

There is a rapidly growing body of research evidence about the effectiveness of COVID-19 vaccines against variants of concern

Iorio A, Little J, Linkins L, Abdelkader W, Bennett D, Lavis JN. COVID-19 living evidence synthesis #6 (version 6.22): What is the efficacy and effectiveness of available COVID-19 vaccines in general and specifically for variants of concern? Hamilton: Health Information Research Unit, 20 October 2021.

Why is all the evidence on this topic being summarized?

- 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.

What question did we want to answer?

- What is the protection provided by available COVID-19 vaccines against variants of concern?

How have we done this living evidence profile?

- We conducted a broad search in several databases and websites to retrieve studies evaluating the effectiveness of COVID-19 vaccines, 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).
- Whenever possible, we also examined how well vaccines work for specific populations (for example, among healthcare workers, in different age groups, in long-term care facilities).

How up to date is this living evidence profile?

- This living evidence synthesis was last updated on October 20, 2021.

What are the main results of our living evidence profile?

- We found a total of 83 studies that were deemed eligible for our review.
- Overall findings are summarized in table 1 below.

Table 1. Key findings about vaccine effectiveness

Vaccine	Quality of evidence	Findings
Pfizer/Comirnaty vaccine [BNT162b2]	Moderate-certainty evidence <i>(What does this mean? Our confidence in the study results is intermediate. They seem good, but not perfect. We will become more confident if new studies have the same results)</i>	Two doses prevent infection, prevent severe disease, prevent death, and reduce transmission of variant Alpha to close contacts
		Two doses prevent symptomatic infection from variant Beta
		Two doses prevent symptomatic infection from variant Delta
	Low-certainty evidence <i>(What does this mean? Our confidence in the study results is low. There are aspects of the studies that make us feel the results may not be the same in future studies)</i>	Two doses prevent infection, or prevent severe, critical or fatal disease from variant Delta
		Two doses prevent symptomatic disease from variant Gamma
Moderna/Spikevax vaccine [mRNA-1273]	Moderate-certainty evidence	Two doses prevent infection from variant Alpha
		Two doses prevent infection from variant Delta
	Low-certainty evidence	Two doses prevent infection from variant Beta
		Two doses prevent symptomatic infection, or severe, critical or fatal disease from variant Alpha
		Two doses prevent severe, critical or fatal disease from variant Delta
		Two doses prevent symptomatic infection from variant Gamma
AstraZeneca/Vaxzevria vaccine [ChAdOx1]	Moderate-certainty evidence	Two doses prevent infection from variant Alpha
		Two doses provide limited protection from infection by variant Beta
		Two doses prevent symptomatic infection from variant Delta
	Low-certainty evidence	Two doses prevent infection from variant Delta

Vaccine	Quality of evidence	Findings
		Two doses prevent admission to the intensive care unit, or prevent death from variant Delta
Johnson & Johnson vaccine [AD26.COV2.S]	Moderate-certainty evidence	Two doses prevent severe disease from variant Beta
	Low-certainty evidence	Two doses prevent infection from variant Delta
Novavax vaccine [NVX-Co2373]	Moderate-certainty evidence	Two doses prevent symptomatic infection from variants Alpha and Beta
Sinovac [CoronaVac]	Low-certainty evidence	Two doses prevent symptomatic infection and severe infection from variant Delta
		Two doses prevent infection and death from variant Gamma
Sinopharm [BBIBP-CorV]	Low-certainty evidence	Two doses prevent admission to the intensive care unit, or death from variant Delta
Gamaleya [Sputnik V]	Low-certainty evidence	Two doses prevent admission to the intensive care unit, or death from variant Delta
Combining vaccines	Low-certainty evidence	One dose of AstraZeneca followed by one dose of Pfizer or Moderna prevent infection by variant Alpha

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