Version 8.22 (Last updated 29 March 2023)

COVID-19 Living Evidence Synthesis #8

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

A variant of concern is a variant for which there is evidence of an increased risk of spread, more severe disease (for example, causing more hospitalizations or deaths), lower capacity of antibodies generated as a result of infection by the virus or vaccination to block its actions, reduced success of treatments or vaccines, or failure of diagnostic tests to detect the virus. **It is important to understand how COVID-19 variants of concern affect the virus' behaviour, including their impact on how well vaccines work among children and adolescents.**

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 vaccines, including the COVID-END Inventory of Evidence Syntheses.

We examined the studies reporting data on how well vaccines work against variants of concern (more specifically, whether the vaccines prevent any infection, symptomatic infection, admission to the intensive care unit, severe disease, and death).

We critically appraised the studies and determined the level of certainty of the body of evidence. The color indicates the level of certainty based on the evidence.

Levels of certainty based on the best evidence available

Low-certainty evidence
There are aspects of the studies that led us to believe the results may not be the same in future studies

Moderate-certainty evidence
The studies were done with low to moderate risk of bias but revealed only partially consistent findings

High-certainty evidence
The studies were well done with low risk of bias. The studies revealed consistent findings

Vaccine* effectiveness** against Omicron

Outcome (and vaccine)	Vaccine effectiveness (2 doses) up to 28 days after last dose		
	0 to 4 years	5 to 11 years	12 to 18 years
Any infection			
Pfizer	54%	26 to 70%	25 to 83%
Moderna	58%		55 to 78%
Symptomatic infection			
Pfizer		48 to 71%	55 to 83%
Admission to the intensive care unit			
Pfizer		21%	
Severe disease (may include death in some studies)			
Pfizer		41 to 94%	76%
Death			
No evidence available			

The COVID-19 Evidence Network to support Decision-making (COVID-END) is supported by an investment from the Government of Canada through the Canadian Institutes of Health Research (CIHR). To help Canadian decision-makers as they respond to unprecedented challenges related to the COVID-19 pandemic, COVID-END in Canada is preparing rapid evidence responses like this one. The opinions, results, and conclusions are those of the evidence-synthesis team that prepared the rapid response, and are independent of the Government of Canada and CIHR. No endorsement by the Government of Canada or CIHR is intended or should be inferred.

COVID-19 Living Evidence Synthesis #8

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

Vaccine* effectiveness** against Omicron based on number of doses, time since last dose and age

Outcome (and vaccine)	Number of doses	Age	Time since last dose (days)	Vaccine Effectiveness
Any infection				
Pfizer	1	5 to 11	60	4%
		12 to 17	21 to 48	16 to 34%
			28 to 56	58%
			49 to 76	-1 to 17%
			77	-13 to -5%
			56 to 84	64%
	2	0 to 4	56 to 83	63%
			84 to 111	64%
			112 to 139	64%
			140	64%
		5 to 11	14 to 82	31%
			29 to 84	21 to 29%
			60	26%
			70	23%
		12 to 15	14 to 149	59%
		12 to 17	28 to 69	35 to 63%
			56 to 83	48 to 58%
			84 to 111	41 to 51%
			112 to 139	38 to 46%
			70	8%
		16 to 17	63	23%
	3	5 to 11	14	70%
		12 to 17	14	56 to 72%
			7 to 13	80%
			35 to 69	30%
Moderna	2	0 to 4	56 to 83	64%
			84 to 111	60%
			112 to 139	54%
			140	48%
		12 to 17	35 to 69	29%
			70	20%
Symptomatic Infection				
Pfizer	1	12 to 17	28 to 69	23 to 49%
			70 to 83	16 to 27%
			84	17 to 26%
			14 to 98	19%
		16 to 17	105	13%

Outcome (and vaccine)	Number of doses	Age	Time since last dose (days)	Vaccine Effectiveness
Symptomatic Infection (continued)				
Pfizer	2	5 to 11	30 to 90	29%
			30 to 59	60%
			60	43%
			90	35%
		12 to 15	30 to 90	17%
			60 to 120	10%
		12 to 17	7 to 69	32 to 77%
			14 to 149	34 to 45%
			56 to 120	10 to 38%
			14 to 98	65%
		16 to 17	70	23%
	3	12 to 17	7	62 to 87%
			0 to 60	56%
	2 doses + mRNA vaccine	12 to 17	14 to 98	63%
Transmission				
No evidence available				
Admission to the intensive care unit				
No evidence available				
Multisystem inflammatory syndrome in children (MIS-C)				
Pfizer	2	12 to 18	28	92%
Severe Disease (may include death for some studies)				
Pfizer	2	5 to 11	90	100%
		12 to 17	7 to 60	76 to 84%
			60 to 120	82 to 86%
			60	74%
			98	83%
Death				
No evidence available				

* This infographic includes evidence about vaccines available in Canada.
** The values represent "range of means" and single values mean the result is derived from a single study.

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 22): 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,29 March 2023.