

Epidemiology of Invasive Pneumococcal Disease in Taiwan, 2008-2013

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Abstract

The pneumococcal polysaccharide vaccine (PPV) vaccination program for elderly has implemented in Taiwan since October 2007, followed by pneumococcal conjugate vaccine (PCV) vaccination program for high-risk children <5 years old, beginning from July 2009. In this study, the domestic invasive pneumococcal disease (IPD) incidence, case-fatality rate, clinical syndromes, underlying disease cases, recurrent IPD and change of serotypes between 2008-2013 are illustrated, and the current strategies of IPD control are further discussed.

There were 4,439 identified IPD cases during these six years. Overall annual incidence was 3.2 cases per 100,000 population, and the highest incidence was in 2-4 years age group (20.4 per 100,000 population). The average case fatality rate (CFR) was 18.2%, and the CFR of cases in ≥ 75 years age group was 35.5%.

Cases with underlying disease accounted for 35.9%, and the most common disease was malignancy (12.7%). Pneumonia was the most common clinical symptoms (61.0%) in IPD cases, followed by sepsis (47.9%). About 20% of the cases were complicated by pneumonia and sepsis. In addition, there were 39 recurrent IPD cases (0.9%), with median age of 58 years, of which 72% had underlying disease, and 30% were re-infected by pneumococcus with the same serotypes.

19A was the most prevalent serotype in IPD cases < 5 years old (accounting for 39.5%). Dominant serotypes in ≥ 65 years age groups were 14, 23F and 3 (totally accounted for 48.8%). It is worth noting that there have been significant increases in the rate of serotype 15 (15B was not included) since 2012/2013, and serotype 15 was not covered by any PCVs. In 2013, for example, coverage rates of 7-valent conjugated pneumococcal vaccine (PCV7) and 13-valent conjugated pneumococcal vaccine (PCV13) were 21.4% and 79.5% in < 5 years age group. Coverage rate of 10-valent conjugated pneumococcal vaccine (PCV10) was consistent with that of PCV7 in < 5 years age group. In addition, the incidence of serotypes covered by PCV7/PCV10 in < 5 years age group declined from 11.06 per 100,000 population in 2008 to 2.54 in 2013. The incidence of PCV13 serotypes dropped from 14.53 to 9.44, but non-PCV13 serotypes increased from 0.77 to 1.73.

To protect people from IPD, surveillance of domestic IPD epidemiology and changes of serotypes and antimicrobial resistance in *Streptococcus pneumoniae* should be continued for assessing the effectiveness of pneumococcal vaccines and revising the prevention policies timely.

Keywords: Invasive pneumococcal disease, pneumococcal polysaccharide vaccine, pneumococcal conjugate vaccine, recurrent