

Haemophilus influenzae Infection, Invasive

Agent: *Haemophilus influenzae* (bacteria)

Mode of Transmission: Person-to-person transmission by inhalation of respiratory droplets or direct contact with nose and throat secretions from an infected person or an asymptomatic carrier.

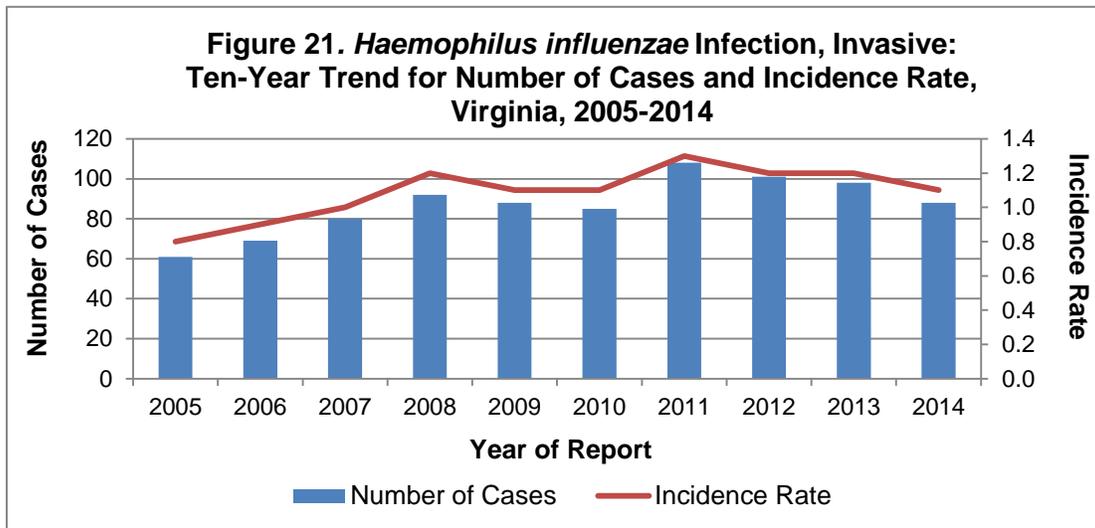
Signs/Symptoms: Inflammation of the lining of the brain and spinal cord (i.e., meningitis), inflammation of the epiglottis which may lead to blockage of upper airway and death, pneumonia, deep skin infection, arthritis, or bloodstream infection.

Prevention: Vaccination with a 3-4 dose series (depending on manufacturer) of conjugate *Haemophilus influenzae* type b (Hib) vaccine beginning at 2 months of age and concluding with a booster at 12 to 15 months of age. If vaccination is delayed, children 7 months of age and older may not require a full series of three or four doses. The total number of doses a child needs to complete the series depends on the child's age at the time the first dose is administered.

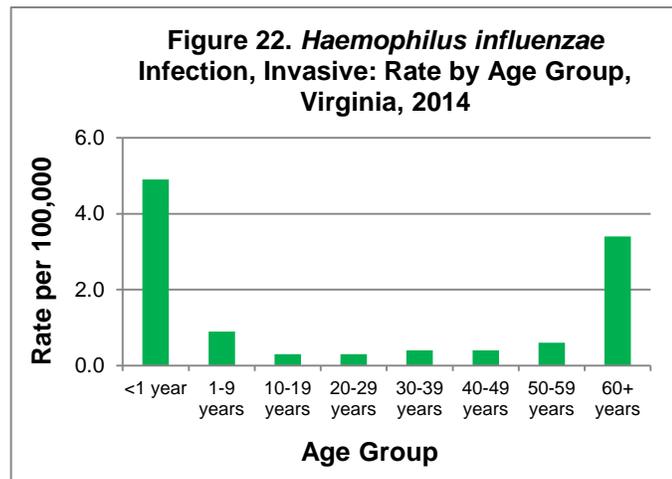
Other Important Information: *Haemophilus influenzae* is categorized into two major groupings: encapsulated and non-encapsulated. Encapsulated strains are more virulent and produce a polysaccharide capsule which is further characterized into six antigenically distinct serotypes (types a through f). Nontypable serotype results indicate a non-encapsulated strain. Vaccine is currently only available for one serotype, type b. In the pre-Hib vaccine era, type b organisms accounted for 95% of all strains that caused invasive disease. Since the licensure of conjugate Hib vaccine in the late 1980s, the incidence of invasive Hib disease in the U.S. has declined by more than 99% compared with the pre-vaccine era.

<i>Haemophilus influenzae</i> Infection, Invasive: 2014 Data Summary	
Number of Cases:	88
5-Year Average Number of Cases:	96.0
% Change from 5-Year Average:	-8%
Incidence Rate per 100,000:	1.1

The 88 cases of invasive *H. influenzae* reported in 2014 represent a 10% decrease from the 98 cases reported in 2013, and an 8% decrease from the five-year average of 96.0 cases per year (Figure 21). The statewide incidence rate remained relatively stable from 1.2 in 2013 to 1.1 per 100,000 in 2014.



Among the various age groups, incidence rates were highest for the youngest and oldest ages (Figure 22). The less than one year age group had the highest incidence rate with 4.9 cases per 100,000, followed by the 60 year and older age group with 3.4 cases per 100,000. The remaining age groups had rates ranging from 0.3 to 0.9 cases per 100,000.



Race was provided for 80% of cases. Among cases with a known race, the white population had a slightly higher incidence rate (1.0 per 100,000) when compared to the incidence in the black population (0.6 per 100,000) and the “other” race population (0.3 per 100,000). Incidence rates were similar between females and males (1.2 and 0.9 per 100,000, respectively). Geographically, the incidence rate was highest in the southwest region (2.0 per 100,000), followed by the northwest region (1.4 per 100,000). The remaining regions had rates ranging from 0.5 to 1.0 per 100,000. Incidence rates by locality can be seen in the map below. Cases occurred throughout the year with little seasonal variability, and no outbreaks of *H. influenzae* were reported in 2014. Nine deaths attributed to invasive *H. influenzae* infections were reported during 2014. Sixty-seven percent of deaths occurred among those older than 60 years of age. One death occurred among the 10-19 year age group. This patient had received the Hib vaccine; however, the serotype was identified as nontypable.

Serotyping results were available for 82 (93%) of 88 cases. Non-encapsulated strains (60%) were the most commonly identified. Identified encapsulated strains included type f (26%), type e (11%), type b (2%), and type a (1%). The two reported type b cases occurred in the 10-19 and 60 year and older age groups, with the younger individual being age-appropriately vaccinated with Hib vaccine.

Haemophilus influenzae Infection, Invasive Incidence Rate by Locality, Virginia, 2014

