Pneumococcal Disease and Pneumococcal Vaccines

Pink Book Web-on-Demand Series
October 11, 2022

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NCIRD, CDC
Learning Objectives

- Describe the Advisory Committee on Immunization Practices General Best Practice Guidelines on Immunization.
- Describe an emerging immunization issue.
- For each vaccine-preventable disease, identify those for whom routine immunization is recommended.
- For each vaccine-preventable disease, describe characteristics of the vaccine used to prevent the disease.
- Locate current immunization resources to increase knowledge of team’s role in program implementation for improved team performance.
- Implement disease detection and prevention health care services (e.g., smoking cessation, weight reduction, diabetes screening, blood pressure screening, immunization services) to prevent health problems and maintain health.
Continuing Education Information

- CE credit, go to: [https://tceols.cdc.gov/](https://tceols.cdc.gov/)
- Search course number: WD4564-101122
- CE credit expires: July 1, 2024
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Pneumococcal Disease
Pneumococcal Disease

Otitis media
Middle ear infection
(Major)

Sinusitis
Sinus infection

Bacteremia
Bloodstream infection
(Major)

Meningitis
An infection of the lining of the brain and spinal cord
(Major)

Pneumonia
Lung infection
(Major)
Streptococcus pneumoniae

- Gram-positive bacteria
- 100 known serotypes
- Polysaccharide capsule important virulence factor
- Type-specific antibody is protective
- Limited cross-reactivity
Transmission of *Streptococcus pneumoniae*

- Common inhabitant of the respiratory tract
- Asymptomatic carriage varies by age
  - School-age children 20% to 60%
  - Adults 5% to 10%
- Children have longer carriage than in adults
Transmission of Streptococcus pneumoniae

- Person to person spread by respiratory droplet contact
- Viral upper respiratory infection can predispose to transmission
- Unknown period of communicability
Transmission of *Streptococcus pneumoniae*

Can occur throughout the year but the incidence is highest in the winter and early spring.
Clinical Manifestations of Pneumococcal Disease: NON-INVASIVE

- Sinusitis
- Otitis media
- Bronchitis
- Pneumonia without bacteremia

Less common:
- Conjunctivitis
- Periorbital Cellulitis
- Mastoiditis
Clinical Manifestations of Pneumococcal Disease: INVASIVE

- Epiglottitis
- Meningitis
- Pneumonia with bacteremia
- Bacteremia and sepsis
- Osteomyelitis
- Endocarditis and pericarditis
- Septic arthritis
- Peritonitis

Invasive disease: isolation of pneumococcus from blood or another normally sterile sites
For those who get it, pneumococcal meningitis kills

1 in 12 Children  1 in 6 Adults
For those who get it, pneumococcal bacteremia kills

1 in 30 Children
1 in 8 Adults
Risk Factors for Invasive Pneumococcal Disease

AGE

Underlying medical or other conditions
Risk Factors for Invasive Pneumococcal Disease: Age

Risk Factors for Invasive Pneumococcal Disease: underlying conditions

- Non-immunocompromising conditions
- Immunocompromising conditions
Risk Factors for Invasive Pneumococcal Disease: underlying conditions

Non-immunocompromising conditions

- Chronic heart disease
- Chronic lung disease
- Diabetes mellitus
- Cerebrospinal fluid leak
- Cochlear implant
- For 19 years and older: chronic liver disease, alcoholism, and cigarette smoking.

1. https://www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm
2. https://www.cdc.gov/mmwr/volumes/71/wr/mm7137a3.htm
Risk Factors for Invasive Pneumococcal Disease: underlying conditions

- Chronic renal failure or nephrotic syndrome
- Asplenia/splenic dysfunction (congenital or acquired)
- Immunodeficiency (congenital or acquired)
- Hemoglobinopathies e.g., sickle cell disease
- Immunosuppressive therapy
- HIV infection
- Solid organ transplant

1. https://www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm
2. https://www.cdc.gov/mmwr/volumes/71/wr/mm7137a3.htm
Knowledge Check

- Pneumonia, meningitis, and bacteremia are major clinical syndromes of pneumococcal disease.
  A. True
  B. False
Knowledge Check

- Pneumonia, meningitis, and bacteremia are major clinical syndromes of pneumococcal disease.
  
  A. True  
  B. False
Milestones in Pneumococcal Vaccine Development in United States

- 1977: 14-valent polysaccharide vaccine licensed
- 1983: 23-valent polysaccharide vaccine licensed
- 2000: 7-valent polysaccharide conjugate vaccine licensed
- 2010: 13-valent polysaccharide conjugate vaccine licensed
- 2021: 15- and 20-valent polysaccharide conjugate vaccine licensed
Milestones in Pneumococcal Vaccine Development in United States

- **1977**: 14-valent polysaccharide vaccine licensed
- **1983**: 23-valent polysaccharide vaccine licensed
- **2000**: 7-valent polysaccharide conjugate vaccine licensed
- **2010**: 13-valent polysaccharide conjugate vaccine licensed
- **2021**: 15 and 20-valent polysaccharide conjugate vaccine licensed
Milestones in Pneumococcal Vaccine Development in United States

- 1977: 14-valent polysaccharide vaccine licensed
- 1983: 23-valent polysaccharide vaccine licensed
- 2000: 7-valent polysaccharide conjugate vaccine licensed
- 2010: 13-valent polysaccharide conjugate vaccine licensed
- 2021: 15 and 20-valent polysaccharide conjugate vaccine licensed
Pneumococcal Vaccine Products

- PPSV23
- PCV13
- PCV15
- PCV20
Serotypes in Pneumococcal Vaccine Products

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6A</th>
<th>6B</th>
<th>7F</th>
<th>9V</th>
<th>14</th>
<th>18C</th>
<th>19A</th>
<th>19F</th>
<th>23F</th>
<th>22F</th>
<th>33F</th>
<th>8</th>
<th>10A</th>
<th>11A</th>
<th>12F</th>
<th>15B</th>
<th>2</th>
<th>9N</th>
<th>17F</th>
<th>20</th>
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<td>PCV13</td>
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<td>PCV20</td>
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<td>PPSV23</td>
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</tbody>
</table>

- **PCV15 non-PCV13**: includes serotypes 22F and 33F
- **PCV20 non-PCV13**: includes serotypes 22F, 33F, 8, 10A, 11A, 12F, and 15B
- **PPSV23 non-PCV20**: includes serotypes 2, 9N, 17F, and 20
23-valent Pneumococcal Polysaccharide Vaccine (PPSV23)

- Non-live vaccine
- Purified capsular polysaccharide antigen from 23 serotypes
- Contains phenol as a preservative
- No antibiotic or adjuvant
- Licensed for adults 50 years and older; children ≥ 2 years who are at increased risk
- Intramuscular or subcutaneous injection
Pneumococcal Conjugate Vaccines

- Non-live vaccine
- Purified capsular polysaccharide antigens linked to CRM197 protein
- No preservative or antibiotics
- Aluminum phosphate adjuvant
- Intramuscular injection
Vaccine Effectiveness of PPSV23

- 60%–70% effective against invasive disease caused by serotypes in the vaccine

- Reduced effectiveness in immunocompromised persons

- No consensus regarding the ability of PPSV23 to prevent non-bacteremic pneumococcal pneumonia.
Immunogenicity and Efficacy of PCV

- Highly immunogenic in infants and young children, including those with risk factors for invasive diseases

- PCV7 was 97% effective against invasive disease caused by vaccine serotypes (presumably PCV13 as well)

- Routine PCV7 and PCV13 in children shown to reduced pneumococcal carriage and transmission of vaccine serotypes lowering invasive disease incidence among unvaccinated persons of all ages
Knowledge Check

Which of the following is NOT a pneumococcal conjugate vaccine?

A. PCV13
B. PPSV23
C. PCV20
D. All of the above
Knowledge Check

- Which of the following is NOT a pneumococcal conjugate vaccine?

A. PCV13
B. PPSV23
C. PCV20
D. All of the above
Clinical Considerations
Pneumococcal Vaccination Schedule: Children and Adolescents

Recommendations for routine vaccination in children and adolescents (age 18 years and younger) are found in the **Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger**.

![Table 1: Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2022](image)

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Birth</th>
<th>1 mo</th>
<th>2 mo</th>
<th>4 mo</th>
<th>6 mo</th>
<th>12 mo</th>
<th>18 mo</th>
<th>16-18 mo</th>
<th>2-3 yr</th>
<th>4-6 yr</th>
<th>7-10 yr</th>
<th>11-12 yr</th>
<th>13-15 yr</th>
<th>16 yr</th>
<th>17-18 yr</th>
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</thead>
<tbody>
<tr>
<td>Hepatitis B (HepB)</td>
<td>1 dose</td>
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<td>Rotavirus (RV)</td>
<td>3 dose</td>
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<tr>
<td>Pneumococcal conjugate (PCV13)</td>
<td>2 dose</td>
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<tr>
<td>Inactivated poliovirus (IPV)</td>
<td>1 dose</td>
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<tr>
<td>Meningococcal A (MenA)</td>
<td>1 dose</td>
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<td>Meningococcal C (MenC)</td>
<td>1 dose</td>
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<td>Meningococcal Y (MenY)</td>
<td>1 dose</td>
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<tr>
<td>Haemophilus influenzae type b (Hib)</td>
<td>4 dose</td>
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<tr>
<td>Tetanus, diphtheria, and pertussis (TdP)</td>
<td>1 dose</td>
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<tr>
<td>Human papillomavirus (HPV)</td>
<td>1 dose</td>
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<tr>
<td>Meningococcal B (MenB)</td>
<td>1 dose</td>
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</tbody>
</table>

**Legend**:
- **Yellow**: range of recommended ages for all children
- **Green**: range of recommended ages for catch-up vaccination
- **Red**: range of recommended ages for certain high-risk groups
- **Gold**: recommended vaccinations can begin in this age group
- **Orange**: recommended vaccination based on shared clinical decision-making
- **No recommendations**: not applicable
PCV Recommendations for Children and Adolescents

- Can use either PCV13 or PCV15 interchangeably
- PCV20 not recommended
- Routine vaccination: age 2, 4, 6, booster at 12-15 months
- Catch-up vaccination through age 4 years for healthy children
- Risk-based vaccination for age 5–18 years
- Has completed series with PCV13: no additional PCV15
PCV Catch-up Vaccination for Children and Adolescents

- Catch up vaccination up to 5th birthday for healthy children
- Aged <24 months who have received ≥1 dose of PCV should complete the vaccination series.
- Fewer doses if series started at age 7 months or older
PCV Catch-up Vaccination for Children Aged 24–71 months

Age 24 – 71 months (2–5 years)

HEALTHY

Age 24- 59 months

Unvaccinated or any incomplete series: Give 1 dose

ANY RISK FACTOR

Age 24- 71 months

Unvaccinated OR incomplete <3 doses before age 24 months: Give 2 doses at least 8 weeks apart

3 doses before age 12 months WITH no booster: Give 1 dose
PCV Catch-up Vaccination for Children Aged 24–71 months

Age 24 – 71 months
(2–5 years)

HEALTHY

Age 24–59 months

Unvaccinated or any incomplete series: Give 1 dose

ANY RISK FACTOR

Age 24–71 months

Unvaccinated OR <3 doses before age 24 months: Give 2 doses at least 8 weeks apart

3 doses before age 12 months WITH no booster: Give 1 dose
PCV Catch-up Vaccination for Children Aged 24–71 months

Healthy

Age 24–59 months

Unvaccinated or any incomplete series: Give 1 dose

Any risk factor

Age 24–71 months

Unvaccinated OR incomplete <3 doses before age 24 months: Give 2 doses at least 8 weeks apart

3 doses before age 12 months WITH no booster: Give 1 dose
PCV Vaccination: Aged 6–18 years

- Risk-based recommendation

- Chronic heart disease, chronic lung disease, or diabetes mellitus
  - PCV not recommended

- Immunocompromising condition, cochlear implant, or cerebrospinal fluid leak
  - No previous PCV13 or PCV15: Give 1 dose of PCV13 or PCV15
    - regardless of whether the child has previously received PPSV23 or PCV7
Risk-based vaccination for age 2 years and older
PPSV23 Recommendations for Children and Adolescents

Give ALL recommended doses of PCV

≥ 8 weeks

Give a single dose of PPSV23

≥ 5 years

Immunocompromised
Give 2nd PPSV23 dose

Table 1: Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2022

These recommendations must be read with the notes that follow. For those who fall behind or start late, provide catch-up vaccination at the earliest opportunity as indicated by the green bars. To determine minimum intervals between doses, see the catch-up schedule (Table 2).
## Pneumococcal Vaccination Schedule: Children and Adolescents

<table>
<thead>
<tr>
<th>Risk group/Condition</th>
<th>PCV* for children aged &lt;6 yrs</th>
<th>PCV* for persons aged 6–18 yrs</th>
<th>PPSV23 for children aged ≥2 yrs</th>
<th>Single revaccination 5 yrs after first dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immunocompetent children</td>
<td>Recommended</td>
<td>Recommended</td>
<td>Recommended</td>
<td>Single revaccination 5 yrs after first dose</td>
</tr>
<tr>
<td>Chronic heart disease‡</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Chronic lung disease§</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Cerebrospinal fluid leak</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
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<td>Cochlear implant</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
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<tr>
<td>Children with immunocompromising conditions</td>
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<tr>
<td>Chronic renal failure or nephrotic syndrome</td>
<td>Y</td>
<td>Y</td>
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<td>Y</td>
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<tr>
<td>Congenital or acquired asplenia, or splenic dysfunction</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Congenital or acquired immunodeficiency§</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Diseases and conditions treated with immunosuppressive drugs or radiation therapy**</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>HIV infection</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>Sickle cell disease or other hemoglobinopathies</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>Solid organ transplant</td>
<td>Y</td>
<td>Y</td>
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</tbody>
</table>

**Abbreviations: N = no; PCV = pneumococcal conjugate vaccine; PCV13 = 13-valent PCV; PCV15 = 15-valent PCV; PPSV23 = 23-valent pneumococcal polysaccharide vaccine; Y = yes.

* Either PCV13 or PCV15 can be used.

† Recommendations are of particular importance for children with cyanotic congenital heart disease and cardiac failure.

§ Includes asthma if treated with high-dose oral corticosteroid therapy.

¶ Includes B-(humoral) or T-lymphocyte deficiency; complement deficiencies, particularly C1, C2, C3, and C4 deficiency; and phagocytic disorders (excluding chronic granulomatous disease).

** Including malignant neoplasms, leukemias, lymphomas, and Hodgkin disease.
PCV13 and PCV15 can be used interchangeably in children and adolescents aged 18 years and younger

A. True
B. False
Knowledge Check

- PCV13 and PCV15 can be used interchangeably in children and adolescents aged 18 years and younger?

A. True
B. False
Pneumococcal Vaccination Schedule: Adults

Recommendations for routine vaccination for adults (age 19 years and older) are found in the [Adult Immunization Schedule by Vaccine and Age Group | CDC]
Pneumococcal Vaccination Recommendations for Adults

- PCV15 or PCV20 recommended
  - PCV13 not recommended
- Routine vaccination: age 65 years and older
- Risk-based vaccination for age 19 – 64 years
Unvaccinated or unknown PCV status

- 1 dose of either PCV15 or PCV20
  - No preference

- If PCV15 is used, give 1 dose PPSV23 at least 1 year later
  - May consider at least 8 weeks if immunocompromising condition, cerebrospinal fluid leak, or cochlear implant
Pneumococcal Vaccination Recommendations for Adults: Unvaccinated

Unvaccinated or unknown PCV status

- 1 dose of either PCV15 or PCV20
  - No preference

- If PCV15 is used, give 1 dose PPSV23 at least 1 year later
  - May consider at least 8 weeks if immunocompromising condition, cerebrospinal fluid leak, or cochlear implant

### Table 1
Recommended Adult Immunization Schedule by Age Group, United States, 2022

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>19–26 years</th>
<th>27–49 years</th>
<th>50–64 years</th>
<th>≥65 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumococcal (PCV15, PCV20, PPSV23)</td>
<td>1 dose PCV15 followed by PPSV23 OR 1 dose PCV20 (see notes)</td>
<td>1 dose PCV15 followed by PPSV23 OR 1 dose PCV20</td>
<td></td>
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</tbody>
</table>
Pneumococcal Vaccination Recommendations for Adults: Vaccinated

Table 1  Recommended Adult Immunization Schedule by Age Group, United States, 2022

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>19–26 years</th>
<th>27–49 years</th>
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<td>1 dose PCV15 followed by PPSV23 OR 1 dose PCV20</td>
<td></td>
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</tr>
</tbody>
</table>

- **Previous PPSV23 only:** may give PCV15 or PCV20 at least 1 year later

- **Previous PCV13**
  - Complete recommended PPSV23 series
  - PPSV23 unavailable: 1 dose PCV20

**UPDATE COMING**
Pneumococcal Vaccination Recommendations for Adults: Vaccinated

Table 1 Recommended Adult Immunization Schedule by Age Group, United States, 2022

<table>
<thead>
<tr>
<th>Vaccine</th>
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<td>1 dose PCV15 followed by PPSV23 OR 1 dose PCV20 (see notes)</td>
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</tr>
</tbody>
</table>

- **Previous PPSV23 only**: may give PCV15 or PCV20 at least 1 year later

- **Previous PCV13**
  - Complete recommended PPSV23 series
  - PPSV23 unavailable: 1 dose PCV20

**UPDATE COMING**
Pneumococcal Vaccination Recommendations for Adults: Vaccinated

Table 1: Recommended Adult Immunization Schedule by Age Group, United States, 2022

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>19–26 years</th>
<th>27–49 years</th>
<th>50–64 years</th>
<th>≥65 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumococcal (PCV15, PCV20, PPSV23)</td>
<td></td>
<td>1 dose PCV15 followed by PPSV23 OR 1 dose PCV20 (see notes)</td>
<td></td>
<td>1 dose PCV15 followed by PPSV23 OR 1 dose PCV20</td>
</tr>
</tbody>
</table>

- Previous PPSV23 only: may give PCV15 or PCV20 at least 1 year later

- Previous PCV13
  - Complete recommended PPSV23 series
  - PPSV23 unavailable: 1 dose PCV20
Other Considerations for Pneumococcal Vaccines

- **Co-administration of vaccines**
  - PCV and PPSV23 should not be administered during the same clinic visit
    - Administer PCV first
  - PCV and MenACWY-D
    - HIV or asplenia: do not administer on same clinic day
    - Administer PCV first
    - MenACWY-D at least 4 weeks later

- **Planned procedures (e.g., splenectomy, cochlear implant, immunocompromising therapy)**
  - Completed PCV or PPSV23 at least 2 weeks before procedure
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Which of the following pneumococcal vaccine is recommended for use in persons aged 19 years and older with indications for pneumococcal vaccination?

A. PCV15  
B. PCV20  
C. PPSV23  
D. All of the above
Knowledge Check

Which of the following pneumococcal vaccine is recommended for use in persons aged 19 years and older with indications for pneumococcal vaccination?

A. PCV15
B. PCV20
C. PPSV23
D. All of the above
Adverse Reactions after PPSV23 Vaccination

- **Local Reactions**
  - Pain, erythema, and swelling

- **Systemic reactions**
  - Fatigue, headache, and generalized muscle pain
  - More frequent after 2\textsuperscript{nd} dose than 1\textsuperscript{st} dose in 65 years and older

- **Clinically important reactions (severe or serious)**
  - Rarely, anaphylactic reaction
Adverse Reactions after PCV Vaccination

- **Local Reactions**
  - Pain, tenderness, erythema, and swelling

- **Systemic reactions**
  - Fatigue, headache, decreased appetite, muscle pain, fever and irritability

- **Clinically important reactions (severe or serious)**
  - Rarely, anaphylactic reaction
# Contraindications and Precautions: PCV

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Contraindications</th>
<th>Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCV</td>
<td>• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component</td>
<td>• Moderate or severe acute illness with or without fever</td>
</tr>
<tr>
<td></td>
<td>• Severe allergic reaction (e.g., anaphylaxis) to any diphtheria-tetanol– containing vaccine or its component</td>
<td></td>
</tr>
<tr>
<td>PPSV23</td>
<td>• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component</td>
<td>• Moderate or severe acute illness with or without fever</td>
</tr>
</tbody>
</table>
Storage & Handling
Vaccine Storage and Handling

- Store PCV and PPSV23 vaccines in a refrigerator between 2°C–8°C (36°F–46°F)

- Store:
  - In the original packaging with the lids closed
  - In a clearly labeled bin and/or area of the storage unit—not next to each other

- Do not freeze the vaccine

Vaccine Label Examples (cdc.gov)
Pneumococcal Vaccination: Information for Healthcare Professionals

Pneumococcal vaccines help protect against some of the more than 100 serotypes of pneumococcal bacteria. Pneumococcal disease contributes to the U.S. burden of pneumonia, meningitis, bacteremia, sinusitis, and otitis media.

Pneumococcal Vaccine Recommendations

About Pneumococcal Vaccines

Storage and Handling for Pneumococcal Vaccines

Administering Pneumococcal Vaccines

Pneumococcal Vaccine Resources

You Call the Shots

You Call the Shots is an interactive, web-based immunization training course. It consists of a series of modules that discuss vaccine-preventable diseases and explain the latest recommendations for vaccine use. Each module provides learning opportunities, self-test practice questions, reference and resource materials, and an extensive glossary.

Pink Book

The "Pink Book" contains the most comprehensive information on routinely used vaccines and the
PneumoRecs VaxAdvisor

PneumoRecs VaxAdvisor (cdc.gov)

Download the App Today

Web Access Tool

PneumoRecs VaxAdvisor: Vaccine Provider App | CDC
# PCV Catch-up Vaccination for Children and Adolescents

## Catch-Up Guidance for Healthy Children 4 Months through 4 Years of Age

### Pneumococcal Conjugate Vaccine: PCV

The table below provides guidance for children whose vaccinations have been delayed. Start with the child's age and information on previous doses (previous doses must be documented and must meet minimum age requirements and minimum intervals between doses). Use this table in conjunction with table 2 of the Recommended Child and Adolescent Immunization Schedule for Ages 18 Years or Younger, found at [www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html](https://www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html).

<table>
<thead>
<tr>
<th>IF current age is</th>
<th>AND # of previous doses is</th>
<th>AND</th>
<th>THEN</th>
<th>Next dose due</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 or unknown</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 through 6 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>Give Dose 1 today</td>
<td>Give Dose 2 at least 4 weeks after Dose 1</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Give Dose 2 today</td>
<td>Give Dose 3 at least 4 weeks after Dose 1</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td>Give Dose 1 today</td>
</tr>
</tbody>
</table>

---

2021 Pneumococcal Conjugate Vaccine (PCV) Catch-up Guidance for Healthy Children 4 months through 4 years of Age (cdc.gov)
Pneumococcal Vaccine Timing for Adults

Make sure your patients are up to date with pneumococcal vaccination.

**CDC recommends pneumococcal vaccination for**

- Adults 65 years old and older
- Adults 19 through 64 years old with certain underlying medical conditions or other risk factors:
  - Alcoholism
  - Cerebrospinal fluid leak
  - Chronic heart/liver/lung disease
  - Chronic renal failure*
  - Cigarette smoking
  - Cochlear implant
  - Congenital or acquired asplenia*
  - Congenital or acquired immunodeficiencies*
  - Diabetes
  - Generalized malignancy*
  - HIV infection*
  - Hodgkin disease*
  - Iatrogenic immunosuppression*
  - Leukemia*
  - Lymphoma*
  - Multiple myeloma*
  - Nephrotic syndrome*
  - Sickle cell disease or other hemoglobinopathies*
  - Solid organ transplants*
  - * Considered an immunocompromising condition

**For those who have never received a pneumococcal vaccine or those with unknown vaccination history**

Administer one dose of PCV15 or PCV20.

If PCV20 is used, their pneumococcal vaccinations are complete.

**If PCV15 is used, follow with one dose of PPSV23.**

- The recommended interval is at least 1 year.
- The minimum interval is 8 weeks and can be considered in adults with an immunocompromising condition*, cochlear implant, or cerebrospinal fluid leak.
- Their pneumococcal vaccinations are complete.

**For those who previously received PPSV23 but who have not received any pneumococcal conjugate vaccine (e.g., PCV13, PCV15, PCV20)**

You may administer one dose of PCV15 or PCV20.

Regardless of which vaccine is used (PCV15 or PCV20):

- The minimum interval is at least 1 year.
- Their pneumococcal vaccinations are complete.
Pneumococcal Vaccination Resources

1. ACIP Pneumococcal Vaccine Recommendations | CDC
2. Adult Immunization Schedule by Vaccine and Age Group | CDC
3. Birth-18 Years Immunization Schedule | CDC
4. Pneumococcal Vaccination: For Providers | CDC
5. Pneumococcal Vaccination: Who and When to Vaccinate | CDC
6. Pneumococcal Vaccine Timing for Adults-April 1, 2022 (cdc.gov)
Continuing Education Information

- CE credit, go to: https://tceols.cdc.gov/
- Search course number: WD4564-101122
- CE credit expires: July 1, 2024
- CE instructions are available on the Pink Book Web-on-Demand Series web page
- Questions and additional help with the online CE system, e-mail CE@cdc.gov
E-mail Your Immunization Questions to Us

- NIPINFO@cdc.gov
Thank You From Atlanta!