

Pneumococcal Vaccines: Q&A

IAC Answers Your Questions

For complete information on CDC's recommendations for the use of pneumococcal vaccines, go to www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/pneumo.html

Experts from the Immunization Action Coalition (IAC) answer your questions about pneumococcal polysaccharide (PPSV23) and pneumococcal conjugate (PCV13) vaccines.

What changed in November 2019 regarding ACIP pneumococcal conjugate vaccine (PCV13, Prevnar, Pfizer) recommendations for adults age 65 years and older?

According to the updated Advisory Committee on Immunization Practices (ACIP) recommendations published November 22, 2019, PCV13 vaccination is no longer routinely recommended for all adults 65 years and older. Instead, shared clinical decision-making for PCV13 use is recommended for adults age 65 years and older who do not have an immunocompromising condition, cerebrospinal fluid (CSF) leak, or cochlear implant. PCV13 continues to be recommended for all adults with immunocompromising conditions, cerebrospinal fluid (CSF) leak, or cochlear implant.

The 2019 PCV13 recommendations update ACIP's 2014 statement which recommended routine use of pneumococcal conjugate vaccine (PCV13) in series with pneumococcal polysaccharide vaccine (PPSV23) for all adults 65 years and older. The incidence of PCV13-type disease has been reduced to historically low levels among adults age 65 years and older through indirect effects from pediatric PCV13 use. Because of this changing epidemiology, ACIP updated its recommendations on PCV13 vaccine scheduling in older adults and incorporated the concept of shared clinical decision-making, as summarized in the question and answer below.

Pneumococcal polysaccharide vaccine (PPSV23, Pneumovax, Merck) continues to be recommended for all adults age 65 years and older.

For more information, the most recent ACIP pneumococcal vaccine recommendations can be accessed at www.cdc.gov/mmwr/volumes/68/wr/pdfs/mm6846a5-H.pdf.

What is CDC's guidance for shared clinical decision-making for PCV13 vaccination of adults age 65 years and older?

When patients and vaccine providers engage in shared clinical decision-making for PCV13 use to determine whether PCV13 is right for the specific individual age 65 years and older, considerations include the individual patient's risk for exposure to PCV13 serotypes and the risk for pneumococcal disease for that person as a result of underlying medical conditions. These considerations are detailed below.

- PCV13 is a safe and effective vaccine for older adults. The risk for PCV13-type disease among adults age 65 years and older is much lower than it was before the pediatric program was implemented. The remaining risk is a function of each individual patient's risk for exposure to PCV13 serotypes and the influence of underlying medical conditions on the patient's risk for developing pneumococcal disease if exposure occurs.
- The following adults age 65 years and older are potentially at increased risk for exposure to PCV13 serotypes and might attain higher than average benefit from PCV13 vaccination, and providers/practices caring for many patients in these groups may consider regularly offering PCV13 to their patients age 65 years and older who have not previously received PCV13:
 - ◀ Persons residing in nursing homes or other long-term care facilities
 - ◀ Persons residing in settings with low pediatric PCV13 uptake
 - ◀ Persons traveling to settings with no pediatric PCV13 program
- Incidence of PCV13-type invasive pneumococcal disease and pneumonia increases with increasing age and is higher among persons with chronic heart, lung, or liver disease, diabetes, or alcoholism, and those who smoke

cigarettes or who have more than one chronic medical condition. Although indirect effects from pediatric PCV13 use were documented for these groups of adults and were comparable to those observed among healthy adults, the residual PCV13-type disease burden remains higher in these groups. Providers and practices caring for patients with these medical conditions may consider offering PCV13 to such patients who are age 65 years and older and who have not previously received PCV13.

If PCV13 is given to an adult age 65 years or older based on shared clinical decision-making, when should PCV13 be given?

If PCV13 is recommended for an adult age 65 years or older based on shared clinical decision-making, PCV13 should be administered first followed by PPSV23 one year later.

If PCV13 is given to adults of any age with immunocompromising conditions, CSF leaks, or cochlear implants, then PCV13 should be given first followed by PPSV23 at least 8 weeks later.

PCV13 and PPSV23 should not be given at the same time.

What does CDC recommend regarding PPSV23 vaccination of adults age 65 years and older?

CDC continues to recommend that all adults age 65 years and older routinely receive 1 dose of PPSV23. PPSV23 contains 12 serotypes in common with PCV13 and an additional 11 serotypes for which there are no indirect effects from PCV13 use in children. The additional 11 serotypes account for 32%–37% of invasive pneumococcal disease among adults age 65 years and older. Adults age 65 years and older who received one or more doses of PPSV23 before age 65 years should receive one additional dose of PPSV23 at age 65 years or older, at least 5 years after the previous PPSV23 dose.

Which high-risk adults are recommended to receive a dose of PCV13?

Pneumococcal conjugate vaccine (PCV13, Prevnar 13, Pfizer) is recommended for all adults without a prior PCV13 vaccination who have a high-risk condition, including immunocompromising conditions, cerebrospinal fluid (CSF) leak, and cochlear implant.

Immunocompromising conditions include chronic renal failure, nephrotic syndrome, immunodeficiency, iatrogenic immunosuppression, generalized malignancy, human immunodeficiency virus, Hodgkin disease, leukemia, lymphoma, multiple myeloma, solid organ transplants, congenital or acquired asplenia, sickle cell disease, or other hemoglobinopathies.

PCV13 can be given to adults age 65 years and older without these high-risk conditions based on shared clinical decision-making. Considerations for PCV13 vaccination of adults age 65 years and older without these high-risk conditions include any potential increased risk for exposure to PCV13 serotypes, such as residing in a nursing home or other long-term care facility, residing in settings with low PCV13 vaccination rates among children, or traveling to areas with no PCV13 vaccination coverage, and their risk of getting pneumococcal disease as a result of underlying medical conditions, such as chronic heart, lung or renal disease, diabetes, alcoholism, or smoking cigarettes.

For complete information on CDC's recommendations for the use of pneumococcal vaccines, go to www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/pneumo.html.

How serious is pneumococcal disease?

Pneumococcal disease is a serious disease that causes much sickness and death.

An estimated 31,000 cases and 3,590 deaths from invasive pneumococcal diseases (IPD-bacteremia and meningitis) occurred in the United States in 2017. In 2017 an estimated 13,200 cases of IPD occurred among adults age 65 years and older.¹ Children younger than age 5 and adults older than 65 have the highest incidence of serious disease.

Case-fatality rates are highest for pneumo-

coccal meningitis and bacteremia, and the highest mortality occurs among the elderly and patients who have underlying medical conditions. Despite appropriate antimicrobial therapy and intensive medical care, the overall case-fatality rate for pneumococcal bacteremia is about 20% among adults. Among elderly patients, the rate may be as high as 60%.²

Who is recommended to receive pneumococcal polysaccharide vaccine (PPSV23)?

PPSV23 (Pneumovax, Merck) is recommended for anyone who meets any of the criteria below:

- Age 65 years and older
- Age 2 through 64 years with any of the following conditions
 1. cigarette smokers age 19 years and older
 2. alcoholism
 3. chronic liver disease, including cirrhosis
 4. chronic heart disease, excluding hypertension (e.g., congestive heart failure, cardiomyopathies)
 5. chronic lung disease (including COPD and emphysema, and for adults age 19 years and older, asthma)
 6. diabetes mellitus
 7. candidate for or recipient of cochlear implant
 8. cerebrospinal fluid (CSF) leak
 9. functional or anatomic asplenia (e.g., splenectomy or congenital asplenia)
 10. sickle cell disease and other hemoglobinopathies
 11. congenital or acquired immunodeficiencies (e.g., B- (humoral) or T-lymphocyte deficiency, complement deficiencies (particularly C1, C2, C3, and C4), and phagocytic disorders (excluding chronic granulomatous disease)
 12. generalized malignancy
 13. HIV infection
 14. Hodgkin disease, leukemia, lymphoma, and multiple myeloma
 15. immunosuppression due to treatment with medication, including long-term systemic corticosteroids, and radiation therapy
 16. solid organ transplantation; for bone marrow transplantation, see www.cdc.gov/vaccines/hcp/acip-recs/general-recs/immunocompetence.html
 17. chronic renal failure or nephrotic syndrome

Could you briefly summarize the revaccination recommendations for PPSV23?

Children and adults younger than age 65 who are at highest risk for serious pneumococcal infection (see categories 9 through 17 in previous answer) should get 2 doses of PPSV23 5 years apart, with a third dose after they turn age 65 (if at least 5 years have passed since the last dose).

Patients with risk factors 1 through 9 above should get one dose of PPSV23 before age 65 and then a second dose after they turn 65 years (if at least 5 years have passed since the last dose).

Patients with no risk factors should get 1 dose at age 65. Thus, depending on risk and age at vaccination, a person age 65 or older may have received 1, 2, or 3 doses of PPSV23.

What are the recommendations for routinely administering PCV13 to children younger than age 6 years?

Give infants a primary series of pneumococcal conjugate vaccine (PCV13, Prevnar 13, Pfizer) at age 2, 4, and 6 months. Boost at age 12 through 15 months. For catch-up vaccination, give PCV13 to healthy children through age 59 months.

Unvaccinated children age 7 through 11 months should receive two doses of vaccine at least 4 weeks apart, followed by a booster dose at age 12–15 months.

Unvaccinated children age 12 through 23 months should receive two doses of vaccine, at least 8 weeks apart. Previously unvaccinated healthy children age 24 through 59 months should receive a single dose of PCV13.

Unvaccinated children age 24 through 71 months with certain chronic medical conditions should receive 2 doses of PCV13, separated by at least 8 weeks. These conditions include chronic heart and lung disease, diabetes, CSF leak, cochlear implant, sickle cell disease and other hemoglobinopathies, functional or anatomic asplenia, HIV infection, or immunocompromising conditions due to illnesses or treatment.

Which underlying medical conditions indicate that a child age 6 through 18 years should receive PCV13?

A single dose of PCV13 should be given to children 6 - 18 years old who have not received PCV13 before and have anatomic or functional asplenia (including sickle cell disease), immunocompromising conditions such as HIV-infection, cochlear implant, or CSF leaks. Routine use of PCV13 is not recommended for healthy children 5 years of age or older.

When elective splenectomy, immunocompromising therapy, or cochlear implant placement is being planned, PCV13 and/or PPSV23 vaccination should be completed at least 2 weeks before surgery or initiation of therapy.

What dosing intervals should be observed when giving PCV13 and PPSV23 to patients (children and adults) who are recommended to receive both vaccines?

Give PCV13 before PPSV23 if possible. PCV13 and PPSV23 should not be given at the same visit. For children, if the child has already received PPSV23, wait 8 weeks before giving PCV13.

For people age 65 years and older with no prior pneumococcal vaccination who do not have a high risk condition, but a decision is made, based on shared clinical decision-making, to give PCV13, give PCV13 followed by PPSV23 12 months later.

For adults at highest risk of pneumococcal

disease (immunocompromised, CSF leak, or cochlear implant), give PCV13 followed by PPSV23 at least 8 weeks later. For adults, with other high risk conditions (e.g., chronic heart, lung, or liver disease, diabetes, smoking, or alcoholism), give PPSV23 at age 19–64 years followed by an additional PPSV23 dose at age 65 years (at least 5 years after the first PPSV23 dose).

For adults who have already received PPSV23 and for whom PCV13 is recommended, wait 12 months before giving PCV13.

If patients who are in a recommended risk group for PPSV23 or PCV13 aren't sure if they have already received these vaccines, should healthcare providers vaccinate them?

Yes. If patients do not have a documented vaccination history and their records are not readily obtainable, you should administer the recommended doses. Extra doses will not harm the patient.

We gave PCV13 then PPSV23 8 weeks later to a 66-year-old patient who is newly diagnosed with a medical condition that places him at increased risk for pneumococcal disease and its complications. Should we give him a second dose of PPSV23 in 5 years because of his underlying medical condition?

No. People who are first vaccinated with PPSV23 at age 65 years or older should receive only 1 dose, regardless of their underlying medical condition.

When should I vaccinate a child or adult who is planning to have either a cochlear implant or elective splenectomy?

If possible, administer the appropriate vaccine at least 2 weeks prior to the splenectomy or cochlear implant so that the person planning to have the procedure has antibody to pneumococcus at the time of the surgery. If the procedure is done on an emergency basis, vaccinate as soon as possible according to the routine schedule. Administer a dose of PPSV23 to all patients no sooner than 8 weeks (minimum interval) from the previous dose of PCV13.

If a patient has had laboratory-confirmed pneumococcal pneumonia, does he or she still need to be vaccinated with PCV13 and/or PPSV23?

Yes. More than 90 known serotypes of pneumococcus exist (23 serotypes are in PPSV23 and 13 serotypes are in PCV13). Infection with one serotype does not necessarily produce immunity to other serotypes. As a result, patients who are candidates for vaccination should be vaccinated even if they have had one or more episodes of invasive pneumococcal disease.

REFERENCES

1. CDC. *Active Bacterial Core Surveillance (ABCS) Emerging Infections Program Network, Streptococcus pneumoniae, 2017*. Available at <https://www.cdc.gov/abcs/reports-findings/surveillance-reports/spneu17.pdf>
2. CDC. *Epidemiology and Prevention of Vaccine-Preventable Diseases, 13th edition*. Available at: <https://www.cdc.gov/vaccines/pubs/pinkbook/pneumo.html>

For more Q&As about pneumococcal vaccines, visit www.immunize.org/askexperts/experts_pneumococcal_vaccines.asp.

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