

Effectiveness of COVID-19 mRNA vaccination for children and adolescents confirmed by multi-state study

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A multi-state study from the Centers for Disease Control and Prevention's (CDC's) VISION Network confirms that the Pfizer-BioNTech mRNA COVID-19 vaccine has provided children and adolescents, ages 5-17, with protection against both moderate and severe

COVID-19 outcomes.

The study found that for 12–17-year-olds, vaccine effectiveness was high against the Delta variant but lower during Omicron dominance, including BA.4 and BA.5. Due to the youngest age (5-11) group's ineligibility for vaccination during Delta predominance, vaccine effectiveness could be estimated for these children only during the Omicron predominant period. Vaccine protection against [emergency department](#)/urgent care visits (markers for moderate disease) were similar across the 5-17 age range during Omicron.

In addition to differing by predominant circulating virus variant, vaccine effectiveness against COVID-19-associated emergency department/urgent care visits and hospitalizations fluctuated by vaccination and, if age eligible, a first booster dose. Protection waned substantially five months after a second vaccine dose for all age groups. In adolescents, protection increased after a booster. Children younger than 12 were ineligible for a booster.

COVID-19 in children and teens is often mild but can lead to hospitalization and death. Data reviewed by the study authors showed that 83 percent of COVID positive hospitalizations of 5–17-year-olds were among unvaccinated patients. Of those hospitalized, 38 percent were non-Hispanic White, 26 percent were Hispanic and 17 percent were non-Hispanic Black.

The Pfizer-BioNTech mRNA COVID-19 vaccine was authorized by the U.S. Food and Drug Administration in December 2020 for immunocompetent individuals 16 years or older, in May 2021 for 12–15-year-olds and in October 2021 for 5-11-year-olds.

"This study adds to what we knew about [vaccine effectiveness](#) for children and adolescents. Vaccination protected against emergency

department/urgent care visits and hospitalizations, indicating that it protected well against the moderate and severe outcomes of COVID-19," said study co-author Shaun Grannis, M.D., M.S., Regenstrief Institute vice president for data and analytics.

"This study is important because we weren't sure if the vaccine was going to work well in children and adolescents and how it would work. We found effectiveness decreased during Omicron, which hadn't been clear, but vaccination still provided significant protection. Effectiveness increased after the monovalent booster for those who were eligible.

"We can't predict the future, so we are studying severity and trends through different epochs, different eras of COVID. It's important to continue doing what we're doing, which is monitoring the effectiveness of the vaccines over time, because we're dealing with variants that behave differently," Dr. Grannis observed.

This study included pediatric electronic health record (EHR) data from April 2021 through September 2022 from 201 emergency departments, 105 urgent care clinics and 164 hospitals from nine VISION network partners across 10 states: Baylor Scott and White Health, Columbia University Irving Medical Center, HealthPartners/Children's Minnesota, Intermountain Healthcare, Kaiser Permanente Northern California, Kaiser Permanente Northwest, Paso del Norte Health Information Exchange, Regenstrief Institute and University of Colorado. Vaccination data from state and local immunization registries and claims were also reviewed.

"If parents are looking for support for their decision or inclination to vaccinate their child, this study provides good evidence that the vaccine is helpful and offers protection," said Dr. Grannis, who is also a professor of family medicine at Indiana University School of Medicine. "This analysis also provides scientifically-based guidance to clinicians

who care for children and adolescents."

"Effectiveness of BNT162b2 COVID-19 Vaccination in Children and Adolescents" is published in *Pediatrics*.

More information: Nicola P. Klein et al, Effectiveness of BNT162b2 COVID-19 Vaccination in Children and Adolescents, *Pediatrics* (2023).
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