Decline in Frequent Otitis Media Tied to PCV7

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After routine administration of the seven-valent pneumococcal conjugate vaccine began in mid-2000, the frequency of otitis media and pressure-equalizing tube insertions among children in Tennessee and New York born between 2000 and 2001 decreased significantly, compared with children born between 1998 and 1999, results from a large birth cohort analysis showed.

The findings "are particularly encouraging in light of [seven-valent pneumococcal conjugate vaccine (PCV7)] shortages," wrote the researchers led by Dr. Katherine A. Poehling of the department of pediatrics at Wake Forest University Medical Center, Winston-Salem, N.C.

"Furthermore, these reductions in frequent otitis media and PETs [pressure-equalizing tubes] are higher than that seen in randomized, controlled trials and may have important implications on the cost-effectiveness analyses for PCV7," the authors stated.

Dr. Poehling and her associates reviewed the records of 150,122 children enrolled in Tennessee's managed care program, TennCare, and 26,409 children enrolled in three commercial managed care organizations in the Rochester, N.Y., area since birth.

They focused on four birth cohorts: children born between July 1 and June 30, 1998-1999, 1999-2000, 2000-2001, and 2001-2002. For each cohort, they estimated the cumulative proportion of children who developed frequent otitis media or had pressure-equalizing tubes inserted (Pediatrics 2007;119:707-15).

National Immunization Survey data from Tennessee and New York were used to estimate the number of children in the four birth cohorts who were vaccinated by 2 years of age.

The researchers reported that the proportion of children who received at least three doses of the PCV7 vaccine increased from 0% in the 1998-1999 birth cohort to about 75% in the 2000-2001 birth cohort.

Cases of frequent otitis media and the need for insertion of pressure-equalizing tubes remained stable in New York but increased in Tennessee.

By age 2 years, 29% of children in Tennessee and New York who were born in 2000-2001 developed frequent otitis media and 6% had pressure-equalizing tubes inserted.

When the researchers compared the 2000-2001 birth cohort with the 1998-1999 birth cohort, they found that the frequency of otitis media in Tennessee and New York declined by 17% and 28%, respectively, while pressure-equalizing tube insertions declined by 16% and 23%, respectively.

When they compared the 2000-2001 birth cohort with the 2001-2002 birth cohort, they observed that the cases of frequent otitis media and the need for insertion of pressure-equalizing tubes remained stable in New York but increased in Tennessee. Reasons for this could be multifactorial.

"The increase in laboratory-confirmed pneumococcal disease from nonvaccine serotypes from the pre-PCV7 to post-PCV7 era has been reported for invasive disease and in one study on otitis media," the researchers wrote.

"Temporal changes in the children who are enrolled and disenrolled from insurance plans may have contributed to this discrepancy."

Dr. Poehling and her associates acknowledged certain limitations of the study, including the possibility that other factors, "such as the encouragement of the judicious use of antibiotics, may have influenced physicians' diagnostic patterns for otitis media. Furthermore, administrative data claims incompletely capture individual vaccinations and the PCV7 status of the elderly population is not known."

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