

Model Immunization Protocol

PNEUMOCOCCAL CONJUGATE VACCINE: PCV21 (Capvaxive™), PCV20 (Pevnar 20™), PCV15 (Vaxneuvance™), AND PNEUMOCOCCAL POLYSACCHARIDE VACCINE: PPSV23 (Pneumovax®23)	
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1. What’s new

On October 23, 2024, ACIP voted to recommend a pneumococcal conjugate vaccine (PCV) for all PCV-naïve adults ≥50 years of age.

2. Oregon model immunization protocol

- A. Check the ALERT Immunization Information System (IIS) to determine whether the patient needs this vaccine and any other vaccines.
- B. Screen clients for contraindications.
- C. Provide a current Vaccine Information Statement (VIS), answering any questions.
- D. Record all required data elements in the client's permanent health record.
- E. Verify needle length for IM injection into the vastus lateralis or deltoid. PPSV23 may also be given by SQ injection into the fatty tissue over the triceps with a 5/8" needle.
- F. To avoid shoulder injury related to vaccine administration, make sure staff who administer vaccines recognize the anatomic landmarks for identifying the deltoid muscle and use proper intramuscular administration technique.
- G. Pneumococcal vaccines:
 - 1) Give 0.5 mL PCV21, PCV20, or PCV15 intramuscularly (IM) to eligible clients (see Section 5); **OR**
 - 2) Give 0.5 mL PPSV23 vaccine (Pneumovax 23) IM, or subcutaneously (SC) to eligible clients (see Section 5).
- H. Pneumococcal conjugate vaccines and PPSV23 should **not** be given at the same time. Either vaccine type may be given simultaneously with influenza and most other ACIP-recommended child and adult vaccinations.
- I. Ask client to remain seated on the premises for 15 minutes after vaccination to decrease the risk of injury should they faint.
- J. Ensure epinephrine hydrochloride solution (1:1,000), oxygen and other appropriate agents and equipment are available for immediate use in case of anaphylactic or acute hypersensitivity reaction. Refer to [Guidelines for Managing Severe Adverse Events Following Immunization](#).

Health Officer Signature

Date

Health Officer Signature

Date

3. Vaccine schedule for pneumococcal vaccines

Vaccine Schedule: Pneumococcal Conjugate Vaccine (PCV15 or PCV20)			
Age Group	Dose	No. of Doses	Route
≥6 weeks	0.5 mL	Varies by age	Intramuscular
Vaccine Schedule: Pneumococcal Conjugate Vaccine (PCV21, PCV20 or PCV15)			
Age Group	Dose	No. of Doses	Route
≥19 years	0.5 mL	1	Intramuscular
Vaccine Schedule: Pneumococcal Polysaccharide Vaccine (PPSV23) ⁷			
Age Group	Dose	No. of Doses	Route
≥2 years	0.5 mL	Varies by age	Intramuscular or Subcutaneous

4. Licensed pneumococcal vaccines

Pneumococcal Conjugate Vaccines		
Trade Name	Presentation	Acceptable Age Range
Capvaxive™ (PCV21)	0.5-mL prefilled syringes	≥19 years
Prevnar 20™ (PCV20)	0.5-mL prefilled syringes	≥6 weeks
Vaxneuvance™ (PCV15)	0.5-mL prefilled syringes	≥6 weeks
Pneumococcal Polysaccharide Vaccine (PPSV23)		
Trade Name	Presentation	Acceptable Age Range
Pneumovax 23®	0.5-mL single-dose vials	≥2 years
	0.5-mL prefilled syringes	

5. Recommendations for use

- A. Routine Schedule for PCV15 or PCV20: All infants aged ≥2 months without contraindications. First dose may be given as early as 6 weeks of age.

Routine Pneumococcal Conjugate Vaccine (PCV15 or PCV20*)			
Dose	Preferred Age	Minimum acceptable age	Minimum Acceptable Spacing
1	2 months	6 weeks	
2	4 months	10 weeks	4 weeks after dose 1

3	6 months	14 weeks	4 weeks after dose 2
4	12–15 months	12 months	8 weeks after dose 3

*Either PCV15 or PCV20 can be used when PCV is indicated.

B. Catch-Up Schedule for PCV15 or PCV20

Catch-Up Pneumococcal Conjugate Vaccine (PCV15 or PCV20*)			
Age	Doses received previously	Recommended PCV regimen	Total doses in series
4–6 months	0 doses	3 doses, 4 weeks apart; 4 th dose at age 12–15 months	4
	1 dose	2 doses, 4 weeks apart; 4 th dose at age 12–15 months	4
	2 doses	1 dose, 4 weeks after most recent dose; 4 th dose at 12–15 months	4
7–11 months	0 doses	2 doses, 4 weeks apart; 3 rd dose at 12–15 months	3
	1 or 2 doses before age 7 months	1 dose at 7–11 months, with a 2 nd dose at 12–15 months ≥ 8 weeks afterwards	3 or 4
12–23 months	0 doses	2 doses ≥ 8 weeks apart	2
	1 dose < 12 months of age	2 doses ≥ 8 weeks apart	3
	1 dose at age ≥ 12 months if age	1 dose ≥ 8 weeks after most recent dose	2
	2 or 3 doses at < 12 months of age	1 dose ≥ 8 weeks after most recent dose	3 or 4
24–59 months	0 doses	1 dose	1
	1 dose < 24 months of age	1 dose	2
	1 dose > 24 months of age	Series complete	1
	2 doses: 1 dose < 12 months of age, dose 2 < 24 months of age	1 dose	3
	2 doses: dose 1 given at > 12 months of age	Series complete	2
	3 doses, all < 12 months of age	1 dose	4

	3 doses, at least 1 dose at ≥ 12 months of age	Series complete	3
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*Either PCV15 or PCV20 can be used when PCV is indicated.

C. Persons with Special Indications

Pneumococcal Vaccine (PCV15 + PPSV, or PCV20) for Persons 2–18 Years of Age with Underlying Conditions				
Age	Previous PCV13, PCV15 or PCV20 Vaccination History	Previous PPSV Vaccination History	Due Now# (≥ 8 weeks since last pneumococcal vaccination)	Due Next
2–5 years of age with chronic conditions*	Unvaccinated or incomplete series of ≤ 2 doses	Unvaccinated	PCV15	PCV15 in ≥ 8 weeks then PPSV 8 weeks later
			PCV20	PCV20 in ≥ 8 weeks
		1 dose	PCV15	PCV15 in ≥ 8 weeks
			PCV20	PCV20 in ≥ 8 weeks
	Incomplete series of 3 doses	Unvaccinated	PCV15	PPSV in ≥ 8 weeks
		1 dose	PCV15	Complete
			PCV20	
	4 doses before age 24 months	Unvaccinated	PPSV	Complete
		1 dose		Complete
6–18 years of age with high-risk* conditions	Unvaccinated	Unvaccinated	PCV15	PPSV in ≥ 8 weeks. Revaccinate with PPSV in 5 years
			PCV20	Complete
		1 dose	PCV15	Revaccinate with PPSV in 5 years
			PCV20	Complete
	≥ 1 dose of PCV13	Unvaccinated	PPSV	Revaccinate with PPSV in 5 years
		1 dose		Complete

#When both PCV13 (or PCV15) and PPSV are indicated, give PCV first. PCV and PPSV should not be administered at the same visit.

* Chronic heart disease (particularly cyanotic congenital heart disease and cardiac failure), chronic lung disease (including asthma if treated with high-dose oral corticosteroid therapy), diabetes mellitus.

*CSF leak, cochlear implant, sickle cell disease and other hemoglobinopathies, asplenia, HIV infection, chronic renal failure, nephrotic syndrome, immunodeficiency, diseases treated with immunosuppressive therapy or radiation therapy, including malignant neoplasms, leukemias, lymphomas, and Hodgkin disease; generalized malignancy; solid organ transplantation; or multiple myeloma. Alcoholism and cigarette smoking are indications for PPSV23 only.

D. Routine Schedule for Pneumococcal Vaccination of Persons ≥ 50 Years of Age⁸

All persons ≥ 50 years of age should receive a single dose of PCV21, PCV20 or doses of PCV15 and PPSV in series.

Routine Pneumococcal Vaccination for Persons ≥ 50 Years of Age			
Dose	Preferred Age	Preferred Spacing	Minimum Spacing
PCV21, PCV20 or PCV15	≥ 50 years		
PPSV*		≥ 1 year after PCV15	≥ 8 weeks after PCV15

*Indicated only for persons who received PCV15, and not for those who received PCV21 or PCV20. If PPSV is not available, one dose of PCV21 or PCV20 may be used.

E. Persons with Special Indications for PCV21, PCV20 or PCV15

Pneumococcal Conjugate Vaccine (PCV21, PCV20 or PCV15) for Persons 19–49 Years of Age with Underlying Conditions*		
Age	Previous PCV or PPSV Vaccination History	Recommended Regimen
19–49 years	PPSV only	1 dose of PCV21, PCV20 or PCV15
	PCV13 only	1 dose PPSV
	PCV13 and PPSV	No additional doses ⁺
	Unknown Vaccination History	1 dose of PCV21, PCV20; or PCV15 followed by PPSV

*Alcoholism; chronic heart disease (particularly cyanotic congenital heart disease and cardiac failure); chronic lung disease (including asthma if treated with high-dose oral corticosteroid therapy); cigarette smoking; diabetes mellitus; CSF leak; cochlear implant; sickle cell disease and other hemoglobinopathies; asplenia; HIV infection; chronic renal failure; nephrotic syndrome; immunodeficiency; diseases treated with immunosuppressive therapy or radiation therapy, including malignant neoplasms, leukemias, lymphomas, and Hodgkin disease; generalized malignancy; solid organ transplantation; or multiple myeloma.

⁺A single dose of PCV21 or PCV20 may be given based on shared clinical decision making between the patient and clinician.

6. Contraindications

PCV21, PCV20, or PCV15

Persons who experienced an anaphylactic reaction to a previous dose of any pneumococcal conjugate vaccine, any vaccine component, or any diphtheria toxoid-containing vaccine.

PPSV23

Persons who experienced an anaphylactic reaction to a previous dose of pneumococcal vaccine or a vaccine component.

Vaccine	Vaccine Excipient Summary
Vaxneuvance (PCV15)	L-histidine, polysorbate 20, sodium chloride, aluminum phosphate ³
Prevnar 20 (PCV20)	Polysorbate, succinate, sodium chloride, aluminum phosphate ²
Capvaxive (PCV21)	L-histidine, polysorbate, sodium chloride, water ¹
Pneumovax 23 (PPSV23)	isotonic saline solution, phenol ⁴

7. Warnings and precautions

Persons with acute, moderate, or severe illness with or without fever may choose to delay immunization until symptoms have improved.

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.

8. Other considerations

- A. **Adults with previous PPSV23 only:** Adults who have only received PPSV23 may receive a PCV (either PCV21, PCV20 or PCV15) ≥1 year after their last PPSV23 dose. When PCV15 is used in those with history of PPSV23 receipt, it need not be followed by another dose of PPSV23.
- B. **Adults with previous PCV13:** The incremental public health benefits of providing PCV21 or PCV20 to adults who have received PCV13 only or both PCV13 and PPSV23 have not been evaluated. A single dose of PCV21 or PCV20 may be administered based on shared clinical decision making.
- C. **Lactation:** It is not known whether pneumococcal vaccines are excreted in human milk. Use with caution in people who are nursing.

- D. **Pregnancy:** Pneumococcal vaccine should be considered for persons at increased risk.
- E. Simultaneous administration of PCV15 and PPSV23 is NOT recommended. See section 5, recommendations for use, for the necessary minimum interval between doses.
- F. May give influenza and zoster vaccines at same visit as PPSV23.
- G. **Splenectomy, immunocompromising therapy, or cochlear implant:**
When elective splenectomy, immunocompromising therapy, or cochlear implant placement is being planned, pneumococcal vaccination should be completed at least 2 weeks before surgery or initiation of therapy. If pneumococcal 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 post-operative period.
- H. Immunization should precede the initiation of immunocompromising therapy by at least two weeks.
- 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.
- J. Individuals with diseases associated with immunosuppressive therapy or radiation therapy and solid organ transplantation may have a diminished response to the vaccine.
- K. **Recipients of Hematopoietic Cell Transplants (HCT):**
For children ≤ 18 years of age: ACIP recommends that patients be revaccinated with three sequential doses of PCV15 or PCV20 vaccine beginning 3–6 months after HCT transplant. If PCV15 is used, a dose of PPSV should be administered ≥ 8 weeks after the last dose of PCV.
For adults ≥ 19 years of age: ACIP recommends that patients be revaccinated with three, sequential doses of PCV21, PCV20, or PCV15 vaccine beginning 3–6 months after HCT transplant. If PCV15 is used, a dose of PPSV should be administered ≥ 8 weeks after the last dose of PCV.

9. Side effects and adverse reactions

PCV20, PCV15	
Infants and children	
Irritability, soreness at the injection site	Up to 60%
Decreased appetite or drowsiness	Up to 30%

Injection site redness or fever	Up to 10%
PCV21, PCV20, PCV15	
Adults	
Soreness at the injection site, fatigue	Up to 76%
Headache, muscle pain, joint pain, decreased appetite, local swelling, decreased arm movement	Up to 30%
Vomiting, fever, chills, rash	Up to 5%
Allergic reactions	Rare
PPSV23	
Soreness, redness, swelling at the injection site	Common, up to 60%
Headache, muscle pain, fatigue	Uncommon, up to 20%
Nausea, fever, chills	Rare, up to 2%
Allergic reactions	Rare

10. Storage and handling

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 (4832).

Vaccine	Latex	Temp	Storage Issues
Prenar 20 (PCV20)	No	2° – 8°C (36°–46°F)	Store syringes horizontally to minimize resuspension time. Do not freeze.
Capvaxive (PCV21), Vaxneuvance (PCV15)			Do not freeze. Protect from light.
Pneumovax 23			None

11. Adverse events reporting

Report suspected adverse events to the Vaccine Adverse Events Reporting System (VAERS) online at <https://vaers.hhs.gov/reportevent.html>.

VAERS Reporting Table: <https://vaers.hhs.gov/resources/infoproviders.html>

Event and interval from vaccination
A. Shoulder Injury Related to Vaccine Administration (7 days) B. Vasovagal syncope (7 days) C. Any acute complication or sequelae (including death) of above events (interval—not applicable)

D. Events described in manufacturer's package insert as contraindications to additional doses of vaccine (interval—see package insert).

12. References

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9. Kroger A, Bahta L, Long S, Sanchez P. General Best Practice Guidelines for Immunization. Best Practices Guidance of the Advisory Committee on Immunization Practices (ACIP). Available at: www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html. Accessed 04 Nov 2024.

13. Appendix – Oregon Disease Incidence and Vaccine Coverage

PCV 21, PCV20, and PCV15 vaccines contain different pneumococcal serogroups.

	1	3	4	5	6A	6B	7F	9V	14	18C	19A	19F	23F	22F	33F	8	10A	11A	12F	15B	2	9N	17F	20	15A	15C	16F	23A	23B	24F	31	35B	16F	7C
PCV15																																		
PCV20																																		
PCV21																																		

Adapted from Loehr J. Presentation to ACIP, 27 Jun 2024. Available at https://stacks.cdc.gov/view/cdc/157883/cdc_157883_DS1.pdf.

During 2017–2023, the Portland tri-county area had 879 cases of invasive pneumococcal disease.

Vaccine coverage of Oregon’s strains would be:

- PCV15: 423 cases (48%)
- PCV20: 520 cases (59%)
- PCV21: 663 cases (75%)
- PPSV23: 637 cases (72%)

In 2022 and 2023, Oregon saw an increase in the number of serogroup 4 cases, particularly in people experiencing homelessness. In 2022, 14 (50%) of the 28 serogroup 4 cases were in people experiencing homelessness.

Any pneumococcal conjugate vaccine may be used when recommended in adults. However, when vaccinating people experiencing homelessness, consideration should be given to using a vaccine that includes serogroup 4—i.e., PCV15 or PCV20, if available.