

## 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 profile #6 (version 6.12): What is the efficacy and effectiveness of available COVID-19 vaccines in general and specifically for variants of concern? Hamilton: Health Information Research Unit, 14 July 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 July 14, 2021.

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

- We found six new studies since the last update.
- Overall findings are summarized in table 1 below.

**Table 1. Key findings about vaccine effectiveness**

Vaccine	Quality of evidence	Findings
Pfizer 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 from variants of concern Alpha and Beta
		Two doses prevent severe disease from variant of concern Alpha
		Two doses prevent symptomatic infection from variants of concern Gamma and Delta
Moderna vaccine [mRNA-1273]	Moderate-certainty evidence	Two doses prevent infection from variant of concern Alpha
		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 symptomatic infection from variants of concern Beta or Gamma
AstraZeneca vaccine [ChAdOx1nCoV-19]	Moderate-certainty evidence	One dose prevents symptomatic infection from variant of concern Delta
		Two doses prevent infection from variant of concern Alpha
		Does not prevent infection from variant of concern Beta
Johnson & Johnson vaccine	Moderate-certainty evidence	Two doses prevent symptomatic infection from variant of concern Delta
		Prevents infection from variant of concern Beta
Novavax vaccine [NVX-Co2373]	Moderate-certainty evidence	May prevent infection from variants of concern Alpha and Beta

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