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On Drugs and Therapeutics

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Polysaccharide or Conjugate?** p 47

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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 Some authors have suggested that perhaps PPSV23 should be withdrawn.¹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. □

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