

Protocol for Pneumococcal Vaccines
PCV15 (VAXNEUVANCE™), PCV20 (Prevnar 20®), PCV21 (CAPVAXIVE™) and
Pneumococcal Polysaccharide Vaccine: PPSV23 (Pneumovax®23)

1) What's New

- A) ACIP recommends PCV21 as an option for adults aged ≥19 years who currently have a recommendation to receive a dose of PCV.
- B) ACIP recommends a pneumococcal conjugate vaccine (PCV) for all PCV-naïve adults aged ≥50 years.

2) Immunization Protocol

- A) Administer a 0.5-mL dose, IM, of pneumococcal conjugate vaccine PCV15 or PCV20 to persons ≥7 years of age according to age-appropriate schedule or high-risk group indication **OR**
- B) Administer a 0.5-mL dose, IM, of pneumococcal conjugate vaccine PCV21 to adults ≥ 19 years who currently have a recommendation to receive a dose of PCV (PCV15 or PCV20).
- C) Pneumococcal vaccination is recommended for all adults ≥ 50 years AND adults aged 19 through 49 years with certain underlying conditions or risk factors.
- D) Administer a 0.5-mL dose, IM or SQ, of pneumococcal polysaccharide vaccine (PPSV) to persons ≥7 years of age according to age-appropriate schedule or high-risk group indication.
- E) PCV and PPSV should not be given at the same time (Section 3 for the necessary minimum interval between doses). Either vaccine type may be given simultaneously with influenza and most other ACIP-recommended child and adult vaccinations.^{4,5}

3) Vaccine Schedule

A. Routine Schedule¹⁰

Pneumococcal Vaccine (PCV15, PCV20, PCV21; PPSV23) for Persons ≥ 50 Years of Age Dose-0.5-mL, Route varies by product				
Age	Previous PCV Vaccination History	Previous PPSV Vaccination History	Due Now/Route	Due Next
≥ 50 years	Unvaccinated*	Unvaccinated	PCV15 IM or	PPSV23 [†] IM or SQ ≥ 1 year later [¶]
			PCV20 or PCV21 IM	Complete
	Unvaccinated*	1 dose (at any age)	PCV15 IM ≥ 1 year later or	Complete
			PCV20 or PCV21 IM ≥ 1 year later	Complete

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	PCV13 only (at any age)	Unvaccinated	PCV20 or PCV21 IM \geq 1 year later	Complete
	PCV13 (at any age)	1 dose (at $<$ 65 years old)	PCV20 or PCV21 IM \geq 5 years after last pneumococcal dose	Complete
	PCV13 (at any age)	1 dose (\geq 65 years old)	The patient and vaccine provider may consider administering PCV 20 or PCV21 IM via shared clinical decision making to patients who have already received PCV13 (but not PCV15, PCV20, or PCV21) at any age, and PPSV23 at or after the age of 65 (See Section 4 for additional details).	
<p>* Also applies to people who received PCV7 at any age and no other pneumococcal vaccines.</p> <p>† If PPSV23 is not available, PCV20 or PCV21 may be used.</p> <p>¶ For adults with an immunocompromising condition, cochlear implant, or cerebrospinal fluid leak, the minimum interval for PPSV23 is \geq 8 weeks since last PCV13 dose and \geq 5 years since last PPSV23 dose; for others, the minimum interval for PPSV23 is \geq 1 year since last PCV13 dose and \geq 5 years since last PPSV23 dose.</p>				

B. Special Conditions Schedule

Pneumococcal Vaccine (PCV15 or PCV20; PPSV23) for Persons 7 through 18 Years of Age with Immunocompromising Conditions [¶] Dose-0.5-mL, Route varies by product ¹¹				
Acceptable Age Range	Previous PCV Vaccination History	Previous PPSV23 Vaccination History	Due Now/Route (≥ 8 weeks since last pneumococcal vaccine)	Due Next
7 through 18 years of age with immune-compromising conditions	No previous history of PCV13, PCV15, or PCV20	Unvaccinated	PCV15 IM or	Administer PPSV23 in ≥ 8 weeks.
			PCV20 IM	Complete
		1 dose	PCV15 IM or	Revaccinate with PCV20 or PPSV23 in 5 years.
			PCV20 IM	Complete
	≥ 1 dose of PCV13 or PCV15 before age 6	Unvaccinated	PCV 20 IM or	Complete
			PPSV23 IM or SQ	Revaccinate with PCV20 or PPSV23 in 5 years.

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	≥1 dose of PCV20 before age 6	Unvaccinated	Complete	
	≥1 dose of PCV13 at or after age 6	Unvaccinated	PCV20 IM <u>or</u>	Complete
			PPSV23 IM or SQ	Revaccinate with PCV20 or PPSV23 in 5 years.
		1 dose	PCV20 <u>or</u> †	Complete
			PPSV23†	Complete
<p>¶ Children and adolescents on maintenance dialysis, or with immunocompromising conditions such as nephrotic syndrome; congenital or acquired asplenia or splenic dysfunction; congenital or acquired immunodeficiencies; diseases and conditions treated with immunosuppressive drugs or radiation therapy, including malignant neoplasms, leukemias, lymphomas, Hodgkin disease, and solid organ transplant; HIV infection; or sickle cell disease or other hemoglobinopathies.</p> <p>† Vaccination must occur at least 8 weeks after the most recent PCV13 dose and at least 5 years after dose 1 PPSV23.</p>				

Pneumococcal Vaccine (PCV15 or PCV20; PPSV23) for Persons 7 through 18 Years of Age with Chronic Conditions¶ Dose-0.5-mL, Route varies by product ¹¹				
Acceptable Age Range	Previous PCV Vaccination History	Previous PPSV23 Vaccination History	Due Now/Route (≥ 8 weeks since last pneumococcal vaccine)	Due Next
7 through 18 years of age with chronic conditions	No previous history of PCV13, PCV15, or PCV20	Unvaccinated	PCV15 IM <u>or</u>	Administer PPSV23 in ≥8 weeks.
			PCV20 IM	Complete
		1 dose	PCV15 IM <u>or</u> PCV20 IM	Complete
	≥1 dose of PCV13 or PCV15 before age 6	Unvaccinated	PCV 20 IM <u>or</u>	Complete
			PPSV23 IM or SQ	Revaccinate with PCV20 or PPSV23 in 5 years.
	≥1 dose of PCV20 before age 6	Unvaccinated	Complete	
	≥1 dose of PCV13 at or after age 6	Unvaccinated	PCV20 IM <u>or</u>	Complete
			PPSV23 IM or SQ	Complete
		1 dose	Complete	
	¶ Children and adolescents with cerebrospinal fluid leak; chronic heart disease; chronic kidney disease (excluding maintenance dialysis and nephrotic syndrome); chronic liver disease; chronic lung disease (including moderate persistent or severe persistent asthma); cochlear implant; or diabetes mellitus.			

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Pneumococcal Vaccine (PCV15, PCV20, PCV21; PPSV23) for Persons 19 through 49 Years of Age with Immunocompromising Conditions [¶] Dose-0.5-mL, Route varies by product				
Age	Previous PCV Vaccination History	Previous PPSV Vaccination History	Due Now/Route	Due Next
19 through 49 years with immune-compromising conditions	Unvaccinated [*]	Unvaccinated	PCV15 IM <u>or</u>	PPSV23 [†] IM or SQ ≥ 8 weeks later [€]
			PCV20 or PCV21 IM	Complete
	Unvaccinated [*]	1 dose	PCV15 IM ≥ 1 year after last PPSV dose <u>or</u>	Complete
			PCV20 or PCV21 IM ≥ 1 year after last PPSV dose	Complete
	PCV13 only	Unvaccinated	PCV20 or PCV21 IM ≥ 1 year after last PCV dose	Complete
	PCV13	1 dose	PCV20 or PCV21 IM ≥ 5 years after last pneumococcal dose	Complete
	PCV13	2 doses	PCV20 or PCV21 IM ≥ 5 years after last pneumococcal dose <u>or</u>	Complete
			Give no additional vaccines.	Revisit recommendations when patient turns 50 years old.
<p>[*] Also applies to people who received PCV7 at any age and no other pneumococcal vaccines.</p> <p>[†] If PPSV23 is not available, PCV20 or PCV21 may be used.</p> <p>[€] The minimum interval for PPSV23 is ≥8 weeks since last PCV13 dose and ≥5 years since last PPSV23 dose.</p> <p>[¶] Immunocompromising conditions include chronic renal failure, nephrotic syndrome, immunodeficiencies,[§] iatrogenic immunosuppression,[‡] generalized malignancy, HIV infection, Hodgkin disease, leukemia, lymphoma, multiple myeloma, solid organ transplant, congenital or acquired asplenia, or sickle cell disease or other hemoglobinopathies.</p> <p>[‡] Includes diseases requiring treatment with immunosuppressive drugs, including long-term systemic corticosteroids and radiation therapy.</p> <p>[§] Includes B- (humoral) or T-lymphocyte deficiency, complement deficiencies (particularly C1, C2, C3, and C4 deficiencies), and phagocytic disorders (excluding chronic granulomatous disease).</p>				

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Pneumococcal Vaccine (PCV15, PCV20, PCV21; PPSV23) for Persons 19 through 49 Years of Age with <u>Chronic Conditions</u> [¶] Dose-0.5-mL, Route varies by product				
Age	Previous PCV Vaccination History	Previous PPSV Vaccination History	Due Now/Route	Due Next
19 through 49 years with chronic conditions	Unvaccinated*	Unvaccinated	PCV15 IM or	PPSV23 IM [†] or SQ ≥ 1 year later
			PCV20 or PCV21 IM	Complete
	Unvaccinated*	1 dose	PCV15 IM ≥ 1 year after last PPSV dose or	Complete
			PCV20 or PCV21 IM ≥ 1 year after last PPSV dose	Complete
	PCV13 only [‡]	Unvaccinated	PCV20 or PCV21 IM ≥ 1 year after last PCV dose	Complete
	PCV13	1 dose	No vaccines are recommended at this time. Revisit recommendations when patient turns 50 years old.	
<p>* Also applies to people who received PCV7 at any age and no other pneumococcal vaccines.</p> <p>¶ Alcoholism; chronic heart disease, including congestive heart failure and cardiomyopathies; chronic liver disease; chronic lung disease, including chronic obstructive pulmonary disease, emphysema, and asthma; cigarette smoking; or diabetes mellitus.</p> <p>† If PPSV23 is not available, PCV20 or PCV21 may be used.</p> <p>‡ Adults with chronic medical conditions were previously not recommended to receive PCV 13.</p>				

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Pneumococcal Vaccine (PCV15, PCV20, PCV21; PPSV23) for Persons 19 through 49 Years of Age with <u>Cochlear Implant or Cerebrospinal Fluid Leak</u> Dose-0.5-mL, Route varies by product				
Age	Previous PCV Vaccination History	Previous PPSV Vaccination History	Due Now/Route	Due Next
19 through 49 years	Unvaccinated*	Unvaccinated	PCV15 IM or	PPSV23 IM [†] or SQ ≥ 8 weeks later
			PCV20 or PCV21 IM	Complete
	Unvaccinated*	1 dose	PCV15 IM ≥ 1 year after last PPSV dose or	Complete
			PCV20 or PCV21 IM ≥ 1 year after last PPSV dose	Complete
	PCV13 only	Unvaccinated	PCV20 or PCV21 IM ≥ 1 year after last PCV dose	Complete
	PCV13	1 dose	PCV20 or PCV21 IM ≥ 5 years after last pneumococcal dose or	Complete
			Give no additional vaccines.	Revisit recommendations when patient turns 50 years old.

* Also applies to people who received PCV7 at any age and no other pneumococcal vaccines.

[†] If PPSV23 is not available, PCV20 or PCV21 may be used.

4) Additional Considerations for Use

A) Special Conditions for Children Ages 7 through 18 years of Age

- i) Chronic heart disease (particularly cyanotic congenital heart disease and cardiac failure); chronic lung disease (including asthma treated with high-dose, oral corticosteroids); diabetes mellitus:
 - Any incomplete series with PCV: no further PCV doses needed
 - No history of PPSV23: 1 dose PPSV23 (at least 8 weeks after completing all recommended PCV doses)

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- ii) Cerebrospinal fluid leak, cochlear implant:
 - No history of either PCV or PPSV23: 1 dose PCV, 1 dose PPSV23 at least 8 weeks later.
 - Any PCV but no PPSV23: 1 dose PPSV23 at least 8 weeks after the most recent dose of PCV.
 - PPSV23 but no PCV: 1 dose PCV at least 8 weeks after the most recent dose of PPSV23.
- iii) Sick cell disease and other hemoglobinopathies; anatomic or functional asplenia; congenital or acquired immunodeficiency; HIV infection; chronic renal failure; nephrotic syndrome; malignant neoplasms, leukemias, lymphomas, Hodgkin disease, and other diseases associated with treatment with immunosuppressive drugs or radiation therapy; solid organ transplantation; multiple myeloma:
 - No history of either PCV or PPSV23: 1 dose PCV, 2 doses PPSV23 (dose 1 of PPSV23 administered 8 weeks after PCV and dose 2 of PPSV23 administered at least 5 years after dose 1 of PPSV23).
 - Any PCV but no PPSV23: 2 doses PPSV23 (dose 1 of PPSV23 administered 8 weeks after the most recent dose of PCV and dose 2 of PPSV23 administered at least 5 years after dose 1 of PPSV23).
 - PPSV23 but no PCV: 1 dose PCV at least 8 weeks after the most recent PPSV23 dose and a dose 2 of PPSV23 administered 5 years after dose 1 of PPSV23 and at least 8 weeks after a dose of PCV.
- iv) Hematopoietic Stem Cell Transplant⁶: Children aged <19 years who are hematopoietic stem cell transplant (HSCT) recipients are recommended to receive 4 doses of PCV20, starting 3–6 months after HSCT. Administer 3 doses of PCV20, 4 weeks apart starting 3–6 months after HSCT. Administer a fourth PCV20 dose ≥6 months after the third dose of PCV20 or ≥12 months after HSCT, whichever is later.
 - If PCV20 is not available, 3 doses of PCV15 4 weeks apart, followed by a single dose of PPSV23 ≥1 year after HSCT, can be administered. For patients with chronic graft versus host disease (GVHD) who are receiving PCV15, a fourth dose of PCV15 can be administered in place of PPSV23 because these children are less likely to respond to.
 - PPSV23. Any PCV but no PPSV23: 2 doses PPSV23 (dose 1 of PPSV23 administered 8 weeks after the most recent dose of PCV and dose 2 of PPSV23 administered at least 5 years after dose 1 of PPSV23).
 - A patient's clinical team is best informed to determine the appropriate timing of vaccination.

B) Shared clinical decision-making:

- i) Shared clinical decision-making refers to an individually based vaccine recommendation informed by a decision-making process between the health

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care provider and the patient or parent/guardian. Pharmacists can engage in shared clinical decision making to discuss PCV20 or PCV21 vaccination with persons aged 65 or older who are most likely to benefit.

- ii) Pharmacists are authorized to administer PCV20 OR PCV21 vaccine if one of the following risk factors is present AND at least 5 years has elapsed since last pneumococcal vaccination:
 - Individuals living in nursing homes or other long-term care facilities.
 - Individuals living in areas with low pediatric pneumococcal conjugate vaccine uptake.
 - Individuals with immunocompromising conditions, cochlear implant, cerebrospinal fluid leak, or more than one of these chronic medical conditions: alcoholism; chronic heart, liver, or lung disease; cigarette smoking; or diabetes.
- iii) See links in References #12 and #13 for guidance documents.

C) Miscellaneous Considerations

- i) Children who have experienced invasive pneumococcal disease should receive all recommended doses of a pneumococcal conjugate vaccine as appropriate for their age and underlying condition. The full series of scheduled doses should be completed even if the series is interrupted by an episode of invasive pneumococcal disease.⁷
- ii) Individuals with diseases associated with immunosuppressive therapy or radiation therapy and solid organ transplantation may have a diminished response to the vaccine.¹⁻³
- iii) Splenectomy, immunocompromising therapy, or cochlear implant: When elective splenectomy, immunocompromising therapy, or cochlear implant placement is being planned, age appropriate PCV vaccination should be completed at least 2 weeks before surgery or initiation of therapy. If vaccine is not administered before surgery, it should be administered ≥ 2 weeks after surgery. If the patient is unlikely to return, vaccine can be administered in the immediate postoperative period.⁷
- iv) Recipients of Hematopoietic Cell Transplants (HCT): ACIP recommends that patients be revaccinated with three sequential doses of age appropriate PCV vaccine beginning 3–6 months after HCT transplant. A dose of PPSV should be administered ≥ 8 weeks after the last dose of PCV.⁷

5) Pregnancy and Lactation

- A) Pregnancy: Pneumococcal vaccine should be considered for persons at increased risk.⁹
- B) Lactation: It is not known whether pneumococcal vaccines are excreted in human milk. Use with caution in people who are nursing. ¹⁻³

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6) Warnings and Precautions

- A) PPSV23: Care should be exercised when administering to patients with severely compromised cardiovascular or pulmonary function in whom a systemic reaction would pose a significant risk.³

7) Contraindications

- A) Severe allergic reaction (e.g., anaphylaxis) to a previous dose or to any vaccine component.
- B) PCV20¹ or PCV21 or PCV15²: Persons who experienced an anaphylactic reaction to a previous dose of any diphtheria toxoid-containing vaccine.
- C) See current prescribing information for more details about formulation and contents.

8) Storage and Handling

- A) Store medications according to [OAR 855-041-1036](https://www.oregon.gov/Health/Immunization/Pages/OAR-855-041-1036.aspx).
- B) See current prescribing information for more details about storage and handling.
- C) All clinics and pharmacies enrolled with the Vaccines for Children (VFC) Program must immediately report any storage and handling deviations to the Oregon Immunization Program at 971-673-4VFC (4823).

9) References

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11. Centers for Disease Control and Prevention (2024, October 26). Summary of Risk-based Pneumococcal Vaccination Recommendations. Available at:
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10) Appendix

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