Pneumococcal Vaccination of Adults: Polysaccharide or Conjugate?

A 23-valent polysaccharide vaccine (PPSV23; Pneumovax 23 – Merck) is the only pneumococcal vaccine approved for use in adults. A more immunogenic conjugate vaccine containing 7 pneumococcal serotypes (PCV7; Prevnar – Wyeth) is generally used only in children <5 years old, but apparently has reduced the incidence of pneumococcal disease due to these serotypes in adults as well, presumably as a result of herd immunity. Some authors have suggested that perhaps PPSV23 should be withdrawn.1

POLYSACCHARIDE VACCINE — PPSV23 contains the capsular polysaccharide antigens of 23 pneumococcal serotypes. It has reduced the risk of invasive pneumococcal disease (meningitis or bacteremic pneumonia), but not mortality, in immunocompetent older adults.2 PPSV23 has not been shown to reduce the risk of invasive pneumococcal disease (IPD) in immunocompromised patients.3

The US Advisory Committee on Immunization Practices (ACIP) recommends a one-time dose of PPSV23 for all adults ≥65 years old.4 Persons who received an initial dose before age 65 should be revaccinated once at or after age 65, at least 5 years following the initial vaccination. PPSV23 is also recommended for adults who smoke or have asthma and for patients ≥2 years old with chronic illnesses or immunosuppression.

CONJUGATE VACCINE — PCV7 contains the capsular polysaccharide antigens of 7 pneumococcal serotypes conjugated to a protein carrier, mutant diphtheria toxin, which increases immunogenicity. Annual rates of IPD in children <5 years declined by 77% between 1999, the year before PCV7 became part of routine infant immunizations, and 2005.5 PCV7 does not contain the 19A serotype, which is currently the most prevalent in invasive pneumococcal disease in children and the second most common in older adults.6 All of the PCV7 serotypes and 19A are present in PPSV23. A 13-valent conjugate vaccine (PCV13) that includes the PCV7 serotypes and 19A is under investigation in adults and children.7

PCV7 in Adults – Clinical trials of PCV7 in adults have used immunogenicity rather than pneumococcal disease as their endpoint. A clinical trial comparing vaccination with PPSV23 to vaccination with PCV7 in pneumococcal vaccine-naïve adults ≥70 years old found higher immune responses in patients who received PCV7 vaccine.8 In another study, the immune response to twice the standard pediatric dose of PCV7 in adults 70-79 years old vaccinated with PPSV23 at least 5 years earlier, was greater than it was with PPSV23 revaccination.9

CONCLUSION — Compared to the pneumococcal polysaccharide vaccine (PPSV23; Pneumovax 23), the currently available pneumococcal conjugate vaccine (PCV7, Prevnar) has the advantage of greater immunogenicity, but the disadvantages of a narrower spectrum of pneumococcal serotypes and, in adults, the absence of clinical efficacy data. Until the results of studies with a conjugate vaccine for adults containing additional pneumococcal serotypes, including 19A, become available, there is no good reason to stop using PPSV23.

8. A de Roux et al. Comparison of pneumococcal conjugate polysaccharide and free polysaccharide vaccines in elderly adults: conju-