

Protocol for Coronavirus 19 Vaccines (Pfizer-BioNTech, Moderna, Novavax)

1. What's New

- A. Individuals ≥ 65 years and older should receive an additional dose of the 2023-2024 COVID-19 vaccine (Moderna, Novavax, or Pfizer) at least four months after the receipt of a previous 2023-2024 COVID-19 dose.
- B. There is a new formulation of COVID-19 Vaccine (Comirnaty by Pfizer) that comes in a pre-filled single dose glass syringe. The glass syringe is stored in the refrigerator and cannot be frozen.
- C. ACIP no longer categorizes Pfizer and Moderna as preferred Coronavirus 19 (COVID-19) vaccines for the 2023-2024 season. Individuals ages 12 years and older may receive either the 2023-2024 mRNA (Moderna or Pfizer) or the 2023-2024 adjuvanted (Novavax) vaccine, as appropriate.

2. Immunization Protocol

- A. Administer one or more doses of the updated 2023–2024 Moderna, Novavax, or Pfizer COVID-19 vaccine according to ACIP recommendations and the vaccine package insert. See section 3 for vaccine volume and spacing based on age and vaccine formulation.¹⁻⁵
- B. COVID-19 vaccine may be administered concomitantly with other vaccines. There is no need to separate COVID-19 vaccine from other vaccinations by 2 weeks.

3. Vaccine Schedule¹⁻⁶

- A. Any immunocompetent person 7 through 11 years of age who has received at least 1 dose of updated mRNA (Pfizer or Moderna) 2023–2024 COVID-19 vaccine is currently up-to-date.⁷
- B. Any immunocompetent person 12 through 64 years of age who has received at least 1 dose of updated mRNA (Pfizer or Moderna) 2023–2024 COVID-19 vaccine OR who is previously vaccinated* and has received at least 1 dose of adjuvanted (Novavax) 2023-2024 COVID-19 vaccine is currently up to date.⁵
- C. Any immunocompetent person ≥ 65 years of age, regardless of vaccination status, is up to date if they have completed one of the following⁶:
 - i. Received at least 2 doses of updated mRNA (Pfizer or Moderna) 2023- 2024 COVID-19 vaccine.
 - ii. Received a combination of 1 dose of updated mRNA (Pfizer or Moderna) 2023-2024 COVID-19 vaccine followed by 1 dose of adjuvanted (Novavax) 2023-2024 COVID-19 vaccine.

Alternatively, any immunocompetent person ≥ 65 years of age who is previously vaccinated* is up to date if they have completed one of the following:

- i. Received at least 2 doses of adjuvanted (Novavax) 2023-2024 COVID-19 vaccine.
- ii. Received a two dose combination series consisting of adjuvanted (Novavax) 2023-2024 COVID-19 vaccine followed by 1 dose of updated mRNA (Pfizer or Moderna) 2023- 2024 COVID-19 vaccine.

Any previously unvaccinated person ≥ 65 years of age is up to date if they have completed the following:

- i. Received 2 doses of adjuvanted (Novavax) 2023-2024 COVID-19 vaccine, followed by 1 dose of updated mRNA (Pfizer or Moderna) 2023- 2024 COVID-19 vaccine.

Protocol for Coronavirus 19 Vaccines (Pfizer-BioNTech, Moderna, Novavax)

- ii. Received 3 doses of adjuvanted (Novavax) 2023-2024 COVID-19 vaccine.
- *Previously vaccinated indicates the individual has received 1 or more doses of any mRNA vaccine; 1 or more doses of Novavax or Janssen, including in combination with any Original monovalent or bivalent COVID-19 vaccine doses.
- D. Any immunocompetent unvaccinated person 7 through 11 years of age may be brought up to date with a single dose of updated mRNA (Pfizer or Moderna) 2023–2024 COVID-19 vaccine.⁷
 - E. Any immunocompetent unvaccinated persons 12 through 64 years of age may be brought up to date with a single dose of updated mRNA (Pfizer or Moderna) 2023–2024 COVID-19 vaccine OR a two dose series of updated adjuvanted (Novavax) 2023-2024 COVID-19 vaccine.^{5,7}
 - F. Any immunocompetent unvaccinated persons ≥ 65 years of age may be brought up-to-date with one of the following:
 - i. Two doses of updated mRNA (Pfizer or Moderna) 2023-2024 COVID-19 vaccine
 - ii. Two dose combination series consisting of 1 dose of updated mRNA (Pfizer or Moderna) 2023-2024 COVID-19 vaccine followed by 1 dose of updated adjuvanted (Novavax) 2023-2024 COVID-19 vaccine.
 - iii. Two dose series of updated adjuvanted (Novavax) 2023-2024 COVID-19 vaccine followed by 1 dose of updated mRNA (Pfizer or Moderna) 2023- 2024 COVID-19 vaccine
 - iv. Three dose series of updated adjuvanted (Novavax) 2023-2024 COVID-19 vaccine
 - G. The PREP Act currently allows pharmacists to administer COVID-19 vaccines to persons aged 3 through 18 years old through 12/31/24.² Pharmacists are only permitted to vaccinate patients ≥ 7 years per ORS 689.645.

Pfizer^{1,3}

Pfizer¹ 2023-2024 pediatric mRNA vaccine Dose and Route – 0.3-mL, 3 mcg, IM (yellow cap and border).		
<i>For Informational Purposes Only- Pharmacists are only permitted to vaccinate patients ≥ 7 years per ORS 689.645.</i>		
Unvaccinated children 3 through 4 years of age*		
Dose	Acceptable Age range	Minimum Acceptable Spacing
1	3 through 4 years of age (<5 years)	
2		3 weeks
3		8 weeks

*Notwithstanding the age limitations for use of the vaccine, individuals turning from 4 to 5 years of age during the vaccination series should receive all doses with Pfizer-BioNTech COVID-19 vaccine, supplied in vials with yellow caps and borders.¹

Children 3 through 4 years of age previously vaccinated with Pfizer vaccine, any formulation		
<i>For Informational Purposes Only- Pharmacists are only permitted to vaccinate patients ≥ 7 years per ORS 689.645.</i>		
Received	Needs Now	Minimum Acceptable Spacing
1 dose	2 doses 2023-2024 Pfizer	3 weeks after last dose
2 or more doses	1 dose 2023-2024 Pfizer	8 weeks after last dose

**Protocol for Coronavirus 19 Vaccines
(Pfizer-BioNTech, Moderna, Novavax)**

Pfizer¹ 2023-2024 pediatric mRNA vaccine Dose and Route – 0.3-mL, 10 mcg, IM (blue cap and border)		
<i>For Informational Purposes Only- Pharmacists are only permitted to vaccinate patients ≥ 7 years per ORS 689.645.</i>		
Children 5 through 11 years of age		
Dose	Acceptable Age range	Minimum Acceptable Spacing
1*	5 through 11 years of age	If previously vaccinated, at least 8 weeks after the last dose of a COVID-19 vaccine (original monovalent or bivalent)

*Immunocompromised children ≤11 years of age should receive a 3-dose vaccine series. At least one dose should be the updated 2023–24 COVID-19 vaccine. Additional doses may be administered at the discretion of the healthcare provider based on individual patient circumstances.

Pfizer 2023-2024 mRNA vaccine (COMIRNATY®) Dose and Route – 0.3-mL, 30 mcg, IM (gray cap and border or pre-filled syringe)³		
Persons ≥ 12 years of age who are unvaccinated OR previously vaccinated with COVID-19 vaccine, any formulation		
Dose	Acceptable Age Range	Minimum Acceptable Spacing
1*	≥ 12 years	If previously vaccinated, at least 8 weeks after the last dose of a COVID-19 vaccine (original monovalent or bivalent)
2	≥ 65 years	At least 4 months after the last dose of a 2023-2024 COVID-19 vaccine

*Immunocompromised persons may be administered additional doses at the discretion of the healthcare provider based on individual patient circumstances.

MODERNA^{2,4}

Moderna 2023-2024 pediatric mRNA vaccine Dose and Route – 0.25-mL, 25 mcg, IM (dark blue cap and green border)²		
Unvaccinated children 3 through 4 years of age		
<i>For Informational Purposes Only- Pharmacists are only permitted to vaccinate patients ≥ 7 years per ORS 689.645.</i>		
Dose	Acceptable Age range	Minimum Acceptable Spacing
1	6 months through 4 years	
2*	(<5 years)	28 days

* Immunocompromised children ≤11 years of age should receive a 3-dose vaccine series. At least one dose should be the updated 2023–24 COVID-19 vaccine. Immunocompromised children may be administered additional doses at the discretion of the healthcare provider based on individual patient circumstances.

**Protocol for Coronavirus 19 Vaccines
(Pfizer-BioNTech, Moderna, Novavax)**

Children 3 through 4 years previously vaccinated with Moderna COVID-19 vaccine, any formulation² <i>For Informational Purposes Only- Pharmacists are only permitted to vaccinate patients ≥ 7 years per ORS 689.645.</i>		
Received	Needs Now	Minimum Acceptable Spacing
1 dose	1 dose 2023-2024 Moderna (0.25mL, dark blue cap and green border)	4 weeks after last dose*
2 or more doses	1 dose 2023-2024 Moderna (0.25 mL, dark blue cap, green border)	8 weeks after last dose*

* Immunocompromised children ≤11 years of age should receive a 3-dose vaccine series. At least one dose should be the updated 2023–24 COVID-19 vaccine. Additional doses may be administered at the discretion of the healthcare provider based on individual patient circumstances.

Moderna 2023-2024 pediatric mRNA vaccine Dose and Route – 0.25-mL, 25 mcg, IM (dark blue cap and green border) <i>For Informational Purposes Only- Pharmacists are only permitted to vaccinate patients ≥ 7 years per ORS 689.645.</i>		
Unvaccinated children 5 through 11 years of age		
Dose	Acceptable Age range	Minimum Acceptable Spacing
1*	5 through 11 years (<12 years)	

* Immunocompromised children ≤11 years of age should receive a 3-dose vaccine series. At least one dose should be the updated 2023–24 COVID-19 vaccine. Additional doses may be administered at the discretion of the healthcare provider based on individual patient circumstances.

Children 5 through 11 years of age previously vaccinated with Moderna COVID-19 vaccine, any formulation <i>For Informational Purposes Only- Pharmacists are only permitted to vaccinate patients ≥ 7 years per ORS 689.645.</i>		
Received	Needs Now	Minimum Spacing
1 or more doses	1 dose 2023-2024 Moderna* (0.25mL, dark blue cap and green border)	8 weeks after last dose

* Immunocompromised children ≤11 years of age should receive a 3-dose vaccine series. At least one dose should be the updated 2023–24 COVID-19 vaccine. Additional doses may be administered at the discretion of the healthcare provider based on individual patient circumstances.

Moderna 2023-2024 mRNA vaccine (SPIKEVAX®) Dose and Route – 0.5-mL, 50 mcg, IM (dark blue cap and border)⁴		
Persons ≥ 12 years of age who are unvaccinated OR previously vaccinated with COVID-19 vaccine, any formulation		
Dose	Acceptable Age Range	Minimum Acceptable Spacing
1*	≥ 12 years	If previously vaccinated, at least 8 weeks after the last dose of a COVID-19 vaccine (original monovalent or bivalent)
2	≥ 65 years	4 months after the last dose of a 2023-2024 COVID-19 vaccine

* Immunocompromised persons may be administered additional doses at the discretion of the healthcare provider based on individual patient circumstances.

NOVAVAX⁵

**Protocol for Coronavirus 19 Vaccines
(Pfizer-BioNTech, Moderna, Novavax)**

Novavax 2023-2024 adjuvanted vaccine Dose and Route –0.5-mL, 5 mcg, IM (dark blue cap, light blue on label)		
Unvaccinated persons ≥ 12 years of age		
Dose	Acceptable Age Range	Minimum Acceptable Spacing
1	≥12 years	
2		21 days
3	≥65 years	4 months after the last dose of a 2023-2024 COVID-19 vaccine

Persons ≥ 12 years of age previously vaccinated with COVID-19 vaccine, any formulation			
Received	Needs Now	Acceptable Age Range	Minimum Acceptable Spacing
1 or more doses (any original monovalent or bivalent COVID-19 vaccine)	1 dose 2023–24 Novavax*	≥12 years	8 weeks after the last dose of a COVID-19 vaccine (original monovalent or bivalent)
1 or more doses of a 2023-2024 COVID-19 vaccine	2 nd dose of 2023-2024 Novavax	≥65 years	4 months after the last dose of a 2023-2024 COVID-19 vaccine

*Immunocompromised persons may receive an additional dose of Novavax COVID-19 vaccine at least two months following the last dose of 2023-2024 COVID-19 vaccine. Additional doses of 2023-2024 Novavax COVID-19 vaccine may be administered at the discretion of the healthcare provider, taking into consideration the individual’s clinical circumstances. The timing of the additional doses may be based on the individual’s clinical circumstances.

4. Licensed Vaccines

Product Name	Vaccine Components	Presentation	FDA Approved Age Range	Cap/Label Color
Pfizer 2023-2024 formulation ¹	mRNA	0.9 mL, 3 dose vial 0.3 mL, single dose vial	3-4 years	Yellow Cap
			5-11 years	Blue Cap
Pfizer COMIRNATY ^{®3} 2023-2024 formulation	mRNA	0.3 mL, single dose vial 0.3 mL, prefilled syringe	≥ 12 years	Gray Cap
Moderna 2023-2024 formulation ²	mRNA	0.25 mL, single dose vial	3-11 years	Blue Cap/Green Label
Moderna SPIKEVAX [®] 2023-2024 formulation ⁴	mRNA	2.5 mL, 5 dose vial 0.5 mL, single dose vial 0.5 mL, prefilled syringe	≥ 12 years	Blue Cap/Blue Label
NVX-CoV2373 ³ (NOVAVAX [®] 2023-2024 formulation) ⁵	Protein subunit	2.5 mL, 5-dose vial	≥ 12 years	Royal Blue Cap

Protocol for Coronavirus 19 Vaccines (Pfizer-BioNTech, Moderna, Novavax)

5. Recommendations for Use¹⁻⁸

- A. An updated, 2023–2024 mRNA COVID-19 vaccine dose should be offered to all persons aged ≥ 7 years. For adults and children ≥ 12 years of age, a 2023-2024 protein subunit (Novavax) vaccine may be used. Persons ≥ 65 years of age should receive an additional dose of a 2023-2024 COVID-19 (Moderna, Novavax, or Pfizer) vaccine at least 4 months after receipt of a previous 2023-2024 COVID-19 vaccine.⁶
- B. For a primary series, COVID-19 vaccines are not routinely interchangeable. When multiple doses are indicated (i.e. in unvaccinated children), the same vaccine brand should be used. In exceptional situations in which an mRNA vaccine series was begun, but the particular product administered for previous doses is not available, the other mRNA COVID-19 vaccine may be administered to complete the primary vaccine series.
- C. Doses for adults and immunocompromised persons ≥ 7 years of age may be any authorized product.
- D. Children ≤ 11 years of age with immune compromise require a 3-dose primary series. All three doses should be the same vaccine brand. At least one dose should be of the 2023–24 COVID-19 vaccine.^{1,2}
- E. For all persons with immune compromise, additional doses of vaccine may be administered at the discretion of the healthcare provider, based on the individual’s clinical circumstances.⁸
- F. Persons with immune compromise may self-attest to the need for additional doses. No other documentation is necessary.
- G. Conditions causing moderate to severe immunodeficiency include:
 - Active treatment for solid tumor and hematologic malignancies
 - Receipt of solid-organ transplant and taking immunosuppressive therapy
 - Receipt of Chimeric antigen receptor (CAR)-T-cell or hematopoietic cell transplant (HCT) within 2 years of transplantation or taking immunosuppression therapy
 - Moderate or severe primary immunodeficiency (e.g., DiGeorge, Wiskott-Aldrich syndromes)
 - Advanced or untreated HIV infection (people with HIV and CD4 cell counts $< 200/\text{mm}^3$, history of an AIDS-defining illness without immune reconstitution, or clinical manifestations of symptomatic HIV)
 - Active treatment with high-dose corticosteroids (i.e., ≥ 20 mg prednisone or equivalent per day)
 - Alkylating agents, antimetabolites, transplant-related immunosuppressive drugs, cancer chemotherapeutic agents classified as severely immunosuppressive, TNF blockers, and other biologic agents that are immunosuppressive or immunomodulatory.

6. Contraindications

- A. Severe allergic reaction (e.g., anaphylaxis) to a previous dose or to any vaccine component.¹⁻⁵

Vaccine	Contains
Pfizer 2023-2024 formulation ¹ (yellow cap and border) ¹	Lipids (0.04 mg ((4-hydroxybutyl)azanediyl)bis(hexane6,1-diyl)bis(2-hexyldecanoate), 0.005 mg 2[(polyethylene glycol)-2000]-N,N tetradecylacetamide, 0.01 mg 1,2-distearoyl-snglycero-3-phosphocholine, and 0.02 mg cholesterol), 9.4 mg sucrose, 0.02 mg tromethamine, and 0.12 mg tromethamine hydrochloride. The diluent (sterile 0.9%

**Protocol for Coronavirus 19 Vaccines
(Pfizer-BioNTech, Moderna, Novavax)**

	Sodium Chloride Injection, USP) contributes 1.88 mg sodium chloride per dose.
Pfizer 2023-2024 formulation ¹ (blue cap and border)	Lipids (0.14 mg ((4- hydroxybutyl)azanediyl)bis(hexane6,1-diyl)bis(2-hexyldecanoate), 0.02 mg 2[(polyethylene glycol)-2000]-N,N-ditetradecylacetamide, 0.03 mg 1,2- distearoyl-sn-glycero-3-phosphocholine, and 0.06 mg cholesterol), 31 mg sucrose, 0.06 mg tromethamine, and 0.4 mg tromethamine hydrochloride.
Pfizer COMIRNATY® 2023-2024 formulation ³ (gray cap and border)	Lipids (0.43 mg ((4-hydroxybutyl)azanediyl)bis(hexane6,1-diyl)bis(2-hexyldecanoate),0.05 mg 2-(polyethylene glycol 2000)-N,N-ditetradecylacetamide, 0.09 mg 1,2-distearoyl-sn-glycero-3-phosphocholine, and 0.19 mg cholesterol), 0.06 mg tromethamine, 0.4 mg tromethamine hydrochloride, and 31 mg sucrose
Moderna 2023-2024 formulation ² (dark blue cap and green border)	Total lipid content of 0.5 mg (SM-102, polyethylene glycol [PEG] 2000 dimyristoyl glycerol [DMG], cholesterol, and 1,2-distearoyl-sn-glycero-3- phosphocholine [DSPC]), 0.13 mg tromethamine, 0.62 mg tromethamine hydrochloride, 0.011 mg acetic acid, 0.049 mg sodium acetate trihydrate, and 21.8 mg sucrose.
Moderna SPIKEVAX® 2023-2024 formulation ⁴ (dark blue cap and border)	Total lipid content of 1.01 mg (SM-102, polyethylene glycol [PEG] 2000 dimyristoyl glycerol [DMG], cholesterol, and 1,2-distearoyl-sn-glycero-3- phosphocholine [DSPC]), 0.25 mg tromethamine, 1.2 mg tromethamine hydrochloride, 0.021 mg acetic acid, 0.10 mg sodium acetate trihydrate, and 43.5 mg sucrose.
NVA-CoV2373 (NOVAVAX® 2023-2024 formulation) ⁵	Cholesterol, phosphatidylcholine, potassium dihydrogen phosphate (3.85 µg), potassium chloride (2.25 µg), disodium hydrogen phosphate dihydrate (14.7 µg), disodium hydrogen phosphate heptahydrate (2.465 mg), sodium dihydrogen phosphate monohydrate (0.445 mg), sodium chloride (8.766 mg) and polysorbate 80 (0.050 mg). The vaccine contains a recombinant form of the SARS-CoV-2 spike protein produced from baculovirus infected Sf9 (fall armyworm) insect cells and Matrix-M™ adjuvant is composed of Fraction-A (42.5 µg) and Fraction-C (7.5 µg) of saponin extracts from the soapbark tree, Quillaja saponaria Molina. The pH is adjusted with sodium hydroxide or hydrochloric acid.

7. Warnings and Precautions⁸

- A. History of severe allergic reaction (e.g. anaphylaxis) to any other vaccine or injectable therapy (e.g. intravenous, intramuscular or subcutaneous).
- B. Persons who have a contraindication to additional doses of mRNA COVID-19 vaccines are considered to have a precaution to the Novavax vaccine. A single dose may be given in an appropriate setting under the supervision of a health care provider experienced in the management of severe allergic reactions. Consider referral to an allergist-immunologist. This additional dose could be considered after a minimum interval of 28 days after the mRNA COVID-19 vaccine dose. See Appendix A for additional information.
- C. Moderate or severe acute illness.

Protocol for Coronavirus 19 Vaccines (Pfizer-BioNTech, Moderna, Novavax)

- D. Development of myocarditis or pericarditis within 3 weeks after a dose of any COVID-19 vaccine is a precaution to a subsequent dose of any COVID-19 vaccine, and subsequent doses should generally be avoided.

8. Other Considerations⁸

- A. Patients with known COVID-19 infection should wait until their symptoms have resolved and criteria have been met to discontinue isolation. Persons who have a history of COVID-19 disease should be vaccinated if otherwise indicated. If desired, persons with acute COVID-19 may wait up to 90 days to receive vaccination, as reinfection within 90 days is uncommon. Viral testing to assess for acute SARS-CoV-2 infection or serologic testing to assess for prior infection solely for the purposes of vaccine decision-making is not recommended.
- B. Patients who received monoclonal antibodies or convalescent plasma during COVID-19 treatment may be vaccinated as soon as their symptoms have resolved.
- C. Patients with a known community or outpatient setting COVID-19 exposure should wait until the end of their quarantine period before seeking vaccination to avoid potentially exposing healthcare personnel.
- D. Patients who have been exposed to COVID-19 living in congregate settings, including long-term care, homeless shelters, or correctional institutions, where exposure or transmission can occur repeatedly over a long period of time may be vaccinated without completing a quarantine period.
- E. Ask patient to remain seated in the clinic for 15 minutes after vaccination to decrease the risk of injury should they faint. Patients with a history of severe allergic reactions should be asked to remain for 30 minutes.
- F. CDC recommends that vaccine for children aged 5–17 years of age with history of Multisystem Inflammatory Syndrome of Children (MIS-C) be delayed for 90 days after their diagnosis of MIS-C. Providers should inform patients that the risk of reinfection, and therefore the potential benefit from vaccination, may increase with time following initial infection.
- G. COVID-19 vaccination is recommended for all people of childbearing age, including people who are pregnant, breastfeeding, trying to get pregnant now, or might become pregnant in the future.
- H. Persons who are trying to become pregnant do not need to avoid pregnancy after receiving COVID-19 vaccine. There is no recommendation for routine pregnancy testing before receipt of a COVID-19 vaccine.
- I. Persons with underlying medical conditions who have no contraindications may receive COVID-19 vaccine.
- J. Children 3 years through 4 years of age should complete a multi-dose initial series (2 doses of Moderna vaccine or 3 doses of Pfizer vaccine) with at least one dose of the 2023–2024 COVID-19 mRNA vaccines. Doses for adults and immunocompromised persons ≥5 years of age may receive any age-appropriate authorized product.

9. Side Effects and Adverse Reactions

- A. COVID-19 vaccines appear to be more reactogenic than most. Inform patient that symptoms of immune system activation are normal (see Table) and should improve without intervention in 12-24 hours.

**Protocol for Coronavirus 19 Vaccines
(Pfizer-BioNTech, Moderna, Novavax)**

Pfizer^{1,3} and Moderna^{2,4} Adverse Events	Frequency
Injection site events (pain at the injection site, redness, swelling)	Very common, up to 93%
Systemic events (fatigue, headache, muscle ache, joint pain)	Very common, up to 77%
Fever	Up to 16%
Lymphadenopathy*	Up to 20%
Serious adverse events	Uncommon, up to 1% (similar to placebo group)

*Lymph node swelling in the underarm is more common after the booster dose than after the initial series.

Novavax⁵ Adverse Events	Frequency
Injection site events (pain at the injection site, redness, swelling)	Very common, up to 82%
Systemic events (fatigue, muscle pain, headache, nausea)	Very common, up to 62%
Fever	Uncommon, up to 6%

10. Storage and Handling

- A. Store medications according to OAR 855-041-1036.
- B. For Pfizer vaccine only: thaw, if needed. The single dose pre-filled glass syringe (COMIRNATY) CANNOT be frozen and stored in the refrigerator. The yellow cap formulation requires reconstitution; the blue and gray cap formulations are ready to administer.^{1,3}
- C. For Moderna vaccine only: thaw vaccine prior to administration.^{2,4}

Vaccine	Temp	Storage Issues	Notes
Pfizer ^{1,3}	-90° to -60° C (-130° to -76° F)	Vaccine may be stored until the expiration date.	Do not freeze the single dose pre-filled glass syringe (discard if frozen)
	2° to 8° C (36° to 46° F)	Adolescent/adult 2023-2024 formulation (blue or gray cap vial OR single dose pre-filled plastic pre-filled syringe): store in the refrigerator for up to 10 weeks	
		Pediatric 2023-2024 formulation (yellow cap): before mixing, the vaccine may be stored in the refrigerator for up to 10 weeks.	
		Adolescent/adult 2023-2024 formulation (single dose pre-filled glass syringe): Store in the refrigerator for up to 6 months	

**Protocol for Coronavirus 19 Vaccines
(Pfizer-BioNTech, Moderna, Novavax)**

	Ambient temperatures	<p>Adolescent/adult 2023-2024 formulation (blue or gray cap vial OR single dose pre-filled glass syringe OR single dose pre-filled plastic syringe): vaccine may be held at room temperature for up to 12 hours</p> <p>Pediatric 2023-2024 formulation (yellow cap): once mixed, vaccine may be held at room temperature for up to 12 hours</p>	
Moderna ^{2,4}	-50° to -15° C (-58° to 5° F)	Vaccine is viable until the expiration date.	For multi-dose vials, once stopper has been punctured, all doses must be used within 12 hours. Do not refreeze once thawed. Protect vaccine from light.
	2° to 8° C (36° to 46° F)	Vaccine is viable under refrigeration for up to 30 days.	
	Ambient temperatures	Unpunctured vials of vaccine is viable for up to 24 hours at room temperature	
Novavax ⁵	2°– 8°C (36° to 46° F)	No expiration date is printed on vial or carton. Lookup the expiration date of the batch/Lot number at www.novavaxcovidvaccine.com enter “United States” as the “country/region.”	Once vial stopper has been punctured, store vial at 2° to 25° C (36° to 77° F) for use within 12 hours. Discard the vial 12 hours after first puncture. Do not freeze. Protect vaccine from light.

11. References

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**Protocol for Coronavirus 19 Vaccines
(Pfizer-BioNTech, Moderna, Novavax)**

- <https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2023-09-12/11-COVID-Wallace-508.pdf>. Accessed 14 Sep 2023.
8. Interim clinical considerations for use of COVID-19 vaccines in the United States, May 12, 2023. Available at: <https://www.cdc.gov/vaccines/covid-19/clinical-considerations/index.html>. Accessed 14 Sep 2023.

12. Appendix

- A. COVID-19 vaccination schedule for people who are not moderately or severely immunocompromised by COVID-19 vaccination history, September 2023:
<https://www.cdc.gov/vaccines/covid-19/downloads/covid-19-immunization-schedule-ages-6months-older.pdf>