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Vaccination with pneumococcal conjugate vaccine before 12 months of age significantly reduces the incidence of both acute and recurrent otitis media.

Q / Does pneumococcal conjugate vaccine prevent otitis media?

A / YES, if the pneumococcal conjugate vaccine (PCV) series is given before 12 months of age. Vaccination before 12 months is associated with a statistically significant reduction in the incidence of both acute (AOM) and recurrent (ROM) otitis media (strength of recommendation [SOR]: **A**, a systematic review of ran-

domized controlled trials [RCTs] and a large retrospective cohort trial). The benefit disappears if the series is started after 12 months (SOR: **B**, a systematic review of RCTs with inconsistent results).

PCV reduces tympanostomy tube placement for ROM (SOR: **A**, a large RCT and retrospective cohort trials).

Evidence summary

A Cochrane review of 7 RCTs, with a total of 46,885 children, examined the effect of pneumococcal vaccine on the incidence of otitis media.¹ The authors didn't pool the results because of large heterogeneity among the studies. Only 2 trials used the licensed 7-valent PCV Prevnar; both enrolled infants vaccinated according to the routine schedule before 12 months of age.

The largest study (37,686 children followed to 42 months of age) showed a 7.8% reduction in the number of office visits for otitis media after pneumococcal vaccination (95% CI, 5.4%-10.1%).² The incidence of ROM—defined as at least 3 episodes within 6 months or at least 4 episodes within 1 year—decreased 9% (95% CI, 4%-14%) among vaccine recipients.² The study also demonstrated a 24% decrease in the need for tympanostomy tubes (95% CI, 12%-35%).² The other 7-valent PCV trial (1662 children) showed a 6% risk reduction in AOM (95% CI, -4% to 16%) in the vaccinated group.¹

A retrospective cohort study in New York and Tennessee that enrolled 176,000 children

vaccinated according to the recommended schedule starting at 2 months of age found reductions in ROM of 28% (95% CI, 11%-33%) for New York's vaccinated cohort and 17% (95% CI, 6%-19%) for the Tennessee cohort. ROM was defined as at least 3 episodes within 6 months or at least 4 episodes within 1 year. The study also showed a 23% decrease in tympanostomy tube placement in New York (95% CI, 1%-35%) and a 16% decrease in Tennessee (95% CI, 3%-21%).³

A simplified vaccination schedule linked to fewer cases of otitis media

A single-blinded prospective cohort study of 1571 children examined the effectiveness of a simplified PCV-7 schedule. Children vaccinated with the licensed 7-valent PCV at 3, 5, and 11 months of age showed a 17% reduction in AOM (95% CI, 2%-39%) compared with unvaccinated controls.⁴

Vaccination starting at 12 months shows mixed results

Results from 3 trials that vaccinated children older than 1 year were mixed.¹ An analysis

of 264 healthy 12- to 35-month-olds given a 9-valent PCV found a 17% reduction in AOM (95% CI, -2% to 33%). However, in 2 other trials, of 74 and 383 children, the vaccine didn't decrease the incidence of AOM.¹

Children in these 2 trials were 1 to 7 years of age and all had had at least 2 episodes of otitis media in the year before enrollment. Both trials employed 2 doses of the licensed 7-valent PCV in children younger than 2 years and 1 dose of the 7-valent vaccine followed by a dose of the 23-valent vaccine in children older than 2 years.¹

Recommendations

A clinical practice guideline issued jointly by the American Academy of Pediatrics and American Academy of Family Physicians recognizes the benefit of PCV vaccination for preventing AOM.⁵ Although preventing AOM is not the primary indication, PCV vaccination at 2, 4, 6, and 12 to 15 months of age is part of the routine childhood immunization series recommended by the Advisory Committee on Immunization Practices.⁶ **JFP**

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