


## Covid-19 Vaccine Candidates

Vaccine		Trial				Specifics								Outlook	
Type	Developer (Name)	Investigational Status <sup>1,3</sup>	Start date of most recent trial (Participants)	Published efficacy	EUA Submission	Route	# of doses <sup>2,3</sup>	Timing of Doses	Presentation <sup>2</sup>	Storage requirements	Preparation & Handling	Stability after opening	Can overfill be used as extra doses?	Initial doses ordered in US (Global Dose Capacity)	Expected Date (Distributor)
mRNA	<b>Pfizer/BioNTech</b> (BNT162b2)	Phase 2 & 3 with EUA	07/27/2020 (44,000)	95%	<a href="#">EUA approved 12/11 for ages 16 and older</a>	IM	2	0, 21 days <sup>2</sup>	MDV (5 doses) / 30 mcg/0.3mL <sup>13</sup>	<ul style="list-style-type: none"> <li>Ultra-cold storage at -70°C for 6 months.</li> <li>Thermal shippers replenished with dry ice for 30 days</li> <li>Refridgeration (2-8°C) for 5 days</li> </ul>	<ul style="list-style-type: none"> <li>Thawing and reconstitution required.</li> <li>Reconstitute with 1.8 mL of 0.9% sodium chloride.</li> </ul>	Stable up to 6 hours after dilution.	<a href="#">Yes</a>	100 million (800 million)	In distribution (Pfizer)
	<b>Moderna</b> (mRNA-1273)	Phase 3 with EUA	07/27/2020 (30,000)	94%	<a href="#">EUA approved 12/20 for ages 18 and above</a>	IM	2	0, 28 days <sup>2</sup>	MDV (10 doses) / 100 mcg/0.5 mL <sup>13</sup>	<ul style="list-style-type: none"> <li>Freezer (-4°C) for 6 months</li> <li>Refrigeration (2-8°C) for 30 days</li> <li>Room Temp: 12 hours</li> </ul>	<ul style="list-style-type: none"> <li>Thawing required. Vaccine may be thawed in the refrigerator or at room temperature.</li> <li>Refrigerator: 2.5 hours</li> <li>Room temperature: 1 hour</li> <li>Vials that have not been punctured may be kept between 8°C and 25°C for up to 12 hours.</li> </ul>	Stable up to 6 hours after puncture.	<a href="#">Yes</a>	200 million (600 million)	In distribution (McKesson)
	<b>Bayer/CureVac</b> (CVnCoV)	Phase 2b/3	12/14/2020 (35,000)	Unknown	Unknown	IM	2	0, 28 days	Unknown	Refridgerator (2-8°C) for up to 3 months	N/A	N/A	N/A	No US orders reported (Billions) <i>*Tesla collaboration</i>	N/A
Viral Vector	<b>Johnson &amp; Johnson</b> (Ad26.COV2.S)	Phase 3	09/23/2020 (60,000)	Coming soon	Anticipated submission in Feb 2021	IM	<sup>1</sup> (*may be 2)	0 day <sup>6</sup>	MDV (5 doses)	2 years at -20°C and at least 3 months at 2-8°C. <sup>2,7</sup>	N/A	N/A	N/A	100 million (1.2 billion)	Feb-21
	<b>Oxford/AstraZeneca</b> (AZD1222)	Phase 3	08/29/2020 (30,000)	<a href="#">62% to 90%. **disparity being investigated (12/30)</a>	Not likely to receive authorization until April 2021	IM	2	0, 28 days <sup>6</sup>	MDV (10 doses) <sup>6</sup>	Refridgerator (2-8°C) for up to 6 months <i>**may be longer, pending stability testing</i>	N/A	N/A	N/A	300 million (1 billion)	Apr-21
	<b>Merck (V591)</b>	Phase 1/2	08/27/2020 (260)	N/A	N/A	IM	1 or 2	0, 57, or 169	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Protein Subunit	<b>Novavax</b> (NVX-CoV2373)	Phase 3	12/28/2020 (30,000)	N/A	N/A	IM	2	0, 21 days <sup>5</sup>	MDV (10 doses)	* Refridgerator (2-8°C) up to 6 months Room temp for 24 hours <sup>15</sup>	N/A	N/A	N/A	100 million (1 billion) <sup>(2)</sup>	N/A
	<b>Sanofi Pasteur/GSK</b> (SCB-2019)6	Phase 1/2 (Delayed)	On-hold (Prelim studies show lowered immune response in elderly. Study is halted to increase antigen concentration)	N/A	Expected in 2022	IM	2	0, 22 days <sup>3</sup>	N/A	Refridgerator (2-8°C), duration unknown	N/A	N/A	N/A	100 million (1 billion)	N/A
DNA Plasmid	<b>Inovio</b> (INO-4800)	Phase 2/3	11/24/2020 (6,578)	N/A	N/A	ID	2	0,28 days <sup>3</sup>	N/A	Stable at room temperature for more than a year <sup>9</sup>	Delivered by Collectra, portable device that delivers medication intradermally with electrical pulses. <sup>9</sup>	N/A	N/A	No US orders reported (100 million doses)	N/A

Inactivated	<b>Sinovac (CoronaVac)</b>	Phase 3	07/03/2020	(9,000)	<78% (NYTimes estimates it to be as low as 63%)	No indication that it will be submitted to US FDA	IM	2	0, 14 days <sup>3</sup>	N/A	Refridgerator (2-8°C), duration claimed to be up to 3 years	N/A	N/A	N/A	No US orders reported (600 million)	N/A

<p><b>Disclaimer</b></p> <p>The information contained in this vaccine informational sheet is emerging and rapidly evolving because of ongoing research and events and is subject to the professional judgment and interpretation of the practitioner due to the uniqueness of the needs of individual patients. ASHP provides this information to help practitioners better understand the current status of Covid-19 vaccine testing. ASHP has made reasonable efforts to ensure the accuracy and appropriateness of the information presented. However, any reader of this information is advised that ASHP is not responsible for the currency of the information, for any errors or omissions, and/or for any consequences arising from the use of the information for any purpose. Any reader of this document is cautioned that ASHP makes no representation, guarantee, or warranty, express or implied, as to the accuracy and appropriateness of the information contained in this vaccine information sheet and will bear no responsibility or liability for the results or consequences of its use.</p>	<p><b>References</b></p> <ol style="list-style-type: none"> <li>1 <a href="https://www.defense.gov/Explore/Spotlight/Coronavirus/Operation-Warp-Speed/Operation-Warp-Speed-Timeline/">https://www.defense.gov/Explore/Spotlight/Coronavirus/Operation-Warp-Speed/Operation-Warp-Speed-Timeline/</a></li> <li>2 <a href="https://clinicaltrials.gov/">https://clinicaltrials.gov/</a></li> <li>3 <a href="https://clinicaltrials.gov/">https://clinicaltrials.gov/</a></li> <li>4 <a href="http://ir.inovio.com/news-releases/news-releases-details/2020/NOVIO-Reports-FDA-Partial-Clinical-Hold-for-Planned-Phase-2--3-Trial-of-COVID-19-Vaccine-Candidate-INO-4800/default.aspx">http://ir.inovio.com/news-releases/news-releases-details/2020/NOVIO-Reports-FDA-Partial-Clinical-Hold-for-Planned-Phase-2--3-Trial-of-COVID-19-Vaccine-Candidate-INO-4800/default.aspx</a></li> <li>5 <a href="http://ir.inovio.com/news-releases/news-releases-details/2020/NOVIO-Reports-FDA-Partial-Clinical-Hold-for-Planned-Phase-2--3-Trial-of-COVID-19-Vaccine-Candidate-INO-4800/default.aspx">http://ir.inovio.com/news-releases/news-releases-details/2020/NOVIO-Reports-FDA-Partial-Clinical-Hold-for-Planned-Phase-2--3-Trial-of-COVID-19-Vaccine-Candidate-INO-4800/default.aspx</a></li> <li>6 <a href="http://ir.inovio.com/news-releases/news-releases-details/2020/NOVIO-Reports-FDA-Partial-Clinical-Hold-for-Planned-Phase-2--3-Trial-of-COVID-19-Vaccine-Candidate-INO-4800/default.aspx">http://ir.inovio.com/news-releases/news-releases-details/2020/NOVIO-Reports-FDA-Partial-Clinical-Hold-for-Planned-Phase-2--3-Trial-of-COVID-19-Vaccine-Candidate-INO-4800/default.aspx</a></li> <li>7 <a href="http://ir.inovio.com/news-releases/news-releases-details/2020/NOVIO-Reports-FDA-Partial-Clinical-Hold-for-Planned-Phase-2--3-Trial-of-COVID-19-Vaccine-Candidate-INO-4800/default.aspx">http://ir.inovio.com/news-releases/news-releases-details/2020/NOVIO-Reports-FDA-Partial-Clinical-Hold-for-Planned-Phase-2--3-Trial-of-COVID-19-Vaccine-Candidate-INO-4800/default.aspx</a></li> <li>8 <a href="http://ir.inovio.com/news-releases/news-releases-details/2020/NOVIO-Reports-FDA-Partial-Clinical-Hold-for-Planned-Phase-2--3-Trial-of-COVID-19-Vaccine-Candidate-INO-4800/default.aspx">http://ir.inovio.com/news-releases/news-releases-details/2020/NOVIO-Reports-FDA-Partial-Clinical-Hold-for-Planned-Phase-2--3-Trial-of-COVID-19-Vaccine-Candidate-INO-4800/default.aspx</a></li> <li>9 <a href="http://ir.inovio.com/news-releases/news-releases-details/2020/NOVIO-Reports-FDA-Partial-Clinical-Hold-for-Planned-Phase-2--3-Trial-of-COVID-19-Vaccine-Candidate-INO-4800/default.aspx">http://ir.inovio.com/news-releases/news-releases-details/2020/NOVIO-Reports-FDA-Partial-Clinical-Hold-for-Planned-Phase-2--3-Trial-of-COVID-19-Vaccine-Candidate-INO-4800/default.aspx</a></li> <li>10 <a href="https://www.reuters.com/article/us-health-coronavirus-inovio-pharma/inovio-partners-with-thermo-fisher-to-bolster-covid-19-vaccine-supply-idUSKBN25Z1XS">https://www.reuters.com/article/us-health-coronavirus-inovio-pharma/inovio-partners-with-thermo-fisher-to-bolster-covid-19-vaccine-supply-idUSKBN25Z1XS</a></li> <li>11 <a href="https://www.wbur.org/commonhealth/2020/10/29/moderna-vaccine-end-of-year">https://www.wbur.org/commonhealth/2020/10/29/moderna-vaccine-end-of-year</a></li> <li>12. <a href="https://investors.modernatx.com/news-releases/news-release-details/moderna-announces-longer-shelf-life-its-covid-19-vaccine">https://investors.modernatx.com/news-releases/news-release-details/moderna-announces-longer-shelf-life-its-covid-19-vaccine</a></li> <li>13. <a href="https://www.medscape.com/viewarticle/940880">https://www.medscape.com/viewarticle/940880</a></li> <li>14. <a href="https://www.biospace.com/article/warp-speed-head-slaoui-predicts-astrazeneca-vaccine-won-t-be-used-in-the-u-s-until-april/">https://www.biospace.com/article/warp-speed-head-slaoui-predicts-astrazeneca-vaccine-won-t-be-used-in-the-u-s-until-april/</a></li> <li>15. <a href="https://www.fiercepharma.com/pharma/jpm-j-j-hopes-to-share-phase-3-coronavirus-vaccine-data-very-soon-ceo-says">https://www.fiercepharma.com/pharma/jpm-j-j-hopes-to-share-phase-3-coronavirus-vaccine-data-very-soon-ceo-says</a></li> </ol>	<p><b>ASHP Statement</b></p> <p>ASHP will continue to advocate on behalf of our members and support COVID-19 vaccine planning efforts; a number of resources, including ASHP's Principles for COVID-19 Vaccine Distribution, Allocation, and Mass Immunization, are available on our COVID-19 vaccine page</p> <p><a href="https://www.ashp.org/COVID-19/Vaccines">https://www.ashp.org/COVID-19/Vaccines</a></p> <p style="text-align: right;">   Last updated: 01/12/2020 </p>
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