Clinical considerations for use of mRNA COVID-19 vaccines

- CDC clinical considerations for Pfizer-BioNTech COVID-19 published:

- Clinical considerations will be updated to include both authorized mRNA vaccine products:
  - Guidance harmonized across products with few differences (e.g., age indication, dosing schedule)
  - This presentation focuses on contraindications and precautions to vaccination

---

Interim Clinical Considerations for Use of Pfizer-BioNTech COVID-19 Vaccine

On December 13, 2020, the Advisory Committee on Immunization Practices (ACIP) issued an interim recommendation for use of the Pfizer-BioNTech COVID-19 vaccine for the prevention of COVID-19 in persons aged 16 years and older. The Pfizer-BioNTech COVID-19 vaccine is a lipid nanoparticle-formulated, nucleoside-modified mRNA vaccine encoding the prefusion spike glycoprotein of SARS-CoV-2, the virus that causes coronavirus disease 2019 (COVID-19).

These CDC clinical considerations are informed by data submitted to the Food and Drug Administration for Emergency Use Authorization (EUA) of the vaccine, other data sources, general best practice guidelines for immunization, and expert opinion. In addition to the following considerations, the FDA conditions of use and storage, handling, and administration procedures described in the prescribing information should be referenced when using the Pfizer-BioNTech COVID-19 vaccine.

Administration

The Pfizer-BioNTech COVID-19 vaccine series consists of two doses (30 μg, 0.5 ml each) administered intramuscularly, three weeks apart. Doses administered within a grace period of 4 days (i.e., between day 17 and 21) are considered valid; however, if the second dose is administered earlier than day 17, it does not need to be repeated. If more than 21 days have elapsed since the first dose, the second dose should be given at the earliest opportunity; the series does not need to be repeated.

Interchangeability with other COVID-19 vaccine products

The Pfizer-BioNTech COVID-19 vaccine is not interchangeable with other COVID-19 vaccine products and the safety and efficacy of a mixed product series have not been evaluated. Persons initiating vaccination with Pfizer-BioNTech COVID-19 vaccine should complete the series with this product. If two doses of different mRNA COVID-19 vaccine products are inadvertently administered, no additional doses of either product are recommended at this time. Recommendations may be updated as further information becomes available or other vaccine types (e.g., viral vector, protein subunit vaccines) are
Contraindications and precautions to mRNA COVID-19 vaccines
Contraindications to vaccination

- Prescribing information for both Pfizer-BioNTech and Moderna COVID-19 vaccines:
  - Severe allergic reaction (e.g., anaphylaxis) to any component of the vaccine is a contraindication to vaccination
  
  - Appropriate medical treatment used to manage immediate allergic reactions must be immediately available in the event an acute anaphylactic reaction occurs following administration of the vaccine
### Ingredients* included in mRNA COVID-19 vaccines

<table>
<thead>
<tr>
<th>Description</th>
<th>Pfizer-BioNTech</th>
<th>Moderna</th>
</tr>
</thead>
<tbody>
<tr>
<td>mRNA</td>
<td>Nucleoside-modified mRNA encoding the viral spike (S) glycoprotein of SARS-CoV-2</td>
<td>Nucleoside-modified mRNA encoding the viral spike (S) glycoprotein of SARS-CoV-2</td>
</tr>
<tr>
<td>Lipids</td>
<td>2[(polyethylene glycol)-2000]-N,N-ditetradecylacetamide</td>
<td>Polyethylene glycol (PEG) 2000 dimyristoyl glycerol (DMG)</td>
</tr>
<tr>
<td></td>
<td>1,2-distearoyl-sn-glycero-3-phosphocholine</td>
<td>1,2-distearoyl-sn-glycero-3-phosphocholine</td>
</tr>
<tr>
<td></td>
<td>Cholesterol</td>
<td>Cholesterol</td>
</tr>
<tr>
<td></td>
<td>(4-hydroxybutyl)azanediyl)bis(hexane-6,1-diyl)bis(2-hexyldecanoate)</td>
<td>SM-102</td>
</tr>
<tr>
<td>Salts, sugars, buffers</td>
<td>Potassium chloride</td>
<td>Tromethamine</td>
</tr>
<tr>
<td></td>
<td>Monobasic potassium phosphate</td>
<td>Tromethamine hydrochloride</td>
</tr>
<tr>
<td></td>
<td>Sodium chloride</td>
<td>Acetic acid</td>
</tr>
<tr>
<td></td>
<td>Dibasic sodium phosphate dihydrate</td>
<td>Sodium acetate</td>
</tr>
<tr>
<td></td>
<td>Sucrose</td>
<td>sucrose</td>
</tr>
</tbody>
</table>

*As reported in the prescribing information
# Ingredients* included in mRNA COVID-19 vaccines

<table>
<thead>
<tr>
<th>Description</th>
<th>Pfizer-BioNTech</th>
<th>Moderna</th>
</tr>
</thead>
<tbody>
<tr>
<td>mRNA</td>
<td>Nucleoside-modified mRNA encoding the viral spike (S) glycoprotein of SARS-CoV-2</td>
<td>Nucleoside-modified mRNA encoding the viral spike (S) glycoprotein of SARS-CoV-2</td>
</tr>
<tr>
<td>Lipids</td>
<td>2([\text{polyethylene glycol}})-2000]-N,N-ditetradecylacetamide</td>
<td>Polyethylene glycol (PEG) 2000 dimyristoyl glycerol (DMG)</td>
</tr>
<tr>
<td></td>
<td>1,2-distearoyl-sn-glycero-3-phosphocholine</td>
<td>1,2-distearoyl-sn-glycero-3-phosphocholine</td>
</tr>
<tr>
<td></td>
<td>Cholesterol</td>
<td>Cholesterol</td>
</tr>
<tr>
<td></td>
<td>(4-hydroxybutyl)azanediyl)bis(hexane-6,1-diy1)bis(2-hexyldecanoate)</td>
<td>SM-102</td>
</tr>
<tr>
<td>Salts, sugars, buffers</td>
<td>Potassium chloride</td>
<td>Tromethamine</td>
</tr>
<tr>
<td></td>
<td>Monobasic potassium phosphate</td>
<td>Tromethamine hydrochloride</td>
</tr>
<tr>
<td></td>
<td>Sodium chloride</td>
<td>Acetic acid</td>
</tr>
<tr>
<td></td>
<td>Dibasic sodium phosphate dihydrate</td>
<td>Sodium acetate</td>
</tr>
<tr>
<td></td>
<td>Sucrose</td>
<td>sucrose</td>
</tr>
</tbody>
</table>

*As reported in the prescribing information
Precautions to vaccination: Pfizer-BioNTech and Moderna COVID-19 vaccines

- History of severe allergic reaction (e.g., anaphylaxis) to any other vaccine or injectable therapy (e.g., intramuscular, intravenous, or subcutaneous)
  - Risk assessment should be conducted in persons who report history of severe allergic reaction (e.g., whether reaction required use of epinephrine [EpiPen®, etc.], resulted in hospitalization)

- These persons may still receive vaccination, but should be counseled about the unknown risks of developing a severe allergic reaction and balance these risks against the benefits of vaccination
Allergies that do not constitute a contraindication or precaution to vaccination

- Persons with the following allergies do not have a contraindication or precaution to vaccination:
  - History of food, pet, insect, venom, environmental, latex, or other allergies not related to vaccines or injectable therapies
  - History of allergy to oral medications (including the oral equivalent of an injectable medication)
  - Non-serious allergy to vaccines or other injectables (e.g., no anaphylaxis)
  - Family history of anaphylaxis
  - Any other history of anaphylaxis that is not related to a vaccine or injectable therapy
Vaccine providers should observe patients after vaccination to monitor for the occurrence of immediate adverse reactions:

- **Persons with a history of anaphylaxis (due to any cause):**
  - Observation period: 30 minutes

- **All other persons:**
  - Observation period: 15 minutes
Algorithm for the triage of persons presenting for mRNA COVID-19 vaccine

### Conditions
- Immunocompromising conditions
- Pregnancy
- Lactation

### Actions
- Additional information provided
- 15 minute observation period

### Allergies
- History of food, pet, insect, venom, environmental, latex, or other allergies not related to vaccines or injectable therapies
- History of allergy to oral medications (including the oral equivalent of an injectable medication)
- Non-serious allergic to vaccines or other injectables (e.g., no anaphylaxis)
- Family history of anaphylaxis
- Any other history of anaphylaxis that is not related to a vaccine or injectable therapy

### Actions
- 30 minute observation period: Persons with a history of severe allergic reaction (e.g., anaphylaxis) due to any cause
- 15 minute observation period: Persons with allergic reaction, but not anaphylaxis

### Precaution to Vaccination
- Moderate/severe acute illness

### Actions
- Risk assessment
- Potential deferral of vaccination
- 15 minute observation period if vaccinated

### Contraindication to Vaccination
- None

### Actions
- N/A

### Allergies
- History of severe allergic reaction (e.g., anaphylaxis) to another vaccine (not including mRNA COVID-19 vaccine)
- History of severe allergic reaction (e.g., anaphylaxis) to an injectable therapy

### Actions
- Risk assessment
- Potential deferral of vaccination
- 30 minute observation period if vaccinated

### Allergies
- History of severe allergic reaction (e.g., anaphylaxis) to any component of an mRNA COVID-19 vaccine

### Actions
- Do not vaccinate

Additional tools to identify persons with contraindications and precautions to vaccination

Interim considerations:

Preparing for the potential management of anaphylaxis at COVID-19 vaccination sites

Fact sheets under development, including one tailored to long-term care facilities

https://www.cdc.gov/vaccines/covid-19/info-by-product/pfizer/anaphylaxis-management.html
Key messages

Preparing for the potential management of anaphylaxis at COVID-19 vaccination sites

- Early recognition of anaphylaxis symptoms
- Prompt treatment with epinephrine
- Activate emergency medical services

https://www.cdc.gov/vaccines/covid-19/info-by-product/pfizer/anaphylaxis-management.html
**Recommended medications and supplies for the management of anaphylaxis at COVID-19 vaccination sites**

<table>
<thead>
<tr>
<th>Should be available at all sites</th>
<th>Include at sites where feasible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epinephrine prefilled syringe or autoinjector*</td>
<td>Pulse oximeter</td>
</tr>
<tr>
<td>H1 antihistamine (e.g., diphenhydramine)†</td>
<td>Oxygen</td>
</tr>
<tr>
<td>Blood pressure cuff</td>
<td>Bronchodilator (e.g., albuterol)</td>
</tr>
<tr>
<td>Stethoscope</td>
<td>H2 antihistamine (e.g., famotidine, cimetidine)</td>
</tr>
<tr>
<td>Timing device to assess pulse</td>
<td>Intravenous fluids</td>
</tr>
<tr>
<td></td>
<td>Intubation kit</td>
</tr>
<tr>
<td></td>
<td>Adult-sized pocket mask with one-way valve (also known as cardiopulmonary resuscitation (CPR) mask)</td>
</tr>
</tbody>
</table>

*COVID-19 vaccination sites should have at least 3 doses of epinephrine on hand at any given time.

†Antihistamines may be given as adjunctive treatment and should not be used as initial or sole treatment for anaphylaxis. Additionally, caution should be used if oral medications are administered to persons with impending airway obstruction.
Discussion
Discussion

- Does ACIP agree with the proposed contraindications and precautions to vaccination?

- Are there any other sections of the clinical considerations that ACIP would like to discuss?
Acknowledgements

- Karen Broder
- Tom Clark
- Amanda Cohn
- Kathleen Dooling
- Julie Garon
- Susan Goldstein
- Rachel Gorwitz
- Joy Hsu

- Sarah Kidd
- Mona Marin
- Stacey Martin
- Dana Meaney-Delman
- Titilope Oduyebo
- Sara Oliver
- Heidi Soeters
Thank you

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.