Vaccinating Children Decreases Pneumonia Rates in HIV-Positive Adults

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Vaccinating HIV-negative children against pneumonia leads directly to reduced rates of invasive pneumococcal disease (IPD) in HIV-positive adults, according to a study published online July 27 in AIDS.

Despite significant improvements in health and mortality since combination antiretroviral (ARV) therapy was introduced in the late 1990s, rates of bacterial pneumonia remain high among people with HIV. In fact, studies show that the incidence of IPD may be 324-fold higher in some groups of people with HIV than in the general public. A pneumococcal vaccine is available for adults—called the 23-valent polysaccharide pneumococcal vaccine (PPV)—and though it is recommended for all people with HIV, it doesn't work as well in HIV-positive people, particularly those with low CD4 counts, as it does in HIV-negative adults.

A different pneumococcal vaccine for HIV-negative children—the 7-valent pneumococcal conjugate vaccine (PCV7)—was approved and went into wide use in 2000. As expected, IPD rates in children quickly fell after the vaccine was introduced. Studies in 2003 also found that lower levels of pneumococcal bacteria circulating among children reduced pneumonia in adults as well. Early reports suggested this was also true in HIV-positive adults

To determine whether this early finding has been sustained over time, Adam Cohen, MD, MPH—from the National Center for Immunization and Respiratory Diseases at the Centers for Disease Control and Prevention (CDC) in Atlanta—and his colleagues analyzed data on IPD in seven cities in the United States between January 1998 and December 2007.

Cohen and his colleagues found 13,812 IPD cases among all 18- to 64-year-olds in the seven surveillance regions between 1998 and 2007. Of these, 3,236 (23.4 percent) occurred in HIV-positive people with and without AIDS. Just over 1,300 occurred in people with an AIDS diagnosis, accounting for roughly 10 percent of the total cases.

While the rate of new IPD cases remained nearly 40 times higher in people with HIV compared with their HIV-negative counterparts, mortality rates were only slightly higher among younger HIV-positive people than in HIV-negative people. In adults older than 35, the mortality rate was actually higher in HIV-negative individuals than in those living with HIV.

What’s more, compared with the period before PCV7 was introduced, the rate of IPD decreased by 25 percent through 2007. When Cohen’s team looked only at strains of pneumonia covered by the PCV7, the IPD rates actually decreased by 88 percent. Rates increased, however, with strains not covered by the PCV7 vaccine.

“[This] study reports encouraging and sustained declines in IPD among HIV-infected adults in the [United States] seven years after routine pneumococcal vaccination in children began,” the authors stated.

“Despite these large reductions in IPD among HIV-infected adults, IPD still causes substantial morbidity and mortality among HIV-infected individuals, especially black adults in whom the burden of both IPD and HIV is high,” they continued. “Further research should include evaluating indirect effects of childhood [pneumonia vaccines] on adults with HIV infection in settings with high prevalence of HIV and testing direct effects of future [adult] pneumococcal vaccines in adults with HIV infection.”

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