

WASHINGTON (Sinclair Broadcast Group) — Concerns about the emergence of more infectious strains of the [coronavirus](#) overshadowed the good news from Johnson & Johnson that it had completed the third phase clinical trial of its single-dose vaccine.

On Friday, Johnson & Johnson and Janssen Pharmaceuticals reported their vaccine was 72% effective among trial participants in the United States. But that efficacy went down to 57% in a South Africa trial, where the dominant strain of the virus is more transmissible and apparently, more resistant to vaccine-induced immune response.

"We expected this," said Centers for Disease Control and Prevention Director Rochelle Walensky. "Viruses mutate and they tend to mutate in ways that are advantageous to the virus."

The research shows that the vaccination effort is in a race against mutations.

Three, in particular, are [getting the most attention](#). They're the variants that originated in the U.K, B.1.1.7, South Africa, B. 1.351, and Brazil, P1. Each is believed to be more easily transmissible because of mutations on the spike protein, the part of the virus that attaches itself to human cells.

Dr. Anthony Fauci, chief medical adviser to the president, described the Johnson & Johnson study as a "wake-up call" to the fact that mutations "have clinical consequences."

The more opportunities the virus has to spread among people, the more it replicates, the more it mutates, he explained at a Friday press briefing. "That's the reason to continue to do what we're doing, namely, intensify our ability...to vaccinate as many people as possible as quickly as possible."

J&J is expected to file an application with the Food and Drug Administration for emergency use within a week, potentially creating an added resource in the fight against the pandemic. The U.S. government has ordered 100 million doses of the vaccine, which could be supplied by June.

It was not surprising to see a strain of virus emerge that poses a challenge to the vaccination campaign, said Dr. Dana Mazo, an infectious diseases specialist at Mount Sinai Hospital.

"There was always the concern that there could be mutations that would create variants that would decrease the protection from the vaccine or natural infection," she said.

J&J's 57% efficacy in South African trials is "not as high as the protection against other variants but it's promising," Mazo noted. Even against the new variant, the vaccine clears the FDA's requirement that a vaccine is at least 50% effective to consider emergency use authorization.

Despite obstacles in South Africa, Johnson & Johnson's vaccine has proven 85% effective against severe illness, hospitalization and death. That protection increased over time and gave 100% protection against severe illness and death by seven weeks. Additionally, the J&J vaccine does not require ultra-cold storage and it's effective after a single shot, rather than the two recommended by Moderna and Pfizer.

J&J was also one of few vaccine companies to conduct clinical trials against the new variants in South Africa and South America. Novavax also conducted clinical trials in the U.K. and South Africa. In data released Thursday, Novavax reported the shot was 86% effective against the U.K. variant and 60% effective in South Africa trials. It was estimated to be 95% effective against the original strain of SARS-CoV-2.

The new trials have raised fresh concerns about the efficacy of the two dominant vaccines in circulation. Studies published in recent weeks indicated that both the Moderna and Pfizer vaccinations provided decreased protection against the B. 1.351 strain in laboratory tests.

Those vaccines were originally proven to be up to 95% effective against the original strain of COVID-19. Both companies said they were confident their vaccines produce sufficient immune response against all existing strains of the virus, but they are still moving ahead to develop booster shots and potentially reconfigure their platforms to protect against the mutants.

"We are already laying the groundwork to respond quickly if a variant of SARS-CoV-2 shows evidence of escaping immunity by our vaccine," a spokesperson from Pfizer told Reuters last week.

Moderna [announced](#) Monday that "out of an abundance of caution," it was working on a booster shot or a third dose of the vaccine. The shot would account for the spike protein mutations found in the new variants and likely be administered six to 12 months after the second dose.

Altering vaccines at a time when companies are ramping up production could add to the existing logistical challenges. But changing the vaccine formula can be done relatively easily, according to Dr. Zucai Suo, an eminent professor in biomedical science at Florida State University.

When the virus evolves to evade an immune response, "we need to tweak our immune system and the only way to do it is tweak the vaccine," he said.

Each company has a platform that can accommodate minor sequencing adjustments to target genetic mutations in the virus. Pfizer and Moderna use mRNA platforms, J&J uses an adenovirus vector and Novavax uses recombinant protein technology.

"It is just a minor change...just a few building blocks," Suo noted, comparing the process to adding tinted windows to a car on an assembly line. "It's called precision medicine," Suo continued. "The thing you need to do here is precision immunization." That could mean targeting different vaccines into areas where one particular strain is dominant, which will mean more testing and surveillance.

Health officials in the United States are just now [scaling up surveillance](#) and sequencing more samples of the virus found in communities.

"We should be treating every case as if it's a variant," said CDC Director Walensky.

Cases of the strain originally found in the U.K. have been documented in 29 states and public health experts expect it will be the dominant strain of the virus by March or April.

Health officials in [South Carolina](#) reported two cases of the South African variant in two individuals who had not traveled and did not know each other, raising concerns that strain is already spreading in the community. The Brazil variant was identified earlier this week in a Minnesota resident who recently traveled to the country.

Researchers are also investigating the emergence of a California variant, CAL.20C, that coincided with the massive outbreak in Los Angeles.

Surveillance for new and existing strains is critical to stay ahead of developments that could render vaccines ineffective, explained Dr. Lisa Lee, an epidemiologist and public health expert at Virginia Tech. "We can use this type of viral monitoring as an early warning for changes and provide necessary information to vaccine developers to help them tweak their formulas."

The United States is behind other countries, including Britain and Canada in tracking SARS-CoV-2 variants because it lacked the public health infrastructure to do it, according to the CDC director.

The latest CDC data shows 26 million doses of the Moderna and Pfizer vaccine have been administered. After a slow start, the vaccination effort has begun to accelerate. Over the past week, health care providers have administered an average of 1.2 million shots each day.