

## **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.

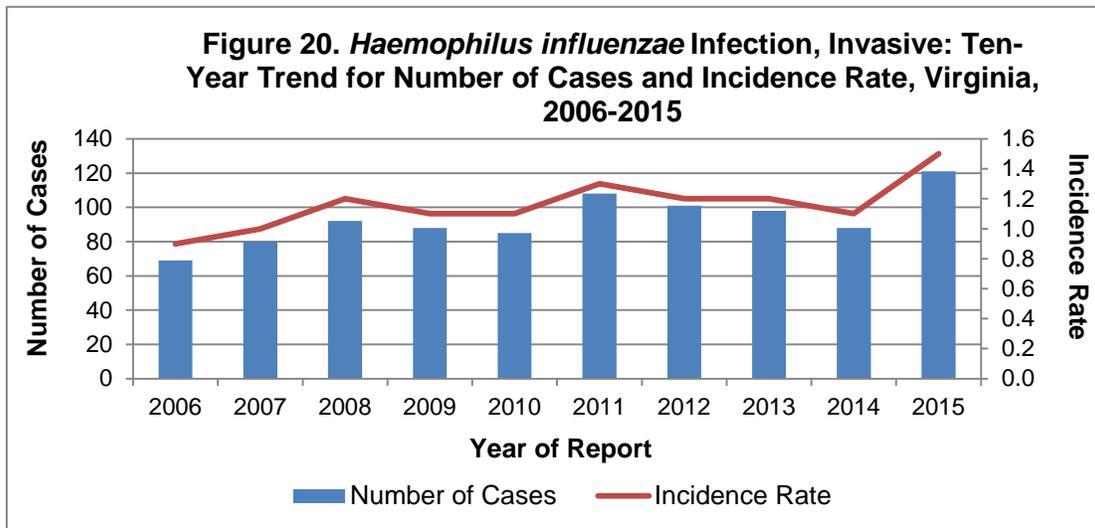
Signs/Symptoms: Inflammation of the lining of the brain and spinal cord (i.e., meningitis), inflammation of the epiglottis which may lead to blockage of upper airway and death, pneumonia, deep skin infection, arthritis, or bloodstream infection.

Prevention: Vaccination with a 3 or 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.

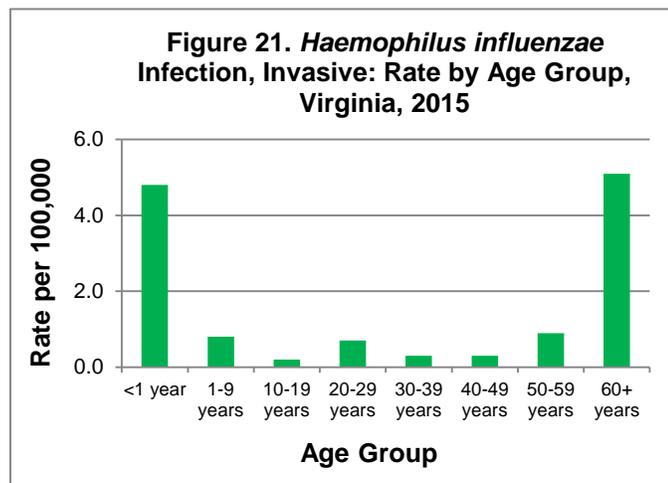
Other Important Information: *Haemophilus influenzae* is categorized into two major groupings: encapsulated and non-encapsulated. Encapsulated strains are more virulent and produce a polysaccharide capsule which is further characterized into six antigenically distinct serotypes (types a through f). Nontypable 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.

<b><i>Haemophilus influenzae</i> Infection, Invasive: 2015 Data Summary</b>	
Number of Cases:	121
5-Year Average Number of Cases:	96.0
% Change from 5-Year Average:	+26%
Incidence Rate per 100,000:	1.5

In 2015, 121 cases of invasive *H. influenzae* were reported, representing a 26% increase from the five-year average of 96.0 cases per year. This increase in cases may reflect a cyclical trend as depicted by the increase in cases in 2008 and 2011 illustrated in Figure 20. While there was an increase in reported cases, the incidence rate increased only slightly from 1.1 cases per 100,000 in 2014 to 1.5 cases per 100,000 in 2015.



The oldest and youngest age groups had the highest incidence rates as depicted in Figure 21. Incidence for those 60 years and older was 5.1 cases per 100,000, followed by those less than one year of age (4.8 cases per 100,000). The incidence rate for all other age groups was less than 1 case per 100,000.



Race was reported for 85% of cases. Of cases with race information provided, incidence was highest for the “other” race population with 1.4 cases per 100,000, followed closely by the white population (1.3 cases per 100,000) and the black population (0.9 cases per 100,000). Sex was reported for all cases and there was no notable difference in incidence rates for males compared to females (1.5 and 1.4 cases per 100,000, respectively).

Cases occurred throughout the year with a noticeable increase (36%) during the fourth quarter. The southwest region had the highest incidence rate with 2.8 cases per 100,000 followed by the eastern region with 1.6 cases per 100,000. Incidence rates for all other regions were below the state incidence rate of 1.5 and ranged from 0.6 to 1.4 cases per 100,000. Incidence rates by locality can be seen in the map below.

No outbreaks of *H. influenzae* were reported in 2015. The number of deaths attributed to *H. influenzae* more than doubled from nine deaths in 2014 to 24 deaths in 2015. Of these deaths, two-thirds (16 cases) were identified as nontypable. A majority of the deaths (91%) were in those age 60 years and older. Two deaths were reported in other age groups; one in the 20-29 year age group and one in the 50-59 year age group.

Serotyping was reported for 113 (93%) of 121 cases. Of those with serotyping results, non-encapsulated strains were most common (81%). Type f was the most common encapsulated strain identified (12%). Other encapsulated strains were e (3%), b (2%), a (1%) and d (1%). Only two cases were identified as type b. Of these, one patient did not receive a fourth dose of Hib vaccine due to a vaccine shortage and the other patient was age appropriately vaccinated.

### *Haemophilus influenzae* Infection, Invasive Incidence Rate by Locality, Virginia, 2015

