COVID-19 VACCINE OVERVIEW

Note

This overview can be used both internally and externally as educational material, as part of documents, reports, presentations etc.

The present version is the eight update and is accurate up to 7 May 2021.

Important information

Only manufacturers of the grey highlighted vaccines in the table have published peer-reviewed results or detailed FDA EUA documentation from Phase 3 efficacy trials.

The rest of the results are either indicative or non-peer-reviewed data from company press briefs, news stories etc. While important to understand possible efficacy levels, these ‘results’ are not necessarily 100% valid.

Vaccine efficacy versus effectiveness

The two terms 'efficacy' and 'effectiveness' can easily be confused. See below for a simple definition.

- Efficacy: Trial data based on perfect or near-perfect conditions measuring the relative difference in infections between a vaccinated and a placebo group.

- Effectiveness: Real-world data based on how well the vaccine work in non-controlled populations. Comparing the vaccination status of a group of confirmed cases with the vaccination status of a group that doesn't have the infection can determine the effectiveness.

Unless otherwise stated, the data in the table is from efficacy trials.

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	Company/vaccine name (country)	Doses (1)	Storage temperature & shelf-life (2)	Whole-sale price in US$ [2]	Implemented in # of countries (4)	Efficacy: preventing OLD variant[1]	Efficacy: preventing death - OLD variant[1, 4]	Efficacy: preventing NEW variants[1, 4]
INACTIVATED VIRUS	**Sinovac/CoronaVac® (China)**	2 doses (day 0 & 14)	4ºC	$30 (5)	24	**Brazil Phase 3 trial (25)**: clinical disease 51% - moderate to severe disease 100% **Turkey Phase 3 trial (25)**: symptomatic disease 84% - hospitalisation 100% **Chile Phase 3 trial (25)**: symptomatic disease 67% - hospitalisation 85% **Indonesia Phase 3 trial (25)**: symptomatic disease 65%	**Chile Phase 3 trial (25)**: might be effective against circulating **P.1** and **B.1.1.7** variants: symptomatic disease 67% - hospitalisation 85% **Brazil Phase 3 trial (25)**: might be effective against circulating **P.1** variant: clinical disease 51%, moderate to severe disease 100%	
	Beijing/Sinopharm (China)	2 doses (day 0 & 21)	4ºC	-	38	**UAE, Bahrain, Egypt, Jordan Phase 3 trials** expected December 2021 (7). *Interim results* from the multi-country trials suggest (26): overall 78.1% - hospitalization 78%	-	
	Wuhan/Sinopharm (China)	2 doses (day 0 & 21)	4ºC	-	2	-	-	
	Bharat Biotech/Covaxin® (India)	2 doses (day 0 & 28)[5]	2 to 8ºC	-	1	**Phase 3 trial** data expected December 2022 (8)	-	
	Research Institute/Qazcovid-In® (Kazakhstan)	2 doses (day 0 & 21)	-	-	-	**Phase 3 trial** data expected July 2021 (27)	-	
NON-REPLICATING VIRAL VECTOR	**CanSino Biologics/Beijing Institute of Biotechnology/Convidicea® (China)**	1 dose (day 0)	4ºC	$30.62 per dose (9)	2	**Phase 3 trial** data expected July 2021 and January 2022 (28) **Interim / non-published results (6)**: symptomatic disease 65.7% - severe disease 90.98%	-	
	University of Oxford/AstraZeneca/ Covishield® (UK)	2 doses (day 0 & 28-84)	4ºC	$2-$37 per dose (5,6,12)	148	**Brazil and UK Phase 3 trials (16)**: overall 70.4% - symptomatic disease 60.3% (UK 2x standard doses) - symptomatic disease 90% (UK 1 low + 1 standard dose) – symptomatic disease 64.2% (Brazil 2x standard doses) **US, Chile, and Peru Phase 3 trial interim analysis (21)**: symptomatic disease 79% - severe disease and hospitalisation 100% - efficacy among >65 80%	**South Africa variant efficacy trial (19)**: sufficient efficacy not established against **B.1.351**: clinical disease 10.4% - mild to moderate disease 21.9% **UK variant efficacy trial non-peer reviewed (29)**: sufficient efficacy established against **B.1.1.7**: symptomatic disease 74.6%	
	Gamaleya/Sputnik V® (Russia)	2 doses (day 0 & 21)	4ºC	$10 per dose (5,6)	33	**Russia Phase 3 trial (18)**: symptomatic disease 92% - severe disease 100%	-	
	Johnson & Johnson/ Janssen Pharmaceutical (USA)	1 dose (day 0)	4ºC	$8.5-$10 per dose (5,6,12)	15	**Multi-country Phase 3 trial (30)**: moderate to severe disease 66.9% (overall after day 14) - moderate to severe disease 66.1% (overall after day 28) - severe to critical disease 76.7% (overall after day 14) severe to critical disease 85.4% (overall after day 28)	**Multi-country Phase 3 trial (31)**: sufficient efficacy established against **B.1.351** and **P.2**[6]: moderate to severe disease 52% (after day 14) - moderate to severe disease 64% (after day 28) severe to critical disease 73.1% (after day 14) severe to critical disease 81.7% (after day 28)	
mRNA	**Curevac (Germany)**	2 doses (day 0 & 21)	4ºC	$11.84 per dose (24)	-	**Phase 3 trial** data expected April, June and September 2022 (32)	-	
	Pfizer/BioNTech/Fosun/ Comirnaty® (Germany & USA)	2 doses (day 0 & 21-84)	-80 to -60ºC (6 mths) -25 to -15ºC (2 wks) (15)	$14.5-$20 (5,6,12)	93	**Argentina, Brazil, South Africa and the US Phase 3 trial (13)**: symptomatic disease 95% **England effectiveness real-life study (pre-print) (34)**: asymptomatic and symptomatic disease 86% **Israel effectiveness real-life study (health care workers) (33)**: symptomatic disease 90.5% - symptomatic disease 89-91% (during days 15-28 after first dose) **Israel effectiveness real-life study (general population) (34)**: overall effectiveness 95.3% - symptomatic disease 97% - asymptomatic infection 91.5% - hospitalisation 97.2% - severe/critical hospitalisation 97.5% - deaths 96.7%	**Israel effectiveness real-life study (general population) (34)**: sufficient efficacy established against **B.1.1.7**: overall effectiveness 95.3% - symptomatic disease 97% - asymptomatic infection 91.5% - hospitalisation 97.2% - severe/critical hospitalisation 97.5% - deaths 96.7% **Qatar effectiveness real-life study (35)**: sufficient efficacy established against **B.1.1.7** and **B.1.351**: infection with B.1.1.7 89.5% - infection with B.1.351 75% - severe, critical or fatal disease with B.1.1.7 or B.1.351 100%	
	Moderna (USA)	2 doses (day 0 & 28)	-20ºC 4ºC (1 mths)	$18-$37 per dose (5,6,12)	42	**The US Phase 3 trial (17)**: symptomatic disease 94.1% - severe and fatal disease 100%	**Booster efficacy trial non-peer reviewed (xx)**: preliminary results suggest sufficient efficacy against **B1351** and **P1**: no efficacy results available. The trial evaluates a booster shot based on the B1351 variant strain, a multistrain version, and the original vaccine.	
PROTEIN SUBUNIT	**Anhui Zhifei Longcom / RBD-Dimer (ZF2001) (China)**	2 or 3 doses (day 0 & 28 / 0, 28 & 56)	-	-	-	-	-	
	FBRI[3] / EpiVacCorona / Vector Institute (Russia)	2 doses (day 0 & 21)	-	-	1	-	-	
	Novavax (USA)	2 doses (day 0 & 21)	4ºC	$16 per dose (6,14)	-	**Phase 3 trial** data expected January 2022 and June 2023 (36) **England Phase 3 trial interim analysis (20)**: symptomatic disease 96%	**England Phase 3 trial interim analysis (20)**: preliminary results suggest sufficient efficacy against **B.1.1.7**: symptomatic disease 86% **South Africa Phase 1-2 trial (37)**: non-efficacy trial results suggest efficacy against **B.1.351**: symptomatic disease 51%	

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Non-Replicating Viral Vector

Ebola vaccines use this technology.

This type of vaccine is based on a genetically modified virus that cannot replicate itself and therefore is not able to cause illness. Instead, the virus is injected with a piece of the SARS-CoV-2 virus that makes the virus produce a protein, resulting in an immune response by the body towards COVID-19.

Inactivated / killed whole virus

Polio (IPV), Influenza, Hepatitis A, Japanese Encephalitis, Rabies vaccines use this technology.

These vaccines are based on the SARS-CoV-2 virus itself, which is grown in significant amounts in laboratory settings and then killed. Vaccines based on inactivated viruses are generally not as effective as vaccines based on live virus and often require multiple injections to stimulate an adequate immune response. They are however very safe and cannot replicate in the body.

mRNA vaccines

What is injected in the body is simply the genetic instructions to make a viral protein such as the spike protein. Cells in your body then use the instructions to make the protein inside the body for your immune cells to see and respond to.

RNA vaccines are thought to initiate a strong cellular immunity and they can be produced and altered rapidly.

Protein subunit

A protein subunit vaccine only contain ‘dead’ parts of a pathogen, and contrary to inactivated and RNA vaccines, the protein subunit vaccine does not have any genetic material, only subunits – in this case a protein.

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Foot notes

[1] Some data is from ongoing trials
[2] The prices listed are the wholesale price paid by countries, it is not the final prices for consumers. Prices vary between countries.
[3] Federal Budgetary Research Institution (Russia)
[4] Please refer to the International SOS Pandemic site for an overview of variants: https://pandemic.internationalsos.com/2019-ncov/covid-19-variants
[5] There is a discrepancy between the manufacturer stated interval (28 days between doses) and the interval stated by WHO (21 days between doses). See the manufacturer statement here: https://www.bharatbiotech.com/covaxin.html
[6] The efficacy data is higher for the P.2 lineage than for the B.1.351