

1095. Invasive Pneumococcal Disease in Children with Underlying Conditions Has Higher Case Fatality and Unique Serotype Distribution

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Background. Despite the success of pneumococcal conjugate vaccine (PCV), children with underlying conditions remain at increased risk for IPD. We evaluated the serotype distributions and outcomes of IPD in children with selected underlying conditions.

Methods. Cases of IPD in Massachusetts (MA) children <18 years of age were identified via enhanced surveillance of *Streptococcus pneumoniae* (SP) isolates from sterile body sites. All SP isolates are submitted to the MA Department of Public Health and parents/physicians are interviewed for demographic and clinical data. Isolates are confirmed as SP, serotyped with Quellung reaction. Underlying conditions were classified as at-risk or high-risk for IPD per the 2012 Report of the Committee on Infectious

Diseases. Logistic regression was used to compare IPD outcomes in children with and without comorbidities.

Results. Between April 2002 and April 2014, 1052 IPD cases were reported in MA children <18 years old; 22.1% had at least one comorbidity. Immunocompromising conditions (32.1%) and chronic respiratory diseases (22.5%) were most common. Children with comorbidities were older at the time of IPD diagnosis (median 54 months vs 23 months, $p < 0.001$), had higher hospitalization rates [OR 1.8 (95%CI 1.2-2.8)] and case fatality rates [OR 4.3 (95%CI 1.3-14.8)] compared to children without known underlying conditions. Bacteremic pneumonia was observed more often in children with asthma (OR 3.2, 95% CI 1.5-6.9). Children with comorbidities were more likely to have IPD caused by serotypes with lower invasive capacity (i.e., 6C, 23A, 11A, 35B, 19F, 15A and 15BC) compared to children with no known underlying condition [45/142 (31.7%) vs 91/498 (18.3%), respectively] ($p < 0.001$).

One fifth of IPD cases among Massachusetts children during the last decade had an underlying comorbidity; ~1/3 had an immunocompromising condition and ~1/5 had a chronic respiratory disease. Cases with underlying conditions were older, and had higher hospitalization and mortality rates compared to kids with no comorbidity. Children with comorbidities were more likely to have disease caused by serotypes with lesser invasive capacity. Further research is needed, specifically to evaluate additional strategies for prevention of IPD in children with comorbid conditions.

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