

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

**Agent:** *Streptococcus pneumoniae* (bacteria)

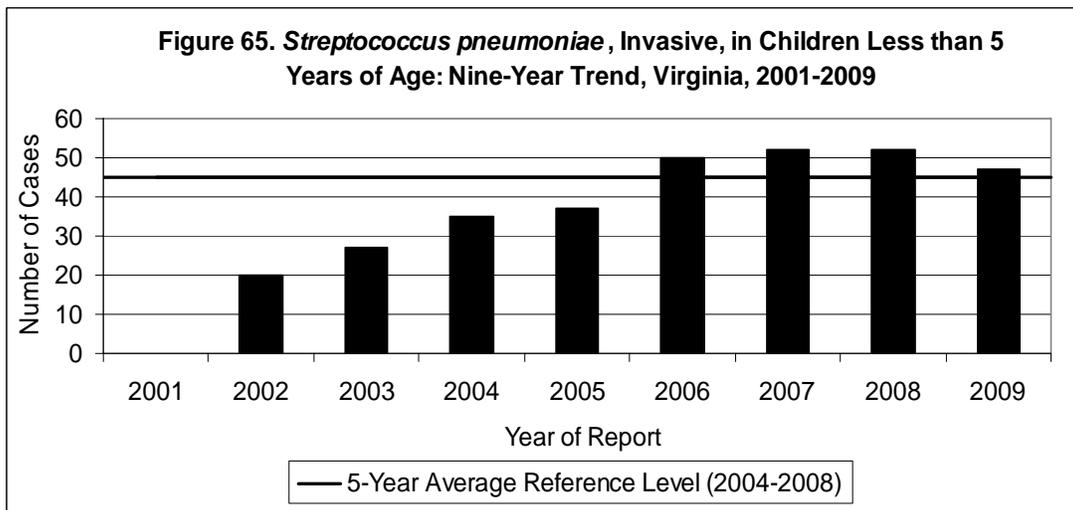
**Mode of Transmission:** Person-to-person transmission via respiratory droplets or direct contact with respiratory secretions from persons carrying the bacteria in their upper respiratory tract.

**Signs/Symptoms:** Invasive infections 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 for infants at 2, 4, 6, and 12 to 15 months of age. Pneumococcal infections can be hard to treat because of antibiotic resistance, thus making prevention through vaccination even more important. Vaccine is also recommended for adults aged 65 years or older and other persons at increased risk for infection.

**Other Important Information:** With the decline of invasive *Haemophilus influenzae* infections, *S. pneumoniae* has become the leading cause of bacterial meningitis among children less than 5 years of age in the United States.

Forty-seven cases of invasive *S. pneumoniae* infection in children less than 5 years of age were reported in Virginia during 2009. This represents a 10% decrease from the 52 cases reported in 2008, but is similar to the five-year average of 45.2 cases per year (Figure 65).



Forty-three percent of the reported cases occurred in infants aged less than one year, resulting in an incidence rate of 19.1 per 100,000. The incidence rate in children aged 1 to 4 years was substantially lower than that of infants with 6.5 cases per 100,000. Among the 83% of cases with information about race, the incidence was higher in the black population (13.8 per 100,000) than in the white and “other” populations (6.3 and 1.8 per 100,000, respectively). The rate of *S. pneumoniae* infection among males (11.6 per 100,000) was almost twice as high as the rate of infection in females (5.9 per 100,000). This reflects national data that show males are more likely than females to contract pneumococcal infections. Although cases were reported from all regions of the state, the highest incidence was seen in the northwest region

(14.1 per 100,000). The rates in other regions ranged from 4.9 to 12.1 per 100,000. Cases occurred throughout the year, with 32% of cases having onset during the first quarter, which is consistent with the seasonal pattern of pneumococcal infections. Among cases reported in 2009, one death was attributed to *S. pneumoniae* infection in an infant who was too young for the administration of vaccine. Of the 40 cases where hospitalization status was reported, 72% were hospitalized, highlighting the serious nature of the disease.