRUM** United States  All times  
Enabled by data from 

## Known variants



**covSpectrum – About the Collaboration from Zurich, Switzerland that Uses USAID Data to Track SARS-CoV-2 (COVID-19):** <https://cov-spectrum.ethz.ch/about>

This Epidemiologist agrees that the Delta Variant is rapidly rising and of concern.



**Eric Feigl-Ding**

[@DrEricDing](#)



**Troubling—the worst variant to date, the [#DeltaVariant](#) is now the new fastest growing variant in US. This is the so-called “Indian” variant [#B16172](#) that is ravaging UK GB despite high vaccinations because it has immune evasion properties. Here is why it’s trouble—📌. [#COVID19](#)  
[pic.twitter.com/nuPUOWoLa1](https://pic.twitter.com/nuPUOWoLa1)**

**6/7/21, 8:36 PM**

