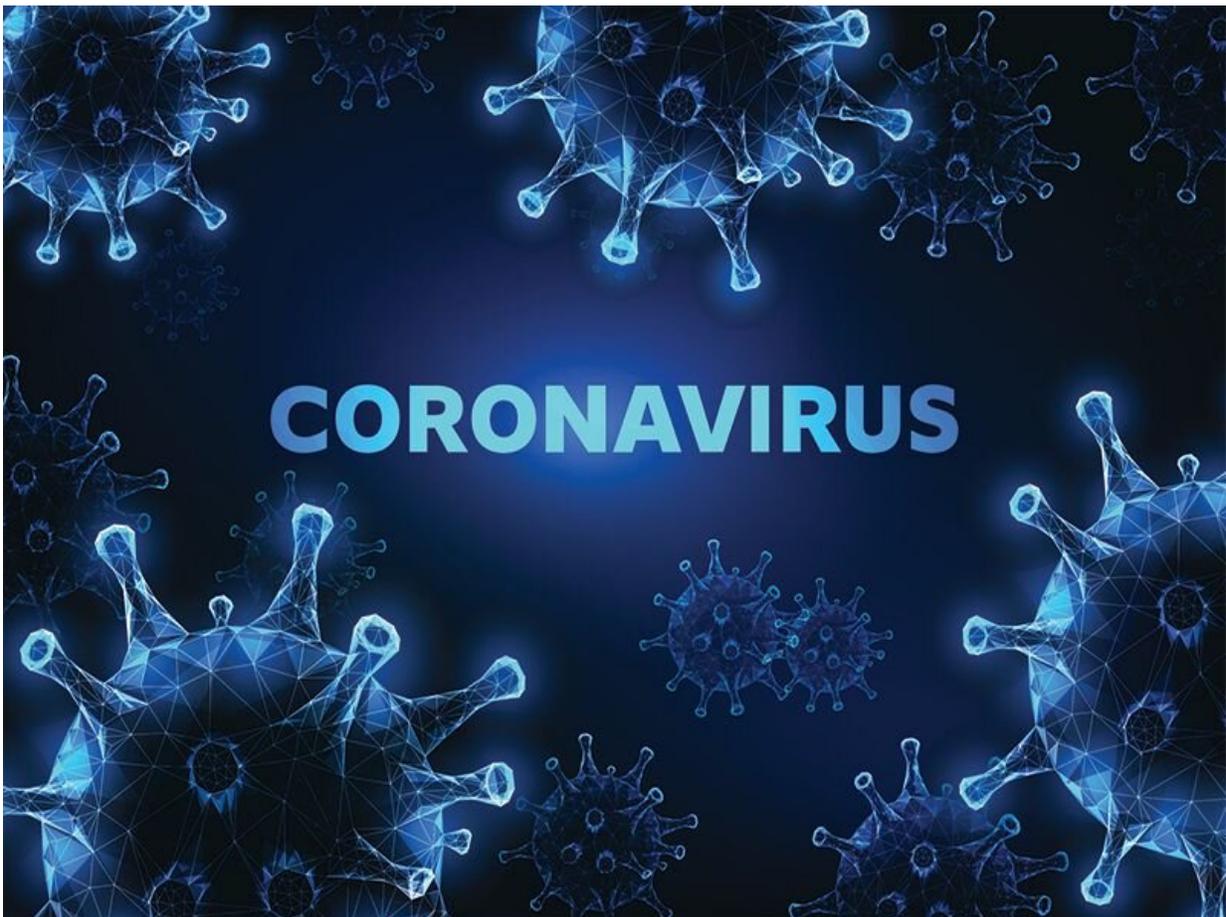


# New COVID variants may weaken vaccines, but shots will still protect you

February 1 2021, by Dennis Thompson

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The new coronavirus is mutating in an attempt to elude vaccines and

treatments, putting a greater onus on Americans to get vaccinated and use social distancing measures to avoid infection, U.S. health officials said Friday.

New COVID-19 variants out of South Africa and Brazil—B.1.351 and P1, respectively—contain a mutation called E484K, "which results in changes in the shape of the virus spike protein such that neutralizing antibodies might not bind as well as it does in the absence of the mutation," explained Dr. Jay Butler, deputy director for [infectious diseases](#) at the U.S. Centers for Disease Control and Prevention. He spoke during a media briefing from the Infectious Diseases Society of America (IDSA) on Friday.

But experts also stressed that even a weakened vaccine can still largely protect folks from what they most fear: A severe case of COVID-19 disease.

"When one looks at the potential impact on a very important aspect of what we look at carefully—namely severe disease—that overall in the United States, in South Africa and in Brazil, the overall efficacy for severe disease was 85%," the nation's top infectious disease expert, Dr. Anthony Fauci, said at a White House briefing on Friday.

Just this week, the South African variant cropped up in two cases in South Carolina and the Brazilian variant was diagnosed in a Minnesota resident who had recently traveled to Brazil. A British variant has a far greater foothold in the United States right now, with 315 cases confirmed in 28 states, according to the CDC. That variant does not seem to dampen the effectiveness of [coronavirus](#) vaccines, however.

Importantly, the E484K mutation has not allowed either the South African or Brazilian variants to completely slip past the protection created by the approved Pfizer and Moderna vaccines, because the

human immune response creates many different antibodies that attack multiple parts of the spike protein, Butler explained.

"Nonetheless, we're very worried about P1 and B.1.351 because of the number of mutations in the receptor binding domains of the spike protein, which is where the majority of those antibodies that are produced by vaccination would be expected to bind," Butler said.

Highly infectious COVID-19 variants from the United Kingdom, South Africa and Brazil are expected to overrun the original strain of the novel coronavirus within a matter of weeks, the CDC projects.

Models indicate the British variant will become the predominant variant in the United States by mid- to late March, and other strains that spread more rapidly between humans are sure to follow, according to Fauci, who directs the U.S. National Institute of Allergy and Infectious Diseases and is President Joe Biden's chief medical advisor.

"You can be almost certain that as long as there is a lot of virus circulating in the community, there will be the evolution of mutants because that's what viruses do," Fauci said at the Friday morning news briefing. "It gives the virus a chance to adapt to the forces, in this case the immune response, that are trying to get rid of it, and that's why you get mutations."

The only way to keep the virus from mutating is to stop its spread, Fauci added, because "viruses cannot mutate if they don't replicate."

That means U.S. health officials need to "vaccinate as many people as we can as quickly as we possibly can" so we don't provide the coronavirus a "playing field" to pursue future and potentially more dangerous mutations, Fauci said.

## **Vaccines will still help prevent severe illness**

People also can help prevent the emergence of new mutations by wearing masks, practicing physical distancing, washing their hands and taking other steps to prevent COVID-19 infection, Butler added.

Results from the Johnson & Johnson vaccine trial, also announced Friday, show the effect that a viral mutation can have on a vaccine's effectiveness.

The vaccine's efficacy rate dropped from 72% in the United States to 57% in South Africa, with an overall average effectiveness of 66% at preventing moderate and severe illness.

But the results also show that the new vaccine still provides strong protection against severe COVID-19, regardless of the variant, Fauci noted.

Even in South Africa, where one of the new mutations is already widespread, "there were essentially no hospitalizations or deaths in the vaccine group, whereas in the placebo group there were," Fauci added.

Dr. Amesh Adalja, a senior scholar at the Johns Hopkins Center for Health Security, in Baltimore, agreed that "it appears that the vaccines will be less effective at preventing symptomatic disease from the South African variant, but still highly effective at preventing severe disease" if the variant infects someone.

"Severe disease is really what matters, because what we are trying to do is tame this virus and make it more like the community-acquired coronaviruses that cause common colds," Adalja continued. "Vaccines could be updated, if necessary, in a fairly fast manner given that vaccine platform technologies were used for the leading vaccines."

Butler noted that the Johnson & Johnson vaccine's effectiveness rate of 66% doesn't stack up favorably to the 95% achieved by the Pfizer and Moderna vaccines—but it's still much better than the average effectiveness of the seasonal flu vaccine.

The flu vaccine has ranged in effectiveness from 29% to 48% in recent years, according to the CDC. The 2019-2020 flu vaccine had an effectiveness of 39%.

"We would be celebrating a seasonal influenza [vaccine](#) with 60% efficacy," Butler said.

### **Herd immunity harder to reach**

The problem with the rapid spread of COVID-19 variants is that their increased transmissibility will likely move the goalposts for herd immunity, where enough people are immune to prevent community spread of the coronavirus, Butler said.

Experts estimated that 70% to 75% of Americans would need to become vaccinated against the original COVID-19 strain to create herd immunity, Butler said.

"If a more transmissible variant becomes the predominant strain, that level of coverage needed to achieve herd immunity would be higher, and could be even in the 80% to 85% range," he added.

The new variants could have an even greater impact on the effectiveness of monoclonal antibody treatments, he noted, since those therapies contain one type of antibody that targets one specific place on COVID-19's spike protein.

"The monoclonal antibody tends to focus on a particular site in the spike

protein, and thus might be more at risk of being a site that is altered by the mutation, rendering the monoclonal antibody much less effective or even ineffective," Butler said.

Pharmaceutical companies are investigating the creation of blended monoclonal antibody treatments to ward this off, Dr. John Brooks, chief medical officer for the CDC's COVID-19 Response Team, said during the IDSA media briefing. These treatments would contain a number of different antibodies, more closely resembling the natural immune response caused by vaccination.

**More information:** The U.S. Centers for Disease Control and Prevention has more about [COVID-19 variants](#).

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