

5 Things To Know About the Delta Variant

BY [KATHY KATELLA](#) AUGUST 3, 2021



The predominant COVID-19 strain has put the focus back on prevention

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Even as people began to feel some hope—or at least cautious optimism—early this summer that the pandemic could recede to the background, there was still the threat that new mutations of the COVID-19 virus could bring it back, and it might be even stronger.

A major worry right now is Delta, a highly contagious SARS-CoV-2 virus strain, which was first identified in India in December. It swept rapidly through that country and Great Britain before reaching the U.S., where it is now the predominant variant.

The Centers for Disease Control and Prevention (CDC) described Delta as more transmissible than the common cold and influenza, as well as the viruses that cause smallpox, MERS, SARS, and Ebola—and called it as contagious as chickenpox in an internal document, a copy of which was obtained by and reported on in [The New York Times](#). The highest spread of cases and severe outcomes is happening in places with low vaccination rates, and virtually all hospitalizations and deaths have been among the unvaccinated, the CDC says. But the CDC released data in July that showed vaccinated people also can transmit Delta, which officials did not believe to be the case with other variants, and which led the agency to make a prompt revision to its masking guidelines.

[Inci Yildirim, MD, PhD](#), a Yale Medicine pediatric infectious diseases specialist and a vaccinologist, isn't surprised by what's happening. "All viruses evolve over time and undergo changes as they spread and replicate," she says.

From what we know so far, people who are fully vaccinated against the coronavirus appear to have strong protection against Delta compared to those who aren't. Recent data on "breakthrough cases, from the Kaiser Foundation (while based on limited available data) put these cases at well below 1% in the United States, and effectively 0% for severe illness and death. But anyone who is unvaccinated and not practicing preventive strategies is at high risk for infection by the new variant, doctors say.

Here are five things you need to know about the Delta variant.

1. Delta is more contagious than the other virus strains.

One thing that is unique about Delta is how quickly it is spreading, says [F. Perry Wilson, MD](#), a Yale Medicine epidemiologist. Around the world, he says, "Delta will certainly accelerate the pandemic." The first Delta case was identified in [December](#)

[2020](#), and the variant soon became the predominant strain of the virus in both India and then Great Britain. By the end of July, Delta was the cause of more than 80% of new U.S. COVID-19 cases, according to CDC [estimates](#).

The July CDC report on Delta's transmissibility came after an outbreak that occurred in Provincetown, Mass., after a crowded July 4 weekend, which quickly turned into a cluster of at least 470 cases. While the number of reported breakthrough cases in general has been very low in the U.S., three quarters of those infected in Provincetown were people who had been immunized. According to the CDC, even people with "breakthrough cases" carry tremendous amounts of virus in their nose and throat, and, according to preliminary reports, can spread the virus to others whether or not they have symptoms.

The CDC has labeled Delta "a [variant of concern](#)," using a designation also given to the Alpha strain that first appeared in Great Britain, the Beta strain that first surfaced in South Africa, and the Gamma strain identified in Brazil. (The new naming conventions for the variants were established by the WHO as an alternative to numerical names.)

"It's actually quite dramatic how the growth rate will change," says Dr. Wilson, commenting on Delta's spread in the U.S. in June. Delta was spreading 50% faster than Alpha, which was 50% more contagious than the original strain of SARS-CoV-2, he says. "In a completely unmitigated environment—where no one is vaccinated or wearing masks—it's estimated that the average person infected with the original coronavirus strain will infect 2.5 other people," Dr. Wilson says. "In the same environment, Delta would spread from one person to maybe 3.5 or 4 other people."

"Because of the math, it grows exponentially and more quickly," he says. "So, what seems like a fairly modest rate of infectivity can cause a virus to dominate very quickly."

2. Unvaccinated people are at risk.

People who have not been fully vaccinated against [COVID-19](#) are most at risk.

In the U.S., there is a disproportionate number of unvaccinated people in Southern and Appalachian states including Alabama, Arkansas, Georgia, Mississippi, Missouri, and West Virginia, where vaccination rates are low. (In some of these states, the number of cases is on the rise even as some other states are lifting restrictions because their cases are going down).

Kids and young people are a concern as well. "A [recent study](#) from the United Kingdom showed that children and adults under 50 were 2.5 times more likely to become infected with Delta," says Dr. Yildirim. And so far, no vaccine has been approved for children 5 to 12 in the U.S., although the U.S. and a number of other countries have either authorized vaccines for adolescents and young children or are considering them.

"As older age groups get vaccinated, those who are younger and unvaccinated will be at higher risk of getting COVID-19 with [any variant](#)," says Dr. Yildirim. "But Delta seems to be impacting younger age groups more than previous variants."

3. Delta could lead to 'hyperlocal outbreaks.'

If Delta continues to move fast enough to accelerate the pandemic, Dr. Wilson says the biggest questions will be about the heightened transmissibility—how many people will get the Delta variant and how fast will it spread?

The answers could depend, in part, on where you live—and how many people in your location are vaccinated, he says. "I call it 'patchwork vaccination,' where you have these pockets that are highly vaccinated that are adjacent to places that have 20% vaccination," Dr. Wilson says. "The problem is that this allows the virus to hop, skip, and jump from one poorly vaccinated area to another."

In some cases, a low-vaccination town that is surrounded by high vaccination areas could end up with the virus contained within its borders, and the result could be “hyperlocal outbreaks,” he says. “Then, the pandemic could look different than what we’ve seen before, where there are real hotspots around the country.”

Some experts say the U.S. is in a good position because of its relatively high vaccination rates—or that conquering Delta will take a race between vaccination rates and the variant. But if Delta keeps moving fast, multiplying infections in the U.S. could steepen an upward COVID-19 curve, Dr. Wilson says.

So, instead of a three- or four-year pandemic that peters out once enough people are vaccinated or naturally immune (because they have had the virus), an uptick in cases would be compressed into a shorter period of time. “That sounds almost like a *good* thing,” Dr. Wilson says. “It’s not.” If too many people are infected at once in a particular area, the local health care system will become overwhelmed, and more people will die, he says. While that might be less likely to happen in the U.S., it will be the case in other parts of the world, he adds. “That’s something we have to worry about a lot.”

4. There is still more to learn about Delta.

One important question is whether the Delta strain will make you sicker than the original virus. But many scientists say they don’t know yet. Early information about the severity of Delta included a [study](#) from Scotland that showed the Delta variant was about twice as likely as Alpha to result in hospitalization in unvaccinated individuals, but other data has shown no significant difference.

Another question focuses on how Delta affects the body. There have been reports of symptoms that are different than those associated with the original coronavirus strain, Dr. Yildirim says. “It seems like cough and [loss of smell](#) are less common. And headache, sore throat, runny nose, and fever are present based on the most recent surveys in the U.K., where more than 90% of the cases are due to the Delta strain,” she says.

It’s unclear whether Delta could cause more breakthrough cases—infections in people who have been vaccinated or have natural immunity from a prior COVID-19 infection. This question is being revisited after the Provincetown outbreak. “Breakthrough is a big question,” Dr. Wilson says. “At least with immunity from the [mRNA vaccines](#), it doesn’t look like it will be a problem.” A Public Health England analysis (in a preprint that has not yet been peer-reviewed) showed that at least two vaccines are effective against Delta. The Pfizer-BioNTech vaccine was [88% effective against symptomatic disease](#) and [96% effective against hospitalization](#) from Delta in the studies, while Oxford-AstraZeneca (which is not an mRNA vaccine) was 60% effective against symptomatic disease and 93% effective against hospitalization. The studies tracked participants who were fully vaccinated with both recommended doses.

[Moderna has also reported on studies](#) (not yet peer-reviewed) that showed its vaccine to be effective against Delta and several other mutations (researchers noted only a “modest reduction in neutralizing titers” against Delta when compared to its effectiveness against the original virus).

“So, your risk is significantly lower than someone who has not been vaccinated and you are safer than you were before you got your vaccines,” Dr. Yildirim says.

Will vaccinated people need booster shots to protect against Delta? Some experts say it’s too soon to know whether we will need a booster modified to target the Delta variant—or to bolster protection against the original virus. But both Pfizer and Moderna are working on boosters, although they would still face the hurdle of getting FDA authorization for them. While the Biden Administration officials has not made a commitment to boosters, in July it said a third shot of the two mRNA vaccines might be necessary for people over 65 and those with compromised immune systems.

Johnson & Johnson also has reported that its vaccine is effective against Delta, but one recent study, which has not yet been peer-reviewed or published in a scientific journal, suggests that its vaccine is less effective against the variant, which has prompted discussion over whether J&J recipients might also need a booster.

There are additional questions and concerns about Delta, including Delta Plus—a subvariant of Delta, that has been found in the U.S., the U.K., and other countries. “Delta Plus has one additional mutation to what the Delta variant has,” says Dr. Yildirim. This mutation, called K417N, affects the spike protein that the virus needs to infect cells, and that is the main target for the mRNA and other vaccines, she says.

“Delta Plus has been reported first in India, but the type of mutation was reported in variants such as Beta that emerged earlier. More data is needed to determine the actual rate of spread and impact of this new variant on disease burden and outcome,” Dr. Yildirim adds.

5. Vaccination is the best protection against Delta.

The most important thing you can do to protect yourself from Delta is to get fully vaccinated, the doctors say. At this point, that means if you get a two-dose vaccine like Pfizer or Moderna, for example, you must get both shots and then wait the recommended two-week period for those shots to take full effect. Whether or not you are vaccinated, it’s also important to follow CDC prevention guidelines that are available for [vaccinated](#) and [unvaccinated](#) people.

“Like everything in life, this is an ongoing risk assessment,” says Dr. Yildirim. “If it is sunny and you’ll be outdoors, you put on sunscreen. If you are in a crowded gathering, potentially with unvaccinated people, you put your mask on and keep social distancing. If you are unvaccinated and eligible for the vaccine, the best thing you can do is to get vaccinated.”

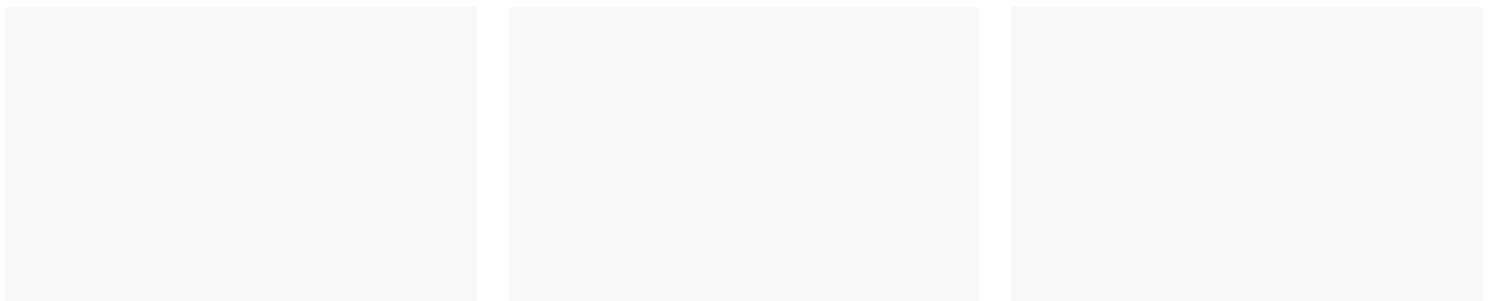
Face masks can provide additional protection and the WHO has encouraged mask-wearing even among vaccinated people. The CDC updated its guidance in July to recommend that both vaccinated and unvaccinated individuals wear masks in public indoor settings in areas of high transmission to help prevent Delta’s spread and to protect others, especially those who are immuno-compromised, unvaccinated, or at risk for severe disease. The agency is also recommending universal indoor masking for all teachers, staff, students, and visitors to K-12 schools.

Of course, there are many people who cannot get the vaccine, because their doctor has advised them against it for health reasons or because personal logistics or difficulties have created roadblocks—or they may choose not to get it. Will the Delta variant be enough to encourage those who can get vaccinated to do so? No one knows for sure, but it’s possible, says Dr. Wilson, who encourages anyone who has questions about vaccination to talk to their family doctor.

“When there are local outbreaks, vaccine rates go up,” Dr. Wilson says. “We know that if someone you know gets really sick and goes to the hospital, it can change your risk calculus a little bit. That could start happening more. I’m hopeful we see vaccine rates go up.”

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