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## Pneumococcal conjugate vaccine update

ACIP no longer recommends routine use of PCV13 in immunocompetent adults  $\geq 65$  years. Three simple statements summarize guidance on intervals to follow when administering both PCV13 and PPSV23.

Two pneumococcal vaccines are licensed for use in the United States: the 13-valent pneumococcal conjugate vaccine (PCV13 [Prevnar 13, Wyeth]) and the 23-valent pneumococcal polysaccharide vaccine (PPSV23 [Pneumovax, Merck]). The recommendations for using these vaccines in adults ages  $\geq 19$  years are arguably among the most complicated and confusing of all vaccine recommendations made by the Advisory Committee on Immunization Practices (ACIP).

In June 2019, things got even more complicated with ACIP's unusual decision to change the previous recommendation on the routine use of PCV13 in adults  $\geq 65$  years. The new recommendation states that PCV13 should be used in immunocompetent older adults only after individual clinical decision making. The recommendation for routine use of PPSV23 remains unchanged. This Practice Alert explains the reasoning behind this change and its practical implications.

### How we got to where we are now

Nearly 20 years ago, PCV was introduced into the child immunization schedule in the United States as a 7-valent vaccine (PCV7). In 2010, it was modified to include 13 antigens. And in 2012, the use of PCV13 was expanded to include adults with immunocompromising conditions.<sup>1</sup> In 2014, PCV13 was recommended as an addition to PPSV23 for adults  $\geq 65$  years.<sup>2</sup> However, with this recommenda-

tion, ACIP noted that the incidence of invasive pneumococcal disease in the elderly had been declining since the introduction of PCV7 use in children in the year 2000 (FIGURE 1<sup>3</sup>), presumably due to the decreased transmission of pneumococcal infections from children to older adults.

Because it was unclear in 2014 how much added benefit PCV13 would offer older adults, ACIP voted to restudy the issue after 4 years. At the June 2019 ACIP meeting, the results of an interim analysis were presented. ACIP concluded that routine use of PCV13 in immunocompetent adults  $\geq 65$  years adds little population-wide public health benefit given the vaccine's routine use among children and immunocompromised adults (FIGURE 2<sup>3</sup>).

ACIP had 3 options in formulating its recommendations.

- Recommend the vaccine for routine use universally or among designated high-risk groups.
- Do not recommend the vaccine.
- Recommend the vaccine only for specific patients after individualized clinical decision making.

The last option—the one ACIP decided on—applies when a safe and immunogenic vaccine has been approved by the Food and Drug Administration and may be beneficial for (or desired by) individuals even though it does not meet criteria for routine universal or targeted use.

## Practical issues

ACIP recommendations for the use of PCV13 and PPSV23 in adults vary according to 3 categories of health status: immunocompetent patients with underlying medical conditions; those with functional or anatomic asplenia; and immunocompromised individuals (TABLE<sup>1</sup>). Those in the latter 2 categories should receive both PCV13 and PPSV23 and be revaccinated once with PPSV23 before the age of 65 (given 5 years after the first dose). For immunocompetent individuals with underlying medical conditions, only those with cerebral spinal fluid leaks or cochlear implants should receive both PCV13 and PPSV23, although revaccination with PPSV23 before the age of 65 is not recommended.

Prior to the recent change, ACIP recommended both PCV13 and PPSV23 for those  $\geq 65$  years. Now, PCV13 is not recommended routinely for immunocompetent adults  $\geq 65$  years; however, individuals in this age group who have chronic underlying medical conditions may receive PCV13 after consulting with their physician. PPSV23 is still recommended for all adults in this age group. Recommendations for those with immunocompromising conditions are also unchanged.

**3 sentences summarize change in vaccine intervals.** Another source of confusion is the recommended intervals in administering the 2 vaccines when both are indicated. The current guidance has been simplified and can be summarized in 3 sentences<sup>4</sup>:

- When both PCV13 and PPSV23 are indicated, give PCV13 before PPSV23.
- For patients  $\geq 65$  years, separate the vaccines by 12 months or more—regardless of which vaccine is administered first.
- For patients who are 19 to 64 years of age, separate the vaccines by  $\geq 8$  weeks.

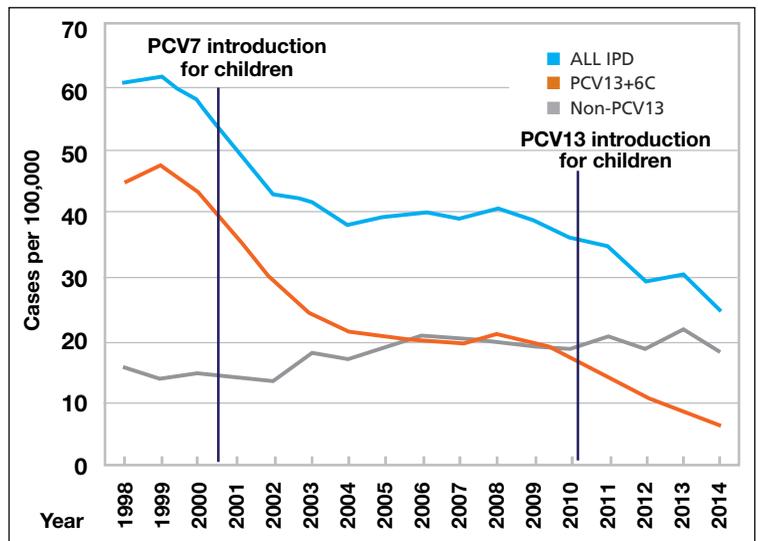
Advice on repeating the PPSV23 vaccine also can be summarized in 3 sentences<sup>1</sup>:

- When a repeat PPSV23 dose is indicated, give it at least 5 years after the first dose.
- Administer no more than 2 doses before age 65.
- For an individual older than 65, only 1 dose should be administered and it

FIGURE 1

## Childhood vaccination with PCV13 starting in 2010 accounted for continued reductions in IPD among adults $\geq 65$ years<sup>3</sup>

Following the introduction of PCV13 vaccination of children in 2010, there was a marked reduction in PCV13-type IPD among adults  $\geq 65$  years.

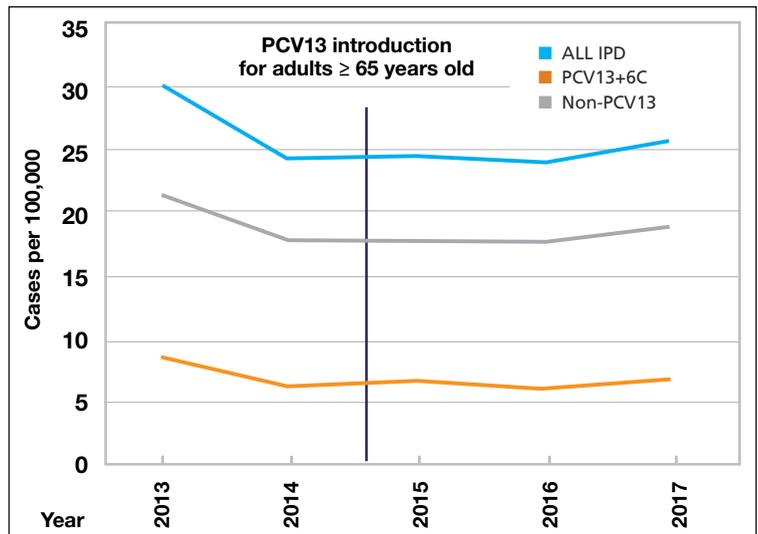


IPD, invasive pneumococcal disease; PCV, pneumococcal conjugate vaccine.

FIGURE 2

## Routine vaccination of immunocompetent adults $\geq 65$ years with PCV13 has had no impact on overall IPD since 2014<sup>3</sup>

Since 2014, the incidence of invasive pneumococcal disease has not changed with routine PCV13 vaccination of adults  $\geq 65$  years. The burden of disease is now due to non-PCV13 serotypes.



IPD, invasive pneumococcal disease; PCV, pneumococcal conjugate vaccine.

TABLE

## Indications for administering pneumococcal vaccines to adults ≥ 19 years<sup>1</sup>

Risk group	Underlying medical condition	PCV13	PPSV23 <sup>a</sup>	
		Recommended	Recommended	Revaccination 5 years after first dose
Immunocompetent individuals	Chronic heart disease <sup>b</sup>		√	
	Chronic lung disease <sup>c</sup>		√	
	Diabetes mellitus		√	
	Cerebrospinal fluid leak	√	√	
	Cochlear implant	√	√	
	Alcoholism		√	
	Chronic liver disease, cirrhosis		√	
	Cigarette smoking		√	
Individuals with functional or anatomic asplenia	Sickle cell disease/other hemaglobinopathy	√	√	√
	Congenital or acquired asplenia	√	√	√
Immunocompromised individuals	Congenital or acquired immunodeficiency <sup>d</sup>	√	√	√
	Human immunodeficiency virus infection	√	√	√
	Chronic renal failure	√	√	√
	Nephrotic syndrome	√	√	√
	Leukemia	√	√	√
	Lymphoma	√	√	√
	Hodgkin's disease	√	√	√
	Generalized malignancy	√	√	√
	Iatrogenic immunosuppression <sup>e</sup>	√	√	√
	Solid organ transplant	√	√	√
Multiple myeloma	√	√	√	

<sup>a</sup> All adults ages ≥ 65 years should receive a dose of PPSV23, regardless of history of vaccination with pneumococcal vaccine.

<sup>b</sup> Including congestive heart failure and cardiomyopathies; excluding hypertension.

<sup>c</sup> Including chronic obstructive pulmonary disease, emphysema, and asthma.

<sup>d</sup> Includes B- (humoral) or T-lymphocyte deficiency, complement deficiencies (particularly C1, C2, C3, and C4 deficiencies), and phagocytic disorders (excluding chronic granulomatous disease).

<sup>e</sup> Diseases requiring treatment with immunosuppressive drugs, including long-term systemic corticosteroids and radiation therapy.

should be done at least 5 years after a previous PPSV23 dose. **JFP**

### References

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