

# Research shows third vaccine dose key to preventing omicron hospitalization

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New research shows that two doses of an mRNA COVID-19 vaccine result in lower effectiveness for preventing hospitalization for the omicron variant (65 percent) than previous variants, including alpha (85

percent) and delta (85 percent). However, importantly, a third ("booster") vaccine dose significantly improves protection against omicron hospitalization up to 86 percent.

The almost year-long study, led by researchers at Vanderbilt University Medical Center, the Centers for Disease Control and Prevention (CDC) and University of Michigan, looked at the alpha, delta and omicron variants of SARS-CoV-2. The research was conducted by the IVY (The Influenza and Other Viruses in the Acutely Ill) Network and included nearly 12,000 patients enrolled at 21 hospitals across the United States.

"There is effectiveness from the Pfizer and Moderna mRNA vaccines, but they're not as effective as they were against the earlier variants," said principal investigator Wesley Self, MD, MPH, associate professor of Emergency Medicine and Vice President for Clinical Research Networks and Strategy at VUMC. "Two things may be contributing to the lower protection from the vaccines against omicron, including waning immunity over time and evasion of this particular variant from the effects of vaccines."

"Our research shows that booster or third vaccine doses, which are now recommended for all adults, are critically important for protection against omicron," Self said. "It's good news that the current [vaccine](#) formulations do have effectiveness against omicron, but it means you need to get that third dose."

At this time, the CDC is reporting 64.1 percent of the U.S. population is fully vaccinated and 42.3 percent received the booster.

In December 2021, hospitalized patients in this study were mainly infected with the delta variant which is known to result in more serious illness. Because there was a mix of COVID strains in hospitalized patients, researchers used genetic sequencing to identify the omicron

[variant](#).

"We found that omicron indeed is causing a lot of people to be hospitalized," Self said. "And if you are hospitalized with omicron, it's still a very severe disease. Fifteen percent of people hospitalized with the [omicron variant](#) of COVID-19 required ventilators and 7 percent died."

Another finding in this research is the amount of breakthrough cases detected during the omicron surge.

"Because more people are getting vaccinated over time and omicron seems to be somewhat less susceptible to vaccines, we are seeing people in the hospital who have been fully vaccinated who are sick with [omicron](#). However, the severity of illness for people who have been vaccinated is less than those who have not been vaccinated," said Self. "This type of disease attenuation is important to understand because it shows that the vaccines are helpful even to people who do get COVID after vaccination."

Researchers conclude vaccinations against COVID-19, including the third dose, continue to be the best protection from becoming critically ill or dying from the virus.

Provided by Vanderbilt University

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