

# Study: Vaccines and booster shots are key to controlling spread of COVID variants

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A new study by researchers at the Yale School of Public Health emphasizes the continuing importance of vaccines and booster shots at the individual and population level in controlling infections from highly contagious new variants of COVID-19.

The findings show that not only are [vaccinations](#) and boosting important for lowering individual risk of infection, they also aid in controlling COVID-19 within a larger [population](#). With new COVID-19 variants and sub-variants driving current surges in infections, being both vaccinated and boosted is critically important, the researchers said.

"It's not the time to stop getting people boosted. It really makes a huge difference," said Jeffrey Townsend, the study's senior author and a professor of biostatistics and of ecology and [evolutionary biology](#) at Yale.

The study appears in *PNAS Nexus*.

In the study, the researchers used [mathematical calculations](#) to determine the likelihood of transmission of the SARS-CoV-2 Omicron [variant](#)

after an infected person emerges from various lengths of quarantine. The calculations considered the virus's incubation period, incubation time, and test sensitivity in detecting the Omicron variant.

Their results showed that vaccines and booster shots at both the individual and [population level](#) are critically important to limiting virus transmission.

"That an individual is recently vaccinated—or even better, recently boosted—substantially decreases their risk of contracting COVID-19," Townsend said. "However, once infected, being recently vaccinated or boosted doesn't change transmission all that much. Therefore, recent vaccination and boosting don't affect the length of quarantine necessary for an individual who is infected with Omicron."

"However, if the population where that infected individual is located is highly vaccinated and boosted, then if that infected individual emerges from quarantine still infected, far fewer people are likely to contract COVID-19 from them," Townsend said. "We concluded, therefore, that within populations where there are high levels of vaccination and boosting, it can be suitable to require quarantines of lower durations and to conduct less frequent testing."

The methods used for the analysis were adapted from a 2020 study in which Townsend and colleagues investigated the transmissibility of the initial SARS-CoV-2 Alpha virus and its impact on quarantine. The researchers were inspired to extend the analytical model and apply it to new data on the Omicron variant in their current study.

"Our concern was with the changes that were going on with the epidemic," Townsend said. "With new variants sweeping through and with higher levels of vaccination and boosting, perhaps the recommendations we made in 2020 can be tailored to these specific circumstances—and they can."

**More information:** Chad R Wells et al, Quarantine and serial testing for variants of SARS-CoV-2 with benefits of vaccination and boosting on consequent control of COVID-19, *PNAS Nexus* (2022). [DOI: 10.1093/pnasnexus/pgac100](https://doi.org/10.1093/pnasnexus/pgac100)

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