Influence of Childhood Pneumococcal Conjugate Vaccines on Invasive Pneumococcal Disease in Adults With Underlying Comorbidities in Calgary, Alberta (2000–2013)

Jason L. Cabaj, Alberto Nettel-Aguirre, Judy MacDonald, et al.

Clin Infect Dis. (2016) 62 (12): 1521-1526. doi: 10.1093/cid/ciw175

Abstract

Background. Pneumococcal conjugate vaccine (PCV) was introduced into Alberta, Canada's routine childhood immunization programs in 2002 (7-valent [PCV7]) and 2010 (13-valent [PCV13]). We assessed the effect of these programs on the epidemiology of invasive pneumococcal disease (IPD) to determine if PCV-associated indirect protection was relatively reduced in adults with underlying comorbidities.

Methods. Demographic and clinical data were collected by a prospective, population-based surveillance system in Calgary, Alberta, Canada, from January 2000 to December 2013. An indirect cohort study design was used to assess for changes in the proportion of IPD cases with underlying comorbidities.

Results. There were 1598 overall and 1346 adult IPD cases from 1 January 2000 to 31 December 2013. Overall IPD incidence decreased 33% (age 0–5 months), 86% (6–23 months), 67% (2–4 years), 26% (5–17 years), 22% (18–64 years), 36% (65–84 years), and 42% (≥85 years) from the prevaccine (January 2000–July 2002) to the post-PCV13 (July 2010–December 2013) period. Over the same timeframe, PCV7 serotype disease incidence declined to ≤1 case per 100 000 persons in all age groups. Neither the proportion of adult cases with immunocompetent comorbidities (relative risk ratio [RRR], 0.93; 95% confidence interval [CI], .62–1.40) nor immunocompromising comorbidities (RRR, 0.99; 95% CI, .61–1.61) differed between the pre-PCV period and post-PCV era.

Conclusions. Childhood PCV programs have provided considerable benefit, with substantial declines in overall and vaccine-serotype IPD in vaccinated children and in unvaccinated persons. Conjugate vaccine–associated indirect protection for adults with comorbidities was similar to that for healthy adults.