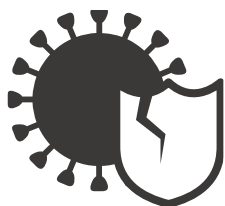


How Effective Are COVID-19 Viral vector Vaccines Against Omicron?



Vaccine effectiveness (VE) is how well a vaccine works in the real world (not just in trial settings).

Key Facts

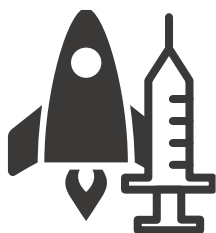


Evidence on the effectiveness of COVID-19 viral vector vaccines against different variants of Omicron is limited; most available evidence is for AstraZeneca (AZD1222).



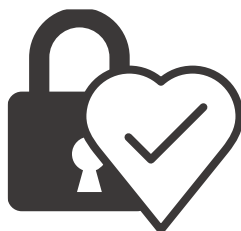
After the primary vaccination with vector vaccines:

- Protection against Omicron symptomatic disease (disease of any severity) ranges from low to moderate.
- Protection against severe disease is better than that for symptomatic disease but declines some over 6 months.



After a booster shot (3rd dose) of vector or mRNA vaccine:

- Protection against Omicron symptomatic disease is 63% on average initially, but declines to ~40% by 4 months.
- Protection against Omicron severe disease improves to 92% on average and declines slightly to 86% by 4 months.



COVID-19 vector vaccines are safe and severe adverse reactions are rare:

- Guillen-Barre Syndrome, a rare complication following vaccination leading to an attack on the nervous system by the immune system has been detected after vector vaccination in rare cases.
- A small increased risk of blood clotting and bleeding complications has been observed for AstraZeneca and Janssen vaccines.

COVID-19 Viral Vector Vaccine Effectiveness against Omicron

How Effective Are Viral Vector Vaccines in the General Population?

Primary series vaccination with viral vector vaccines provides modest protection against severe disease, symptomatic disease and infection by the Omicron variant compared to unvaccinated persons; however, the data is limited.

A booster dose with either viral vector vaccine or a mRNA vaccine provides substantially higher levels of protection against severe disease compared to unvaccinated persons.

Viral vector primary series



AstraZeneca (AZ)

Janssen

Sputnik V

	Severe Disease/ Hospitalization/Death	Symptomatic Disease	Infection
AstraZeneca (AZ)	59-79% ₅	27-50% ₃	11-61% ₃
Janssen	28% ₁	No Omicron data	47-65% ₂
Sputnik V	64% ₁	No Omicron data	No Omicron data

Viral vector primary series + Viral vector booster



AstraZeneca + AstraZeneca

Janssen + Janssen

	Severe Disease/ Hospitalization/Death	Symptomatic Disease	Infection
AstraZeneca + AstraZeneca	No Omicron data	44-53% ₂	No Omicron data
Janssen + Janssen	67-85% ₂	54% ₁	No Omicron data

Viral vector primary series + mRNA booster



AstraZeneca + any mRNA

Janssen + any mRNA

Sputnik V + BioNTech Pfizer

	Severe Disease/ Hospitalization/Death	Symptomatic Disease	Infection
AstraZeneca + any mRNA	86-99% ₁₃	52-72% ₇	41-47% ₂
Janssen + any mRNA	78% ₁	79% ₁	No Omicron data
Sputnik V + BioNTech Pfizer	No Omicron data	No Omicron data	57% ₁

Note: values represent the range of peak VE estimates against Omicron found across all included studies evaluating VE within 4 months of final dose among the general population. Subscript represents the number of estimates included in range.

How Effective Are Viral Vector Vaccines Against Omicron in Special Populations?



CHILDREN: VE of primary vaccination with Janssen evaluated by one US-based study against severe disease and infection was 85-92% and 62%, respectively in children aged 12-17 years



OLDER ADULTS: VE of 2 doses of AstraZeneca against hospitalization due to Omicron in adults ≥65 years ranged from 37-100% across 3 studies. In one study, VE of a homologous booster with AstraZeneca provided VE of 82% against severe disease and 52% against symptomatic disease. A heterologous mRNA booster provided considerably better protection against severe disease (86-99%) and similar protection against symptomatic disease (23-58%). VE of 2 doses of Sputnik-V followed by an mRNA booster was 76-88% against severe disease and 34% against infection of any severity in one study of adults ≥50 years.



PREGNANT WOMEN: There are NO data on VE against Omicron in pregnant women.



HEALTHCARE WORKERS (HCWs): VE of Janssen homologous boosters against severe disease by the Omicron variant was 69-82% as reported by one study in Africa.

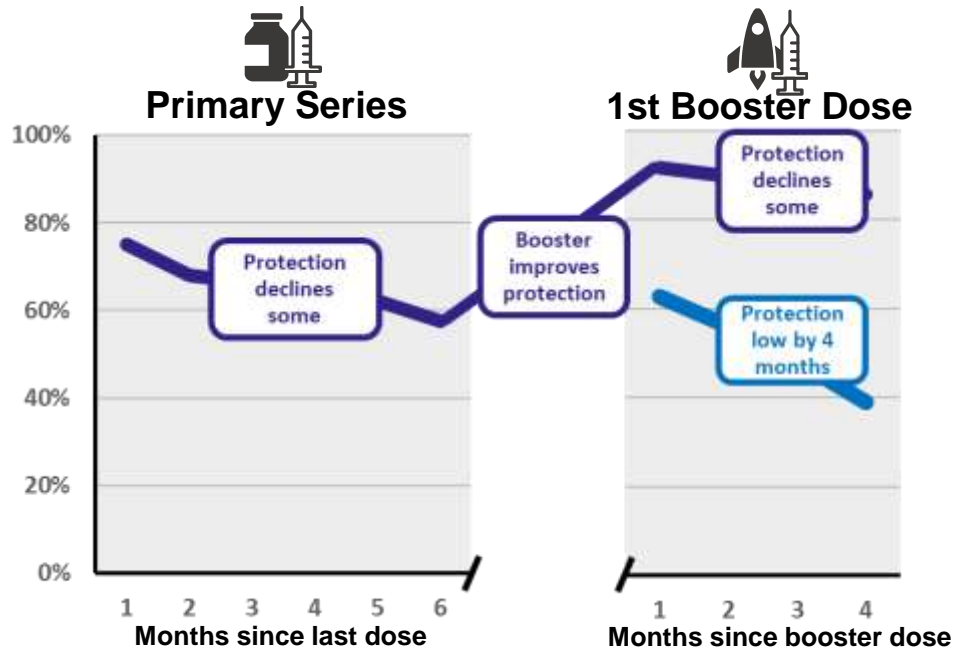


VULNERABLE POPULATION: There are currently NO data on VE against Omicron in vulnerable population.

How Long Do Viral Vector Vaccines Protect Against Omicron?

Average Vaccine Effectiveness of Viral Vector Vaccines (results of a meta-analysis)

- Severe disease
- Symptomatic disease



Against SEVERE DISEASE protection DECLINES SOME over time

- After the primary series (2 doses) of viral vector vaccines, average VE against Omicron was estimated to be >75% which declined moderately to ~58% by 6 months.
- After a booster dose of mRNA vaccine following a primary series with viral vector vaccines, average VE improved to ~92% which declined to ~86% by 4 months

Against SYMPTOMATIC DISEASE protection WANES rapidly

- Limited data on primary series precluded meta-analysis, however 2 studies found that, after primary series vaccination with of AstraZeneca, protection against symptomatic disease was lost by 6 months
- After a booster dose of viral vector or mRNA vaccine following primary series with viral vector vaccines, VE against symptomatic disease was restored back to peak levels initially but then declined to ~40% by 4 months

What We Don't Know About the Effectiveness of Viral vector Vaccines

VULNERABLE POPULATIONS AND PREGNANT WOMEN: There is no data on how well viral vector vaccines perform in immunocompromised, vulnerable populations and in pregnant women.

OMICRON SUB-VARIANTS: We don't know how well the viral vector vaccines work against commonly circulating sub-variants of Omicron.

FIRST BOOSTER DOSE PROTECTION IN CHILDREN: We don't know how well a booster dose of any vaccine, including viral vector vaccines following primary series of viral vector vaccines protects children against Omicron infection or disease.

FIRST BOOSTER DOSE PROTECTION AGAINST DOCUMENTED COVID-19 INFECTION: Limited data is available for the outcome of documented COVID-19 infection by the Omicron variant for booster dose of any vaccine following primary series of viral vector vaccines.