

## There is currently a limited body of evidence about the effectiveness of COVID-19 vaccines against variants of concern among children and adolescents

Flórez ID, Velásquez-Salazar P, Martínez JC, Linkins L, Abdelkader W, Iorio A, Lavis J, Patiño-Lugo DF. COVID-19 living evidence synthesis #8 (version 4): What is the effectiveness of available COVID-19 vaccines in children and adolescents in general and specifically for variants of concern? Evidence and Deliberation Unit for Decision Making (UNED), University of Antioquia & Health Information Research Unit (HIRU), McMaster University, 31 January 2022.

### Why is all the evidence on this topic being summarized?

- Although children and adolescents appear to be at lower risk of severe illness and death, COVID-19 also affects them. Several national agencies (including the Centers for Disease Control and Prevention in the United States) recommend that everyone 5 years of age and older get vaccinated against COVID-19.
- All viruses evolve over time. When a virus multiplies in the human body, it sometimes changes a little bit. These changes are called “mutations.” A virus with one or more new mutations is referred to as a “variant” of the original virus.
- A variant of concern is a variant for which there is evidence of an increased transmissibility, more severe disease (for example, causing more hospitalizations or deaths), lower capacity of antibodies generated during previous infection or vaccination to block it, reduced success of treatments or vaccines, or failure of diagnostic test to detect the virus.
- It is important to understand how COVID-19 variants of concern affect the virus’ behaviour, including their impact on the how well vaccines work in the real world.
- While there is a rapidly growing body of evidence about [the effectiveness of COVID-19 vaccines among the adult population](#) (plain-language summary [here](#)), little is known about their effectiveness for children and adolescents.

### What question did we want to answer?

- What is the effectiveness of available COVID-19 vaccines for children and adolescents, including against variants of concern?

### How have we done this living evidence synthesis?

- We conducted a broad search in several databases and websites to retrieve studies evaluating the effectiveness of COVID-19 among people aged under 18 years, including the [COVID-END inventory of best evidence syntheses](#).
- We examined the studies reporting data on how well vaccines work against variants of concern (for example, whether the vaccines prevent infection, severe disease, death, and prevent transmission).

- We appraised the quality of the individual studies using standardized tools.

### How up to date is this living evidence synthesis?

- This living evidence synthesis was last updated on 31 January 2022.

### What are the main results of our living evidence synthesis?

- We appraised the full text of 22 studies, 7 of which were deemed eligible for our review.
- At the time of this update, all studies found focused on the Pfizer/BioNTech Comirnaty vaccine. No evidence is available on the effectiveness of other vaccines in a population under 18 years of age.
- We critically appraised the studies and determined the level of certainty of the body of evidence (table 1). We present below (table 2) the key findings.

**Table 1. Levels of certainty based on the best evidence available**

High-certainty evidence	Moderate-certainty evidence	Low-certainty evidence
Our confidence in the body of evidence is high. The studies were well done with low risk of bias. The studies revealed consistent findings.	Our confidence in the body of evidence is moderate. The studies were done with low to moderate risk of bias but revealed only partially consistent findings. We will become more confident if new studies have the same findings.	Our confidence in the body of evidence is low. There are aspects of the studies that make us feel the results may not be the same in future studies (low to serious risk of bias with inconsistent findings).

**Table 2. Key findings about vaccine effectiveness**

Vaccine	Findings	
Pfizer/BioNTech Comirnaty [BNT162b2]	Against COVID-19 in general	<p>After <b>one dose</b>:</p> <ul style="list-style-type: none"> <li>• 67% protection from infection (ages 12-15)</li> </ul> <p>After <b>two doses</b>:</p> <ul style="list-style-type: none"> <li>• 91% protection from infection (ages 12-15)</li> </ul>
	Against the Delta variant	<p>After <b>one dose</b>:</p> <ul style="list-style-type: none"> <li>• 59% to 76% protection from infection (ages 12-18)</li> </ul> <p>After <b>two doses</b>:</p> <ul style="list-style-type: none"> <li>• 90% to 93% protection from infection (ages 12-18)</li> <li>• 98% protection from admission to the intensive care unit (ages 12-18)</li> <li>• 91% protection against multisystem inflammatory syndrome in children* (ages 12-18)</li> </ul>

\* Multisystem inflammatory syndrome (MIS-C) is a rare but serious condition that occur in children diagnosed with COVID-19. MIS-C can have varied symptoms that affect several organs and systems in the body.

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