

Issue Brief

COVID-19 Vaccine Comparison

March 2021

In December 2020, two COVID-19 vaccines were granted Emergency Use Authorization (EUA) by FDA. Produced by Pfizer/BioNTech and Moderna, both vaccines use the same technology (mRNA) and are highly effective at preventing COVID-19 infection. In February 2021, a COVID-19 vaccine developed by Janssen Biotech, Inc. was granted an EUA by FDA. A comparison of key details for each vaccine can be found below. This list is not exhaustive. For further details, see the FDA EUA document for [Pfizer/BioNTech](#), [Moderna](#), and [Janssen](#). *Note: head-to-head COVID-19 vaccine studies have not been conducted. Therefore, direct vaccine efficacy comparisons are not possible at this time.*

	Pfizer/BioNTech vaccine	Moderna vaccine	Janssen vaccine
Target population	<ul style="list-style-type: none"> Approved for people aged 16 and older. 	<ul style="list-style-type: none"> Approved for people aged 18 and older. 	<ul style="list-style-type: none"> Approved for people aged 18 and older.
Vaccine efficacy	<ul style="list-style-type: none"> 95% effective at preventing symptomatic COVID-19 infection occurring at least seven days after administration of the second dose. Vaccine is 100% effective against hospitalizations and deaths from COVID-19. Efficacy rates did not vary based on demographic factors like age, race, or ethnicity. Insufficient data to determine if asymptomatic infection or infection transmission is prevented. 	<ul style="list-style-type: none"> 94.1% effective at preventing symptomatic COVID-19 infection occurring at least 14 days after administration of the second dose. Vaccine is 89% effective against hospitalizations and 100% effective against deaths from COVID-19. No difference in efficacy based on race or ethnicity. Insufficient data to determine if asymptomatic infection or infection transmission is prevented. 	<ul style="list-style-type: none"> 66.9% effective at preventing moderate to severe COVID-19 infection occurring at least 14 days after vaccine administration globally. 76.7% effective at preventing severe/critical COVID-19 infection occurring at least 14 days after vaccine administration in the United States. 85.4% effective at preventing severe/critical COVID-19 infection occurring at least 28 days after vaccine administration in the United States. Vaccine is 100% effective against hospitalizations and deaths from COVID-19. Vaccine efficacy was similar across both age groups (18-59 and ≥60).

Vaccine administration	<ul style="list-style-type: none"> • Two shots are required, delivered 21 days apart. Each dose contains 30 micrograms of vaccine. • The vaccine must be diluted with saline before it is injected. • There are five doses in a vial. After dilution, one vial contains six doses of 0.3 mL. Vial labels and cartons may state that after dilution, a vial contains five doses of 0.3 mL. 	<ul style="list-style-type: none"> • Two shots are required, delivered 28 days apart. Each dose contains 100 micrograms of vaccine. • The vaccine is ready to administer. • There are 10 doses in a vial. It can be stored in a refrigerator for 30 days and at room temperature for 12 hours. 	<ul style="list-style-type: none"> • One shot is required. Each dose contains 500 micrograms (0.5 mL) of vaccine. • The vaccine is ready to administer. No dilution required. • There are five doses per vial. Once punctured, vials can be stored in a refrigerator for up to six hours or up to two hours at room temperature.
Possible side effects	<ul style="list-style-type: none"> • Most common side effects: injection site pain, fatigue, headache, muscle pain, joint pain, and fever. • Side effects are more common after the second dose and are reported more by younger adults. • Rarer side effects: severe allergic reactions. 	<ul style="list-style-type: none"> • Most common side effects: injection site pain, fatigue, headache, muscle pain, joint pain, and fever. • Side effects are more common after the second dose and are reported more by younger adults. 	<ul style="list-style-type: none"> • Most common side effects: injection site reactions, headache, fatigue, myalgia, nausea, and fever. • Reactions were less commonly reported among participants 60 years of age and older. • Rarer side effects: post vaccination syndrome and radiculitis brachial.
Safety for pregnant/lactating individuals	<ul style="list-style-type: none"> • Limited safety data is available for individuals who are pregnant. Clinical trials to evaluate the safety of COVID-19 vaccine in pregnant people are in progress. In addition, vaccine manufacturers are monitoring data from individuals who received vaccine and became pregnant during clinical trials. • Pregnant/lactating people should discuss the risks and benefits with their provider. 	<ul style="list-style-type: none"> • Limited safety data is available for individuals who are pregnant. Clinical trials to evaluate the safety of COVID-19 vaccine in pregnant people are in progress. In addition, vaccine manufacturers are monitoring data from individuals who received vaccine and became pregnant during clinical trials. • Pregnant/lactating people should discuss the risks and benefits with their provider. 	<ul style="list-style-type: none"> • Limited safety data is available for individuals who are pregnant. Clinical trials to evaluate the safety of COVID-19 vaccine in pregnant people are in progress. In addition, vaccine manufacturers are monitoring data from individuals who received vaccine and became pregnant during clinical trials. • Pregnant/lactating people should discuss the risks and benefits with their provider.

<p>Storage requirements</p>	<ul style="list-style-type: none"> • Frozen vials are shipped in thermal containers with dry ice. Vials should be removed from the thermal containers upon arrival and <i>preferably</i> stored in an ultra-low temperature freezer between -80°C to -60°C (-112°F to -76°F) until the expiry date printed on the label. • On Feb. 26, FDA announced that it is allowing <i>undiluted frozen vials</i> of the Pfizer-BioNTech COVID-19 vaccine to be transported and stored at temperatures commonly found in pharmaceutical freezers at -25°C to -15°C (-13°F to 5°F) for up to two weeks. Vials must be kept frozen and protected from light until ready to use. • The alternative temperature for storage of frozen vials is <i>not</i> applicable to the storage of thawed vials before dilution or to the storage of thawed vials after dilution. • Full details about storage parameters are available here. 	<ul style="list-style-type: none"> • Vials arrive frozen between -25°C to -15°C (-13°F to 5°F) and should be stored in the original carton to protect from light. Vials can be stored refrigerated between 2° to 8°C (36° to 46°F) for up to 30 days prior to first use. 	<ul style="list-style-type: none"> • Must be transported at refrigerated temperatures of 2 to 8°C (36 to 46°F). • Can be stored for up to three months at refrigerated temperatures of 2-8°C (36 to 46°F).
<p>Minimum purchase order</p>	<ul style="list-style-type: none"> • An order of the vaccine includes 975 doses. 	<ul style="list-style-type: none"> • An order includes 100 doses. 	<ul style="list-style-type: none"> • Minimum order is 100 doses (20 vials) and comes with 100 dose ancillary kits.