### 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.

<table>
<thead>
<tr>
<th>Target population</th>
<th>Pfizer/BioNTech vaccine</th>
<th>Moderna vaccine</th>
<th>Janssen vaccine</th>
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| Vaccine efficacy   | • 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. | • 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.  
• Slightly lower efficacy in individuals older than 65. No difference in efficacy based on race or ethnicity.  
• Insufficient data to determine if asymptomatic infection or infection transmission is prevented. | • 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

- 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.

### Possible side effects

- 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, Bell’s palsy.

### Safety for pregnant/lactating individuals

- No human data is available but interim data from animal studies show no issues.
- Pregnant/lactating people should discuss the risks and benefits with their provider.

### Storage requirements

- Frozen vials are shipped in thermal containers with dry ice. Vials should be removed from the thermal containers upon arrival and preferably 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 undiluted

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### Vaccine administration (continued)

- 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.

### Possible side effects (continued)

- 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 (continued)

- No human data is available but completed animal studies show no issues.
- Pregnant/lactating people should discuss the risks and benefits with their provider.

### Storage requirements (continued)

- 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.
- Must be transported at refrigerated temperatures of 2-8°C (36-46°F).
- Can be stored for up to 3 months at refrigerated temperatures of 2-8°C (36-46°F).
Frozen vials 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 2 weeks. Vials must be kept frozen and protected from light until ready to use.

- The alternative temperature for storage of frozen vials is not applicable to the storage of thawed vials before dilution or on the storage of thawed vials after dilution.
- Full details about storage parameters are available here.

| Minimum purchase order | An order of the vaccine includes 975 doses. | An order includes 100 doses. | Minimum order is 100 doses (20 vials) and comes with 100 dose ancillary kits. |