

## Adult Pneumococcal Vaccination Recommendations

### Background<sup>1,2</sup>

*Streptococcus pneumoniae* is a leading cause of invasive disease, including bacteremia, meningitis, and pneumonia in the United States. It is estimated to be responsible for 4 million episodes of illness, 445,000 hospitalizations, and 22,000 deaths per year. Incidence of invasive disease ranges from 3.8 cases per 100,000 persons among adults aged 18-34 years to 36.4 cases per 100,000 persons among adults aged  $\geq 65$  years. Patients with high-risk immunocompromising medical conditions, such as hematologic malignancies and human immunodeficiency virus, have up to a 20-fold increased risk for invasive pneumococcal disease.

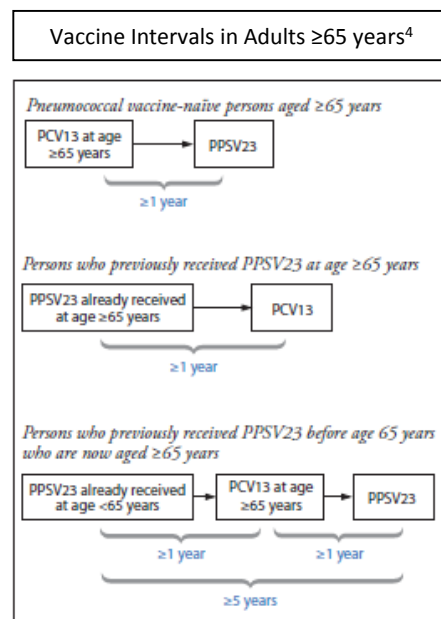
The Centers for Disease Control and Prevention (CDC) Advisory Committee on Immunization Practices (ACIP) currently recommends pneumococcal for all adults aged  $\geq 65$  years, as well as adults aged 19-64 years with immunocompromising conditions. Two pneumococcal vaccines are available, 23-valent pneumococcal polysaccharide vaccine (PPSV23) and 13-valent polysaccharide vaccine (PCV13). The recommendations below outline the preferred formulations and vaccination schedules according to the ACIP guidelines.

### Pneumococcal Vaccination for Adults Aged $\geq 65$ Years<sup>3,4</sup>

In 2010, ACIP recommended that all adults should be vaccinated with PPSV23 at age 65 years. In 2014, these recommendations were updated based on results from a randomized, placebo-controlled trial showing efficacy of PCV13 in preventing pneumonia in 85,000 adults aged  $\geq 65$  years. ACIP now recommends that both PCV13 and PPSV23 should be routinely administered to all adults aged  $\geq 65$  years. In addition, ACIP recently revised the recommended intervals for sequential use of PCV13 and PPSV23 in this patient population.

**Table 1. Recommendations for Adults Aged  $\geq 65$  Years**

Patient Type	Vaccines Indicated	Recommended Schedule
<b>Pneumococcal vaccine-naïve</b>	PCV13 (1 dose) PPSV23 (1 dose)	PCV13 first, followed by PPSV23 $\geq 1$ year later
<b>Prior vaccination with PPSV23</b> <i>Received PPSV23 at age <math>\geq 65</math> years</i>	PCV13 (1 dose)	PCV13 $\geq 1$ year after the last dose of PPSV23
----- <i>Received PPSV23 at age <math>&lt; 65</math> years</i>	PCV13 (1 dose) PPSV23 (1 dose)	PCV13 $\geq 1$ year after the last dose of PPSV23, followed by PPSV23 $\geq 1$ year after PCV13 and $\geq 5$ years after the last dose of PPSV23



### General information:

- PCV13 and PPSV23 should not be coadministered
- If PCV13 was given prior to age 65, an additional dose is not required
- If PPSV23 is given earlier than the recommended interval, the dose does not need to be repeated

## Pneumococcal Vaccination for Adults Aged 19-64 Years with Immunocompromising Conditions<sup>4,5</sup>

In 2012, ACIP recommended routine use of PCV13 for adults aged 19 and older with cerebrospinal fluid (CSF) leaks, cochlear implants, functional or anatomic asplenia, and immunocompromising conditions. Recommendations are stratified by risk group.

**Table 2. Recommendations for Adults Aged 19-64 with Immunocompromising Conditions**

Patient Type	Vaccines Indicated	Recommended Schedule
<b>Alcoholism, cigarette smoking, diabetes, chronic heart<sup>1</sup>, lung<sup>2</sup>, or liver disease<sup>3</sup>, long-term care/nursing home resident</b>	PPSV23 (1 dose)	PPSV23 only
<b>CSF leak or cochlear implants</b>	PCV13 (1 dose) PPSV23 (1 dose)	<i>Pneumococcal vaccine-naïve:</i> PCV13 first followed by PPSV23 ≥ 8 weeks later  <i>Prior vaccination with PPSV23:</i> PCV13 ≥ 1 year after the last dose of PPSV23
<b>Functional or anatomic asplenia</b> <i>Sickle cell disease and other hemoglobinopathies</i> <i>Congenital or acquired asplenia</i> <i>Splenic dysfunction</i> <i>Splenectomy</i>	PCV13 (1 dose) PPSV23 (2 doses)	<i>Pneumococcal vaccine-naïve:</i> PCV13 first followed by initial dose of PPSV23 ≥ 8 weeks later and second dose of PPSV23 ≥ 5 years after the first dose  <i>Prior vaccination with PPSV23:</i> PCV13 ≥ 1 year after the last dose of PPSV23  If an additional dose of PPSV23 is required, it should be given ≥ 8 weeks after PCV13 and ≥ 5 years after the last dose of PPSV23
<b>Immunocompromised</b> <i>Congenital or acquired immunodeficiency<sup>4</sup></i> <i>HIV infection</i> <i>Chronic renal failure</i> <i>Nephrotic syndrome</i> <i>Leukemia</i> <i>Lymphoma</i> <i>Hodgkin disease</i> <i>Generalized malignancy</i> <i>Iatrogenic immunosuppression</i> <i>Solid organ transplant</i> <i>Multiple myeloma</i>		

<sup>1</sup> Includes congestive heart failure and cardiomyopathies; excludes hypertension

<sup>2</sup> Includes chronic obstructive pulmonary disease, emphysema, and asthma

<sup>3</sup> Includes cirrhosis

<sup>4</sup> Includes B- or T-lymphocyte deficiency, complement deficiencies, and phagocytic disorders; excludes chronic granulomatous disease

<sup>5</sup> Includes diseases requiring treatment with immunosuppressive medications, including long-term system corticosteroids and radiation therapy

### General information:

- Prior doses should be counted for the recommendations above and do not need to be repeated
- No more than two doses of PPSV23 are recommended before age 65
- Administer pneumococcal vaccines at least 2 weeks before immunosuppressive therapy or an elective splenectomy

**References:**

1. Huang SS, Johnson KM, Ray GT, Wroe P, Lieu TA, Moore MR, et al. Healthcare utilization and cost of pneumococcal disease in the United States. *Vaccine* 2011; 29(18): 3398-412.
2. CDC. Active Bacterial Core surveillance report, Emerging Infections Program Network, *Streptococcus pneumoniae*, 2010. Atlanta, GA: US Department of Health and Human Services, CDC: 2011. Available at: <http://www.cdc.gov/abcs/reports-findings/survreports/spneu10-orig.html>
3. Tomczyk S, Bennett NM, Stoecker C, et al. Use of 13-valent pneumococcal conjugate vaccine and 23-valent pneumococcal polysaccharide vaccine among adults aged  $\geq 65$  years: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 2014;63(37):822-825.
4. Kobayashi M, Bennett NM, Gierke R, et al. Intervals between PCV13 and PPSV23 vaccines: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 2015;64(34):944-947.
5. Use of 13-valent pneumococcal conjugate vaccine and 23-valent pneumococcal polysaccharide vaccine for adults with immunocompromising conditions: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 2012;61(40):816-819.