

# How Effective Are COVID-19 Vaccines Against Omicron in Children (6 months to 18 years)?



**Vaccine effectiveness (VE) is how vaccines work in the real world (not just in clinical trials)**

## WHO-Authorized vaccines for use in children

Primary course: Pfizer BioNTech & Moderna monovalent ( $\geq 6$  months), Novavax ( $\geq 12$  years), Sinovac ( $\geq 3$  years)

Booster dose: Pfizer BioNTech monovalent and ancestral/omicron bivalent & Moderna monovalent ( $\geq 12$  years)

## Other vaccines with country approvals for use in children

Sinopharm, Covaxin, Soberana 02 & Soberana Plus, Pfizer BioNTech and Moderna ancestral/omicron bivalent ( $\geq 6$  months),+ others

## Key Facts



### COVID-19 disease in children

- While infection rates are similar in adults and children, SARS-CoV-2 rarely causes severe disease in children.
- Children with immunocompromising or underlying conditions are at higher risk of severe disease.
- Rarely, COVID-19 can cause long-term consequences such as Multisystem Inflammatory Syndrome in Children (MIS-C) or long COVID, even after mild illness.
- Infected children, especially adolescents, can transmit SARS-CoV-2 to others.



### Effectiveness of the primary vaccination series

- Against **severe disease**, mRNA vaccines provide good protection and inactivated vaccines provide moderate protection, but some declines are seen by six months.
- Protection against **symptomatic disease** and **infection** (of any severity) is lower and wanes rapidly.



### After a booster shot (3<sup>rd</sup> dose) of an mRNA vaccine:

- Protection against **severe disease** improved and remained high for 2-3 months.
- Protection against **infection or symptomatic disease** was good immediately after vaccination but fell substantially within 1-3 months.



Countries should consider several factors in formulating policies for COVID-19 vaccine use in children, including disease severity, vaccine coverage, and indirect consequences of COVID-19 among children.



COVID vaccines have no evident safety concerns in children, and severe reactions are rare.

## How Effective Are Vaccines Against Omicron in Children?

### Primary series



	Age Group	Severe Disease/ Hospitalization/ Death	Symptomatic Disease	Infection
Pfizer or Moderna (mRNA)	<12 years	48-100% <sub>5</sub>	48-67% <sub>4</sub>	31-60% <sub>10</sub>
	12-18 years	76-89% <sub>3</sub>	51-83% <sub>7</sub>	38-76% <sub>9</sub>
	3-17 years	67% <sub>1</sub>	No data	40% <sub>1</sub>
Sinopharm	<12 years	59-67% <sub>2</sub> *	No data	38% <sub>1</sub>
Sinovac	<12 years	59-69% <sub>3</sub>	40 <sub>1</sub>	38% <sub>1</sub>
	3-17 years	58% <sub>1</sub>	No data	30% <sub>1</sub>

### Booster



Pfizer or Moderna (mRNA)	<12 years	No data	77% <sub>1</sub>	No data
	11-18 years	94-96% <sub>2</sub>	62-87% <sub>3</sub>	56-89% <sub>8</sub>
	3-17 years	73% <sub>1</sub>	No data	39% <sub>1</sub>
Sinovac	3-17 years	76% <sub>1</sub>	No data	-1% <sub>1</sub>

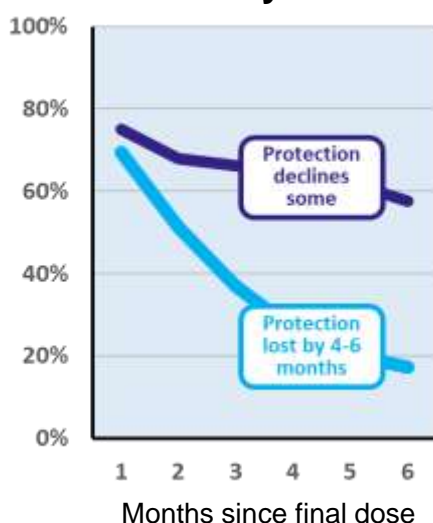
- Values represent the range of estimates found across all included studies evaluating VE within 3 months of the final dose among children, except for VE of Sinopharm against Severe disease/Hospitalization/Death (available estimates were within 6 months of the final dose).
- Subscript represents the number of estimates included in range.

## How Long Do Vaccines Protect Children Against Omicron?



### PRIMARY SERIES

#### Primary Series



### BOOSTER

Evidence from just 3 studies so far shows:

#### Severe disease:

- VE of an mRNA booster dose remained high (76-84%) up to 6 months after vaccination.
- VE of an inactivated booster (Sinovac) was initially high but waned rapidly.

#### Symptomatic disease:

- VE against symptomatic disease was 63% at 1-3 months and fell to 34% by 3-6 months.

**Severe disease:** Across 4 widely used vaccines, average VE of primary series vaccination declined on average by 10 percentage points over 6 months.

**Symptomatic disease:** VE declined on average by 52 percentage points over 6 months.

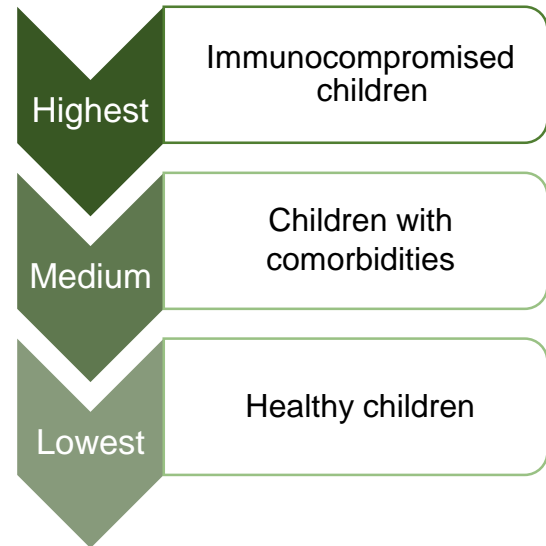
**- MORE EVIDENCE IS NEEDED -**

## Country Approaches to Vaccinating Children

A country's decision whether to vaccinate children depends on a variety of local factors, including **disease severity, vaccination coverage overall and in priority groups, epidemiological circumstances, and the indirect consequences of COVID-19 on children** such as school closure and social impacts (see this [WHO statement](#) for further details).

- At least 91 countries permit COVID-19 vaccination of children and/or adolescents, and an additional 6 countries permit vaccination among those with comorbidities.
- Denmark recently rescinded its recommendation to vaccinate children and adolescents against COVID-19 due to low disease severity and high overall vaccine coverage, though high-risk children are still eligible for vaccination.
- Vietnam, on the other hand, recommends primary and booster vaccination for all children aged 5+ years.

### Priority groups for COVID-19 vaccine use in children (WHO)



## What We Don't Know About the Effectiveness of COVID-19 Vaccines Against Omicron in Children

**Evidence is limited overall and is especially sparse for the following:**

**FIRST BOOSTER DOSE PROTECTION IN CHILDREN:** Little evidence exists on protection of booster doses in children and adolescents, particularly against severe disease, and on how long protection lasts.

**SECOND BOOSTER DOSE PROTECTION IN CHILDREN:** There is no data on how well a second booster dose of any vaccine protects children from Omicron.

**BIVALENT BOOSTER DOSE PROTECTION:** One study found that, relative to primary vaccination, a bivalent mRNA booster dose was 77-47% effective against infection in children at 1-2 months after vaccination. There is no data on the absolute effectiveness of bivalent mRNA boosters in children.

**PROTECTION AGAINST TRANSMISSION:** We don't know how well vaccines can prevent onward transmission of Omicron by children and adolescents, though the limited evidence available suggests vaccines only have a small impact on the risk of onward transmission of Omicron in general.

**VACCINE EFFECTIVENESS OF NON-mRNA VACCINES:** There is limited data on how well non-mRNA vaccines (e.g. Sinopharm, Sinovac) protect against infection, symptomatic and severe disease in children, and how long protection lasts.

**YOUNGER CHILDREN:** There is limited data on how well vaccines protect younger children from Omicron, particularly those under 5 years of age.

**VULNERABLE CHILDREN:** There is no data on how well vaccines perform in immunocompromised and vulnerable children.

**OMICRON SUB-VARIANTS:** We don't know how well the vaccines work against Omicron BA.4, BA.5, BQ.1, BQ.1.1, and XBB.1.5 in children, currently the most common sub-variants.