

## **Streptococcus pneumoniae, Invasive, in Children Less than 5 Years of Age**

Agent: *Streptococcus pneumoniae* (bacteria)

Mode of Transmission: Person-to-person transmission via respiratory droplets or direct contact with respiratory secretions from persons carrying the bacteria in their upper respiratory tract.

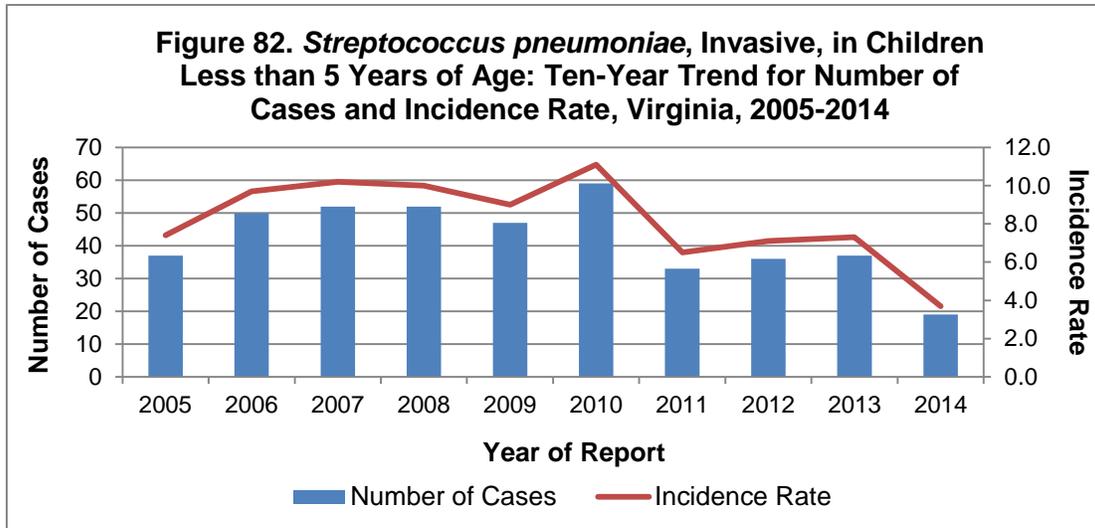
Signs/Symptoms: Invasive pneumococcal disease (IPD) may affect the blood, lung, and lining of the brain and spinal cord and may cause fever, chills, and irritability. Headache, stiff neck, confusion, sleepiness, vomiting, and poor feeding can occur with meningitis.

Prevention: Routine immunization with pneumococcal conjugate vaccine as a 4-dose series is recommended for infants at 2, 4, 6, and 12 to 15 months of age. IPD can be hard to treat because of antibiotic resistance, thus making prevention through vaccination even more important. The 7-valent conjugate vaccine was first licensed in the U.S. in 2000 and a 13-valent vaccine was licensed in 2012. Following the introduction of the 13-valent vaccine, clients that completed the immunization series were recommended to receive a booster dose for protection against the additional strains. Clients two years of age and over with certain high-risk conditions are also recommended to receive one dose of a 23-valent polysaccharide vaccine following series completion with pneumococcal conjugate vaccine. Vaccination with 13-valent followed by 23-valent polysaccharide vaccine is also recommended for adults aged 65 years or older and other persons at increased risk for infection.

Other Important Information: There are more than 90 known serotypes of *S. pneumoniae*. Although all serotypes may cause serious disease, a relatively limited number of serotypes cause the majority of invasive infections. From 1998 (two years before implementation of routine immunization of infants with 7-valent pneumococcal conjugate vaccine) through 2007, incidence of vaccine-type invasive pneumococcal infections decreased by 99% in children less than 5 years, and the incidence for all pneumococcal infections decreased by 76%. Today *S. pneumoniae* continues to be the leading cause of bacterial meningitis among children less than 5 years of age in the United States.

<b><i>Streptococcus pneumoniae</i>, Invasive, in Children Less than 5 Years of Age: 2014 Data Summary</b>	
Number of Cases:	19
5-Year Average Number of Cases:	42.4
% Change from 5-Year Average:	-55%
Incidence Rate per 100,000:	3.7

Nineteen cases of invasive *S. pneumoniae* infection in children less than five years of age were reported in Virginia in 2014. This represents a large decrease from the 37 cases reported in 2013 (Figure 82). This decline is similar to that seen from 2010 to 2011 and could be indicative of a cyclical trend with the disease. The 19 cases also represent a 55% decrease when compared to the five-year average of 42.4 cases per year.



Incidence rates were highest in persons less than one year of age (5.8 cases per 100,000) compared to persons one to four years of age (3.2 cases per 100,000). Incidence among males was higher than females, 4.6 and 2.8 cases per 100,000 respectively. Race was reported for 74% of cases. Among those with a known race, incidence was highest in the “other” race population (4.7 cases per 100,000) when compared to the black population (4.1 cases per 100,000) and the white population (2.0 cases per 100,000). Incidence rates have been adjusted to reflect populations based on children less than five years of age.

Incidence rates varied across the health planning regions ranging from 1.4 cases per 100,000 to 6.2 cases per 100,000, with the highest incidence being reported from the central region. Both the central and northern regions had incidence rates greater than the state incidence rate of 3.7 cases per 100,000. A cold-weather seasonal trend was observed for case onset with 42% of cases reported in the first quarter of the year. One death was reported in 2014 in a child confirmed with invasive pneumococcal disease, but it is unknown if *S. pneumoniae* was the direct cause of death. Thirteen (68%) of the 19 cases were hospitalized.