

## Haemophilus influenzae type B (Hib Disease)

*Haemophilus influenzae* (*H. influenzae* sometimes called "H. flu") type B (Hib) is a bacterium that can cause serious infections. When *H. influenzae* type b causes invasive disease, such as meningitis or blood stream infection, this is known as Hib disease. Hib can also cause epiglottitis which is a dangerous inflammation of the upper airway that can progress quickly and cause suffocation and death. Hib is preventable through vaccination.

### Transmission

Hib disease is transmitted **person to person** through contact with secretions or droplets from the nose and throat of an infected person. Also, individuals can be infected and potentially spread disease without having any symptoms themselves.

Risk factors for Hib disease include:

- **Age:** most severe cases occur in children under five years old. Hib bacteria has properties that make it difficult for immature immune systems to keep under control.
- **Immune status:** individuals who are under-vaccinated or unvaccinated are more at risk for Hib disease. People with medical conditions such as sickle cell disease or asplenia (no spleen) are at increased risk.

### Symptoms

Symptoms depend upon the part of the body affected. Pneumonia may cause a cough that produces mucus and rapid breathing. Invasive disease such as bloodstream infection and meningitis typically present with fever, fatigue, and nausea. Meningitis symptoms will likely include headache, stiff neck, and fever. Babies with meningitis may exhibit different symptoms, including irritability, vomiting, poor feeding, and abnormal reflexes. Individuals may experience more than one site of infection at once (bloodstream infection as well as pneumonia).

### Diagnosis

H. flu infections must be diagnosed in a health care setting. Providers will often test a sample from the infection site for the bacteria. Not all infections are positively identified as H. flu infection before treating symptoms of bacterial infection. In most cases, bacteria are not typed at the initial laboratory diagnosis. Invasive infections are referred for typing since they are more likely to be type B.

## Treatment

Because they are caused by bacteria, H. flu infections can be treated with antibiotics. The type of antibiotic used will be based upon the site of infection, severity of symptoms and age of the patient. Other medications and supportive care may be needed to manage symptoms. Hib disease is typically severe and may require hospitalization.

## Prevention

The American Academy of Pediatrics (AAP) and the Advisory Committee on Immunization Practices (ACIP) recommend that Hib conjugate vaccine be given to all children between 2 months and 5 years of age. Depending on the type of vaccine, children should receive three doses at 2, 4 and 6 months of age or two doses at 2 and 4 months of age. A booster dose should be given at 12 to 15 months of age, regardless of what type of Hib vaccine was previously given. All children attending North Dakota early childhood facilities are required to have documentation of Hib vaccination.

It is also recommended that rifampin prophylaxis (antibiotics) be given to all members of the household of a patient with Hib disease if there are children younger than 4 in the household who have not been immunized. In child care facilities, when two or more cases occur within 60 days and unimmunized or incompletely immunized children are in attendance, antibiotics for attendees and personnel should be considered. The NDHHS monitors the state for Hib cases and will help make recommendations for antibiotic prophylaxis.

## Exclusion Guidance

Individuals with Hib infection should be excluded from school or child care until 24 hours of antibiotic treatment has been completed. Exposed children and staff do not need to be excluded (quarantined) if they have no other reasons for exclusion.

For additional information about Hib, contact the North Dakota Department of Health and Human Services' Public Health Division at 800.472.2180.

**This disease is a reportable condition. As mandated by North Dakota law, any incidence of this disease in humans shall be reported to the North Dakota Department of Health and Human Services.**

### Resources:

1. Centers for Disease Control and Prevention. (2022, March 4). *CDC Haemophilus influenzae Disease (Including Hib)*. Centers for Disease Control and Prevention. Retrieved May 4, 2023, from <https://www.cdc.gov/hi-disease/>
2. Kimberlin, D. W., Barnett, E. D., Lynfield, R., Sawyer, M. H. (2021) Red Book: 2021-2024 Report of the Committee on Infectious Diseases. 32<sup>nd</sup> ed. American Academy of Pediatrics. [Management and Prevention of Infectious Diseases; *Haemophilus influenzae* Infections] [pages 345-354].

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