

COVID-19 VACCINE COMPARISON CHART from The Medical Letter®

	FDA Authorized for Emergency Use in the US			Not Authorized in the US	
	Pfizer/BioNTech	Moderna	J&J (Janssen)	AstraZeneca	Novavax
Name	BNT162b2	mRNA-1273	Ad26.COV2.S	ChAdOx1 nCoV-19	NVX-CoV2373
Vaccine Type	mRNA	mRNA	Adenovirus vector	Adenovirus vector	Recombinant nanoparticle
Age	≥12 years old	≥18 years old	≥18 years old	≥18 years old	≥18 years old
Dosage	2 doses (0.3 mL) 21 days apart	2 doses (0.5 mL) 28 days apart	1 dose (0.5 mL)	2 doses 4-12 weeks apart	2 doses 21 days apart
Efficacy					
Overall	<ul style="list-style-type: none"> ■ 95% (7 days after 2nd dose)¹ 	<ul style="list-style-type: none"> ■ 94.1% (14 days after 2nd dose)² 	<ul style="list-style-type: none"> ■ 66.1% (overall)^{3,4} ■ 72.0% (US)^{3,4} <p>*for moderate-severe COVID-19 from day 28</p>	<ul style="list-style-type: none"> ■ 66.7% (overall; >14 days after 2nd dose)⁵ ■ 82.4% (2nd dose ≥12 wks after 1st dose)⁵ ■ 54.9% (2nd dose <6 wks after 1st dose)⁵ ■ 76% (US overall; 15 days after 2nd dose)¹³ 	<ul style="list-style-type: none"> ■ 89.7% (overall; 7 days after 2nd dose)⁶
In Elderly Persons	94.7% (≥65 yrs) ¹	86.4% (≥65 yrs) ²	66.2% (≥60 yrs) ⁴	Limited data	27% of patients in the trial were >65 yrs ⁶
In Adolescents (12-15 years old)	100% ¹⁴	96% ²⁶	-	-	-
In Severe Disease	90% ¹	100% ²	Overall: 85.4% ⁴ US: 87.6% ⁴	100% ^{5,8}	100% ⁹
COVID-19 Death	100% ¹	100% ²	100% ⁴	100%	100% ⁹
UK Variant (B.1.1.7)	85% ²³ ; 89.5% ²⁵	<i>In vitro</i> activity ¹¹	~60-75% ⁷	74.6% ⁵ ; 70.4% ²²	86.3% ⁹
South Africa Variant (B.1.351)	75.0% ²⁵	<i>In vitro</i> lower activity ¹¹	64.0% ⁴	10.4% ¹²	43.0% overall; 51.0% HIV-negative ⁹
Brazil Variant (P.1)	<i>In vitro</i> activity ¹⁰	<i>In vitro</i> lower activity ¹¹	68.1% ⁴	Effective (prelim data)	Data not available
NY Variant (B.1.526)	<i>In vitro</i> lower activity ²⁷	<i>In vitro</i> lower activity ²⁷	Data not available	Data not available	Data not available
CA Variant (B.1.427/B.1.429)	<i>In vitro</i> lower activity ²⁸	<i>In vitro</i> lower activity ²⁸	Data not available	Data not available	<i>In vitro</i> lower activity ²⁸
India Variant (B.1.617)	Data not available	Data not available	Data not available	Data not available	Data not available
Variant-Specific Vaccine	Developing booster	Developing booster	Adapting vaccine	Adapting vaccine	Developing booster
Storage Requirements					
Transport and Storage	-60 to -80°C Alt: -25 to -15°C x 2 wks	-25 to -15°C	2-8°C	2-8°C	2-8°C
Excursions at distribution	<ul style="list-style-type: none"> ■ 2-8°C x 5 days ■ 8-25°C x ≤2 hrs 	<ul style="list-style-type: none"> ■ 2-8°C x 30 days ■ 8-25°C x 12 hrs 	<ul style="list-style-type: none"> ■ 9-25°C x 12 hrs 	-	-
After Puncture/Dilution	<ul style="list-style-type: none"> ■ 2-25°C x 6 hrs 	<ul style="list-style-type: none"> ■ 2-25°C x 6 hrs 	<ul style="list-style-type: none"> ■ 2-8°C x 6 hrs ■ 8-25°C x 2 hrs 	<ul style="list-style-type: none"> ■ 2-8°C x 48 hrs ■ 9-30°C x 6 hrs 	-

	Pfizer/BioNTech	Moderna	J&J (Janssen)	AstraZeneca	Novavax
Some Post-Authorization Reports					
Efficacy	<ul style="list-style-type: none"> 90% (overall for mRNA vaccines under real-world conditions; ≥14 days after 2nd dose)¹⁵ 46% after 1st dose and 92% after 2nd dose (Israel)²⁴ <p>CDC report²¹</p> <ul style="list-style-type: none"> 5814 vaccine breakthrough infections out of >75 million vaccinated persons in the US 2622 (45%) were ≥60 years old 3752 (65%) in women 1695 (29%) asymptomatic 396 (7%) hospitalized; of those, 133 (34%) asymptomatic or unrelated to COVID19 74 (1%) died; of those, 9 (12%) asymptomatic or death unrelated to COVID-19 	<ul style="list-style-type: none"> 90% (overall for mRNA vaccines under real-world conditions; ≥14 days after 2nd dose)¹⁵ <p>CDC report²¹</p> <ul style="list-style-type: none"> 5814 vaccine breakthrough infections out of >75 million vaccinated persons in the US 2622 (45%) were ≥60 years old 3752 (65%) in women 1695 (29%) asymptomatic 396 (7%) hospitalized; of those, 133 (34%) were asymptomatic or unrelated to COVID19 74 (1%) died; of those, 9 (12%) asymptomatic or death unrelated to COVID-19 	<p>CDC report²¹</p> <ul style="list-style-type: none"> 5814 vaccine breakthrough infections out of >75 million vaccinated persons in the US 2622 (45%) were ≥60 years old 3752 (65%) in women 1695 (29%) asymptomatic 396 (7%) hospitalized; of those, 133 (34%) were asymptomatic or unrelated to COVID19 74 (1%) died; of those, 9 (12%) were asymptomatic or death was unrelated to COVID-19 	-	-
Safety	<ul style="list-style-type: none"> Cases of herpes zoster reactivation in patients with autoimmune inflammatory rheumatic diseases¹⁶ 	<ul style="list-style-type: none"> Delayed cutaneous reactions¹⁷ 	<ul style="list-style-type: none"> CDC/FDA reviewed cases of thrombosis-thrombocytopenia syndrome (TTS) and recommend use of the vaccine resume in the US w/o age/gender restriction¹⁸ risk highest in women 18-49 years old onset mean of 8 days post-vaccination (range 6-15 days) vaccine labeling now contains information about the risk^{4,19} 	<ul style="list-style-type: none"> European Medicines Agency (EMA) reports possible link between vaccine and cases of CVST and splanchnic vein thrombosis with thrombocytopenia²⁰ Some countries have suspended or limited use of the vaccine 	-

For more information see [Treatments Considered for COVID-19](#)

1. FP Polack et al. Safety and efficacy of the BNT162b2 mRNA Covid-19 vaccine. *N Engl J Med* 2020; 383:2603.
2. LR Baden et al. Efficacy and safety of the mRNA-1273 SARS-CoV-2 vaccine. *N Engl J Med* 2021; 384: 403.
3. News Release. Johnson & Johnson announces single-shot Janssen COVID-19 vaccine candidate met primary endpoints in interim analysis of its Phase 3 ENSEMBLE trial. Available at: <https://www.jnj.com/johnson-johnson-announces-single-shot-janssen-covid-19-vaccine-candidate-met-primary-endpoints-in-interim-analysis-of-its-phase-3-ensemble-trial>. Accessed March 19, 2021.
4. FDA. Fact sheet for healthcare providers administering vaccine. Emergency Use Authorization (EUA) of the Janssen COVID-19 vaccine to prevent Coronavirus Disease 2019 (COVID-19). Available at: <https://www.fda.gov/media/146304/download>. Accessed April 26, 2021.
5. M Voysey et al. Single dose administration, and the influence of the timing of the booster dose on immunogenicity and efficacy of ChAdOx1 nCoV19 (AZD1222) vaccine: a pooled analysis of four randomised trials. *Lancet* 2021; 397:881.
6. News Release. Novavax COVID-19 vaccine demonstrates 89.3% efficacy in UK Phase 3 trial. Available at: <https://ir.novavax.com/news-releases/news-release-details/novavax-covid-19-vaccine-demonstrates-893-efficacy-uk-phase-3>. Accessed March 19, 2021.
7. J Lopez Bernal et al. Early effectiveness of COVID-19 vaccination with BNT162b2 mRNA vaccine and ChAdOx1 adenovirus vector vaccine on symptomatic disease, hospitalisations and mortality in older adults in England. medRxiv 2021 March 2 (epub). Available at: <https://www.medrxiv.org/content/10.1101/2021.03.01.21252652v1>. Accessed March 19, 2021.
8. M Voysey et al. Safety and efficacy of the ChAdOx1 nCoV-19 vaccine (AZD1222) against SARS-CoV-2: an interim analysis of four randomised controlled trials in Brazil, South Africa, and the UK. *Lancet* 2021; 397:99.
9. V Shinde et al. Efficacy of NVX-CoV2373 Covid-19 vaccine against the B.1.351 variant. *N Engl J Med* 2021 May 5 (epub).
10. Y Liu et al. Neutralizing activity of BNT162b2-elicited serum. *N Engl J Med* 2021 March 8 (epub).
11. K Wu et al. Serum neutralizing activity elicited by mRNA-1273 vaccine. *N Engl J Med* 2021 March 17 (epub).
12. SA Madhi et al. Efficacy of the ChAdOx1 nCoV-19 Covid-19 vaccine against the B.1.351 variant. *N Engl J Med* 2021 March 16 (epub).
13. News Release. AZD1222 US Phase III primary analysis confirms safety and efficacy. 2021 March 25. Available at: <https://www.astrazeneca.com/content/astraz/media-centre/press-releases/2021/azd1222-us-phase-iii-primary-analysis-confirms-safety-and-efficacy.html>. Accessed March 26, 2021.
14. News Release. Pfizer-BioNTech announce positive topline results of pivotal COVID-19 vaccine study in adolescents. March 31, 2021. Available at: <https://investors.biontech.de/news-releases/news-release-details/pfizer-biontech-announce-positive-topline-results-pivotal-covid/>. Accessed March 31, 2021.
15. MG Thompson et al. Interim estimates of vaccine effectiveness of BNT162b2 and mRNA-1273 COVID-19 vaccines in preventing SARS-CoV-2 infection among health care personnel, first responders, and other essential and frontline workers – eight U.S. locations, December 2020-March 2021. *MMWR Morb Mortal Wkly Rep* 2021 March 29 (epub).
16. V Furer et al. Herpes zoster following BNT162b2 mRNA Covid-19 vaccination in patients with autoimmune inflammatory rheumatic disease: a case series. *Rheumatology* 2021 April 12 (epub).
17. KG Blumenthal et al. Delayed large local reactions to mRNA-1273 vaccine against SARS-CoV-2. *N Engl J Med* 2021; 384:1273.
18. FDA. News Release. FDA and CDC lift recommended pause on Johnson & Johnson (Janssen) COVID-19 vaccine use following thorough safety review. 2021 April 23. Available at: <https://www.fda.gov/news-events/press-announcements/fda-and-cdc-lift-recommended-pause-johnson-johnson-janssen-covid-19-vaccine-use-following-thorough>. Accessed April 26, 2021.
19. Johnson & Johnson COVID-19 vaccine suspended. *Med Lett Drugs Ther* 2021 April 16 (epub). Available at: <https://secure.medicalletter.org/w5029a>. Accessed April 16, 2021.
20. News Release. European Medicines Agency. AstraZeneca's COVID-19 vaccine: EMA finds possible link to very rare cases of unusual blood clots with low blood platelets. 2021 April 7. Available at: <https://www.ema.europa.eu/en/news/astrazenecas-covid-19-vaccine-ema-finds-possible-link-very-rare-cases-unusual-blood-clots-low-blood>. Accessed April 16, 2021.
21. CDC. COVID-19 breakthrough case investigations and reporting. 2021 April 16. Available at: <https://www.cdc.gov/vaccines/covid-19/health-departments/breakthrough-cases.html>. Accessed April 20, 2021.
22. KRW Emary et al. Efficacy of ChAdOx1 nCoV-19 (AZD1222) vaccine against SARS-CoV-2 variant of concern 202012/01 (B.1.1.7): an exploratory analysis of a randomized controlled trial. *Lancet* 2021; 397:1351.
23. VJ Hall et al. COVID-19 vaccine coverage in health-care workers in England and effectiveness of BNT162b2 mRNA vaccine against infection (SIREN): a prospective, multicentre, cohort study. *Lancet* 2021 April 23 (epub).
24. N Dagan et al. BNT162b2 mRNA COVID-19 vaccine in a nationwide mass vaccination setting. *N Engl J Med* 2021; 384:1412.
25. LJ Abu-Raddad and AA Butt. Effectiveness of the BNT162b2 Covid-19 vaccine against the B.1.1.7 and B.1.351 variants. Correspondence. *N Engl J Med* 2021 May 5 (epub).
26. News Release. Moderna reports first quarter fiscal year 2021 financial results and provides business updates. May 6, 2021. Available at: <https://investors.modernatx.com/news-releases/news-release-details/moderna-reports-first-quarter-fiscal-year-2021-financial-results>. Accessed May 9, 2021.
27. H Zhou et al. B.1.526 SARS-CoV-2 variants identified in New York City are neutralized by vaccine-elicited and therapeutic monoclonal antibodies. bioRxiv 2021 March 24 (epub). Available at: <https://www.biorxiv.org/content/10.1101/2021.03.24.436620v1>. Accessed May 9, 2021.
28. X Shen et al. Neutralization of SARS-CoV-2 variants B.1.429 and B.1.351. *N Engl J Med* 2021 April 7 (epub).

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