

Previous COVID-19 or MIS-C does not protect kids from omicron, study finds

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Research drawing on the national Overcoming COVID-19 study, led by Boston Children's Hospital, and the hospital's own Taking On COVID-19 Together Group provides evidence that children who previously had COVID-19 (or the inflammatory condition MIS-C) are not protected against the newer omicron variant.

Vaccination, however, does afford protection, the study found. The findings, published in *Nature Communications* on May 27, parallel similar findings in adults.

"I hear parents say, 'Oh, my kid had COVID last year,'" says Adrienne Randolph, MD, MSc, of Boston Children's Hospital, who launched Overcoming COVID-19 in 2020. Randolph was senior author on the current paper with Surender Khurana, Ph.D., of the Food and Drug Administration's Division of Viral Products, Center for Biologics Evaluation and Research. "But we found that antibodies produced by prior infections in children don't neutralize [omicron](#), meaning that [unvaccinated children](#) remain susceptible to omicron."

The researchers obtained [blood samples](#) from 62 children and adolescents hospitalized with severe COVID-19, 65 children and adolescents hospitalized with MIS-C, and 50 outpatients who had recovered from mild COVID-19. All the samples were taken during 2020 and early 2021, before the emergence of the omicron variant.

In the laboratory, they exposed the samples to a pseudovirus (derived from SARS-CoV-2, but stripped of its virulence), and measured how well antibodies in the samples were able to neutralize five different SARS-CoV-2 variants of concern: alpha, beta, gamma, delta, and omicron.

Overall, children and adolescents showed some loss of antibody cross-neutralization against all five variants, but the loss was most pronounced for omicron.

"Omicron is very different from previous variants, with many mutations on the spike protein, and this work confirms that it is able to evade the antibody response," says Randolph. "Unvaccinated children remain susceptible."

In contrast, children who had received two doses of COVID-19 vaccine showed higher neutralizing [antibody titers](#) against the five variants, including omicron.

Randolph hopes these data will encourage parents to have their children and teens vaccinated.

More information: Juanjie Tang et al, Cross-reactive immunity against the SARS-CoV-2 Omicron variant is low in pediatric patients with prior COVID-19 or MIS-C, *Nature Communications* (2022). [DOI: 10.1038/s41467-022-30649-1](https://doi.org/10.1038/s41467-022-30649-1)

Provided by Children's Hospital Boston

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