FOCUS ON
NEW RECOMMENDATIONS FOR ADULT PNEUMOCOCCAL VACCINATION

This resource is designed to offer pharmacists a concise and accurate tool to support assessing, recommending, and administering vaccines to protect against pneumococcal disease in adults. Information is included for addressing questions and concerns so that pharmacists are prepared to educate patients about pneumococcal disease and the risks and benefits of available vaccines.

INTRODUCTION

Pneumococcal diseases are caused by the *Streptococcus pneumoniae* bacterium.[1] There are more than 100 known serotypes and although most serotypes can cause disease, a majority of pneumococcal infections are caused by a small subset. *S. pneumoniae* can lead to a range of illnesses, including mild to moderate infections such as acute otitis media and sinusitis, to more severe and potentially life-threatening infections, including pneumonia, bacteremia, and meningitis.

Pneumococcal disease is spread through respiratory droplets during close person-to-person contact.[1] *S. pneumoniae* bacteria often colonize the nose and throat without causing illness, particularly in children and service personnel on military installations. Although colonization is typically harmless, it plays a key role in transmission and the potential for disease. Several factors can increase the risk of spread, including crowded living conditions, contact with individuals who have upper respiratory infections or active pneumococcal disease, and seasonal peaks, especially during the winter and early spring months.

Risk factors for pneumococcal disease

1. Age-related risk:

- Children younger than 5 years old
- Adults 65 years and older

2. Underlying medical conditions and lifestyle factors:

- Alcohol use disorder
- Cerebrospinal fluid leak
- Chronic heart disease (*e.g., congestive heart failure, cardiomyopathies*)
- Chronic kidney disease
- Chronic liver disease
- Chronic lung disease (*e.g., COPD, emphysema, asthma*)
- Cigarette smoking
- Cochlear implant
- Diabetes

3. Immunocompromizing conditions:

- Chronic renal failure and nephrotic syndrome
- Congenital or acquired asplenia
- Congenital or acquired immunodeficiency
- Disease or condition treated with immunosuppressive medication or radiation therapy (*e.g., Hodgkin lymphoma, leukemias, lymphomas, malignant neoplasms, solid organ transplant*)
- HIV infection
- Sickle cell disease or other hemoglobinopathies

4. Certain racial and ethnic groups:

- Alaska Native people
- African American people
- Certain American Indian people

5. Environmental risk factors:

- Being in crowded settings (e.*g., nursing homes, day care facilities*)
- Experiencing homelessness

Pneumococcal disease burden in adults

CDC tracks invasive pneumococcal disease (IPD) through the National Notifiable Diseases Surveillance System and the Active Bacterial Core Surveillance (ABCs) system.[2] These systems have documented a significant decrease in disease among both children and adults following the introduction of routine vaccination with pneumococcal conjugate vaccine in 2000. While incidence has declined, pneumococcal disease still causes a considerable number of hospitalizations and deaths. Recent data show that pneumococcal pneumonia accounts for 12%–15% of all hospitalized pneumonia cases in the United States, with an estimated 225,000 adult hospitalizations each year.[3–6] From 2018 to 2022, ABCs data indicated that 56% and 83% of IPD cases in adults aged 50–64 years were caused by serotypes included in the 20-valent pneumococcal conjugate vaccine (PCV20) or the 21-valent pneumococcal conjugate vaccine (PCV21), respectively.[7] Additionally, approximately 40% of IPD cases are resistant to at least one class of antibiotics, highlighting the continued need to prioritize prevention through vaccination.[2]

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Pneumococcal Vaccine Overview

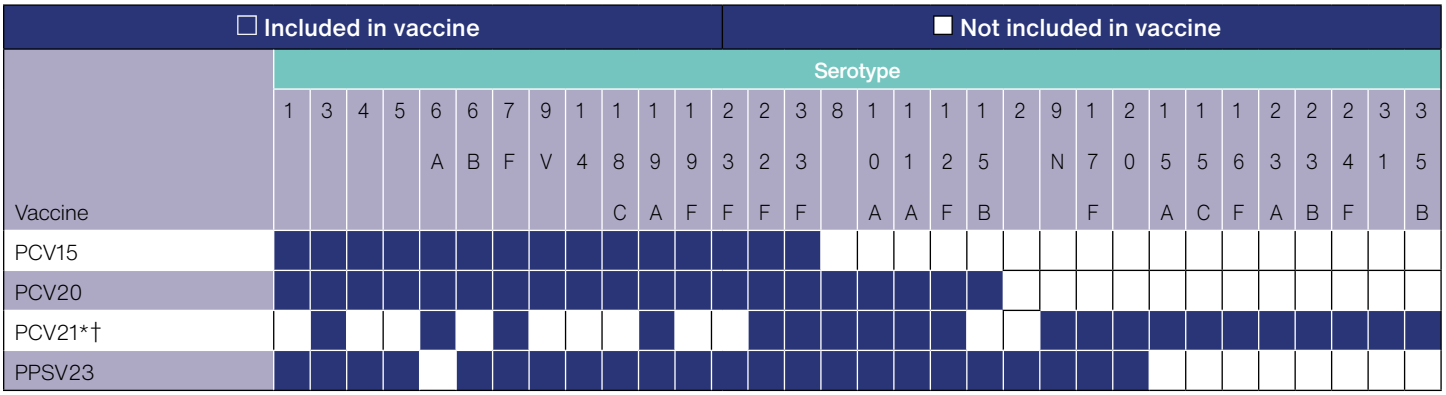
There are currently four pneumococcal vaccines recommended for use in the United States: three pneumococcal conjugate vaccines (PCV) and one pneumococcal polysaccharide vaccine (Table 1).[8–11] The key difference between these vaccine types lies in the immune response they generate. Conjugate vaccines produce a T-cell–dependent response, resulting in longer-lasting immunity, whereas polysaccharide vaccines stimulate a T-cell–independent response, which is generally short-lived.[12] Another key difference among the vaccines is the specific serotypes they cover (Figure 1).[3]

Serotype 4 primarily impacts adults less than 65 years old with certain risk factors or chronic conditions (e.g., homelessness, injection drug use, cigarette smoking, alcohol use disorder, chronic lung disease) living in Alaska, Colorado, the Navajo Nation, New Mexico, and Oregon.[3,13] Since PCV21 does not protect against serotype 4, people with these risk factors or conditions residing in these parts of the country are more likely to experience greater coverage of circulating strands from receiving PCV20 rather than PCV21.

Table 1. Comparison of available recommended pneumococcal vaccines[8–11]

	PCV15	PCV20	PCV21	PPSV23
Brand or trade name (Manufacturer)	Vaxneuvance (Merck & Co., Inc.)	Prevnar 20 (Pfizer, Inc.)	Capvaxive (Merck & Co., Inc.)	Pneumovax 23 (Merck & Co., Inc.)
Initial FDA approval year	2021	2021	2024	1983
Approved age	6 weeks and older	6 weeks and older	18 years and older	2 years and older
Volume	0.5 mL	0.5 mL	0.5 mL	0.5 mL
Available preparations	Single-dose prefilled syringe	Single-dose prefilled syringe	Single-dose prefilled syringe	Single-dose vial or prefilled syringe
Injection route	Intramuscular	Intramuscular	Intramuscular	Subcutaneous or Intramuscular

Abbreviations: FDA = U.S. Food and Drug Administration; PCV = pneumococcal conjugate vaccine; PCV15 = 15-valent PCV; PCV20 = 20-valent PCV; PCV21 = 21-valent PCV; PPSV23 = 23-valent pneumococcal polysaccharide vaccine.



Abbreviations: PCV = pneumococcal conjugate vaccine; PCV15 = 15-valent PCV; PCV20 = 20-valent PCV; PCV21 = 21-valent PCV; PPSV23 = 23-valent pneumococcal polysaccharide vaccine.

* PCV21 is approved for the prevention of invasive pneumococcal disease caused by serotype 15B based upon prespecified criteria for the proportion of participants with fourfold or more rise in opsonophagocytic activity responses. www.fda.gov/media/179426/download?attachment

† PCV21 contains serotype 20A

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Pneumococcal Vaccine Recommendations for Adults

In October 2024, the Advisory Committee on Immunization Practices (ACIP) updated pneumococcal vaccine recommendations for adults.[3] The most recent pneumococcal vaccine recommendations include vaccinating all individuals 50 years and older and individuals 19–49 years old who are immunocompromized or have increased risk of pneumococcal disease based on certain medical conditions or risk factors.

The decision to lower the routine pneumococcal vaccination age from 65 years to 50 years was made to help reduce disease burden and address disparities. An estimated 32%–54% of adults aged 50–64 years have at least one condition or risk factor that qualifies them for pneumococcal vaccination, yet 2022 data from the Behavioral Risk Factor Surveillance System showed that only 37% of eligible adults in this age group received a dose of pneumococcal vaccine, which is significantly lower than the 70% coverage rate among adults aged 65 years and older.[3] Additionally, surveillance data from CDC's ABCs system highlighted racial disparities, with American Indian/Alaska Native and African American adults experiencing higher rates of IPD compared with the general population.[3,7] Expanding routine vaccination to include adults aged 50 years and older is expected to improve vaccine uptake among those at increased risk, help close these gaps in coverage, and improve outcomes.[3]

Who should receive a pneumococcal vaccine?

Pneumococcal vaccine recommendations depend on a person's age, medical conditions or risk factors, and prior pneumococcal vaccine history. Table 2 summarizes these recommendations.[3] Additionally, a convenient practice tool that pharmacists can use to help identify appropriate pneumococcal vaccine recommendations for specific patients is the PneumoRecs VaxAdvisor app for vaccine providers: www.cdc.gov/pneumococcal/hcp/vaccine-recommendations/app.html

Pharmacists should engage in a shared clinical decision-making process for adults who previously received PCV13 at any age and PPSV23 at age 65 years or older. This process should involve a discussion guided by the patient's values and preferences along with the pharmacist's clinical judgment. When considering additional vaccination with PCV20 or PCV21, pharmacists should assess the patient's risk for pneumococcal disease, including potential exposure to serotypes covered by PCV21 or PCV20, the presence of underlying medical conditions that increase the risk for severe disease, and whether 5 or more years have passed since the last pneumococcal vaccination.[14]

What are the contraindications and precautions for pneumococcal vaccines?

Pneumococcal vaccines are generally safe, but there are a few important contraindications and precautions (Table 3).[15]

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Table 2. Clinical guidance for implementing pneumococcal vaccine recommendations for adults aged ≥19 years — United States, October 2024[3]

Risk or age group	Vaccine received previously	Options for vaccination
Adults aged ≥50 years	None or PCV7 only at any age	A single dose of PCV21, PCV20, or PCV15. If PCV15 is administered, a single dose of PPSV23* should be administered ≥1 year after the PCV15 dose. A minimum interval of 8 weeks can be considered if PCV15 is used in adults with an immunocompromizing condition,† cochlear implant, or CSF leak.
	PPSV23 only	A single dose of PCV21, PCV20, or PCV15 ≥1 year after the last PPSV23 dose.
	PCV13 only	A single dose of PCV21 or PCV20 ≥1 year after the PCV13 dose.
	PCV13 at any age and PPSV23 at age <65 years	A single dose of PCV21 or PCV20 ≥5 years after the last pneumococcal vaccine dose.
	PCV13 at any age and PPSV23 at age ≥65 years	A single dose of PCV21 or PCV20 recommended >5 years after the last pneumococcal vaccine dose based on shared clinical decision making.
Adults aged 19–49 years with an immunocompromizing condition,† a CSF leak, or a cochlear implant	None or PCV7 only at any age	A single dose of PCV21, PCV20, or PCV15. If PCV15 is used, administer a single dose of PPSV23* ≥8 weeks after the PCV15 dose.
	PPSV23 only	A single dose of PCV21, PCV20, or PCV15 ≥1 year after the last PPSV23 dose.
	PCV13 only	A single dose of PCV21 or PCV20 administered ≥1 year after the PCV13 dose.
	PCV13 and 1 dose of PPSV23	A single dose of PCV21 or PCV20 ≥5 years after the last pneumococcal vaccine dose. The pneumococcal vaccination series is complete, and it need not be followed by additional pneumococcal vaccine doses.
	PCV13 and 2 doses of PPSV23	The pneumococcal vaccination recommendations should be reviewed again when the person turns 50. Alternatively, a single dose of either PCV21 or PCV20 should be administered ≥5 years after the last pneumococcal vaccine dose. If PCV21 or PCV20 is used, the pneumococcal vaccination series is complete, and it need not be followed by additional pneumococcal vaccine doses.
Adults aged 19–49 years with chronic medical conditions§	None or PCV7 only at any age	A single dose of PCV21, PCV20, or PCV15. If PCV15 is administered, a single dose of PPSV23* should be administered ≥1 year after the PCV15 dose.
	PPSV23 only	A single dose of PCV21, PCV20, or PCV15 ≥1 year after the last PPSV23 dose.
	PCV13 only	A single dose of PCV21 or PCV20 ≥1 year after the PCV13 dose.
	PCV13 and 1 dose of PPSV23	The pneumococcal vaccination recommendations should be reviewed again when the person reaches 50.

Abbreviations: CSF = cerebrospinal fluid; PCV = pneumococcal conjugate vaccine; PCV7 = 7-valent PCV; PCV13 = 13-valent PCV; PCV15 = 15-valent PCV; PCV20 = 20-valent PCV; PCV21 = 21-valent PCV; PPSV23 = 23-valent pneumococcal polysaccharide vaccine.

* For adults who have received PCV15 but have not completed their recommended pneumococcal vaccine series with PPSV23, 1 dose of PCV21 or PCV20 may be used if PPSV23 is not available.

† Chronic renal failure, nephrotic syndrome, immunodeficiency, iatrogenic immunosuppression, generalized malignancy, HIV infection, Hodgkin lymphoma, leukemia, lymphoma, multiple myeloma, solid organ transplant, congenital or acquired asplenia, or sickle cell disease or other hemoglobinopathies.

§ Alcohol use disorder; 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.

Table 3. Contraindications and precautions for pneumococcal vaccines[15]

Contraindication (All pneumococcal vaccines)	Severe allergic reaction (e.g., anaphylaxis) to a previous pneumococcal vaccine dose or any component of the vaccine
Contraindication (Conjugate vaccines only)	Severe allergic reaction (e.g., anaphylaxis) to a diphtheria-toxoid–containing vaccine or any component of the vaccine
Precaution (All pneumococcal vaccines)	Moderate to severe acute illness with or without fever

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Answering Patients' Questions About the Pneumococcal Vaccines

Pharmacists should be comfortable recommending pneumococcal vaccines and answering patient questions.

Why should I get the pneumonia vaccine?

The pneumonia vaccine helps protect you from serious infections caused by bacteria called *Streptococcus pneumoniae*. These infections can lead to lung, brain, and bloodstream infections, which can be very dangerous, especially for older adults and people with certain health conditions.

I already got a pneumonia shot years ago. Do I need another one?

Maybe. Vaccine recommendations have changed over time, and there are newer versions that cover more strains of the bacteria. Let's review your vaccine history and figure out if you should receive an updated vaccine.

Why are there so many pneumonia vaccines, and what's the difference?

There are different pneumonia vaccines because they protect against different strains of the bacteria that can cause pneumonia and other serious infections. Some provide longer-lasting protection or work better for certain age groups or individuals with certain health conditions.

Do I need a pneumonia shot every year?

No, the pneumonia vaccine is not given yearly. Most people only need it once or twice during their lifetime, depending on their age, health conditions, and which vaccines they have already received.

Do I still need the vaccine if I have already had pneumonia?

Yes. Having pneumonia in the past doesn't protect you from getting it again or getting other serious infections that can be caused by the *Streptococcus pneumoniae* bacteria. The vaccine can help prevent future infections, even if you've previously had pneumonia.

Can I get the pneumonia vaccine with other vaccines?

Yes, it's safe to get the pneumonia vaccine at the same time as other vaccines. They can be given in different arms and getting them together can help you stay protected without needing extra visits.

I am already getting so many vaccines. Is this one necessary?

The number of vaccines you are eligible to receive can seem overwhelming, but the pneumonia vaccine is especially important if you're over 50 years old or have conditions such as asthma, diabetes, heart disease, or chronic lung disease. The vaccine helps prevent infections that can lead to serious illness or hospitalization.

Is the vaccine safe?

Yes. The pneumococcal vaccines have been thoroughly tested and are considered very safe. Like all vaccines, they're monitored continuously for safety by public health experts.

What are the adverse effects of this vaccine?

Most people have only mild adverse effects, if any at all. You might notice some soreness, redness, or swelling in the arm where you got the shot. Some people feel a bit tired or have a low-grade fever. Serious adverse effects are very rare.

ONLINE RESOURCES

CDC. Pneumococcal Vaccination: Information for Health Care Professionals www.cdc.gov/vaccines/vpd/pneumo/hcp/index.html

CDC. PneumoRecs VaxAdvisor App for Vaccine Providers www.cdc.gov/pneumococcal/hcp/vaccine-recommendations/app.html

CDC. Shared Clinical Decision-Making PCV20 or PCV21 for Adults 65 Years or Older www.cdc.gov/vaccines/hcp/admin/downloads/job-aid-SCDM-pneumococcal-508.pdf

CDC and FDA. Vaccine Adverse Event Reporting System https://vaers.hhs.gov/

Immunize.org. Ask the Experts: Pneumococcal www.immunize.org/ask-experts/topic/pneumococcal/

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Acknowledgments

This activity is supported through an independent educational grant from Merck & Co., Inc., Rahway, NJ, USA.

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Supported by MERCK INVENTING FOR LIFE

Developed by APhA

DISCLAIMERS: The author acknowledges the use of ChatGPT on June 10, 2025, to assist with proofreading and editing this document for clarity. The prompts used were [refine, streamline and format content]. All outputs were reviewed for accuracy by the author.

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