

## **Decline in Invasive Pneumococcal Disease after the Introduction of Protein-Polysaccharide Conjugate Vaccine**

**Whitney C.G. et al, for the Active Bacterial Core Surveillance of the Emerging Infections Program Network N Engl J Med 2003;348/1737-46**

The authors of this paper (13 in all) examined data from the Active Bacterial Core Surveillance of the Centres for Disease Control and Prevention in order to determine changes in the burden of invasive disease caused by *Streptococcus pneumoniae* in the United States after the introduction in 2000 of a 7-valent protein-polysaccharide conjugate vaccine for use in young children. To assess changes in disease rates after the introduction of vaccination they calculated the numbers of cases in a surveillance population of 16.0 million spread across seven States; 2.7% of the population was under two years of age and a further 4.1% were between two and four years. Chi-square and Fisher's exact tests were used to compare the proportions of disease before and after vaccination.

The rate of invasive pneumococcal disease in the surveillance population was 29% lower in 2001 than the mean rate in 1998 and 1999. The greatest decline (69%) was seen in children under two years of age ( $P < 0.001$ ), but a decline in disease rate was also seen in those for whom the vaccine is not recommended; the rate of disease among persons 20 through 39 years of age was 32% lower in 2001 ( $P < 0.001$ ). Within surveillance sites, there was a correlation between the magnitudes of decline in these two age groups suggesting that there may be a decrease in transmission from children to adults. Children are a reservoir for pneumococci and contact within the household is a known risk factor for invasive disease in adults. The rate of disease cause by strains non-susceptible to penicillin was also significantly lower in 2001 than in 1999 (35%,  $P < 0.001$ ).

The collection and analysis of data reported in this paper is very thorough and reading the complete article is recommended. Conclusions to be drawn may be that preventing pneumococcal disease in young children by vaccination also reduces the rate of disease in non-vaccinated adults, as well as providing a potential tool for reducing disease caused by penicillin-resistant strains of the organism.

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