

Haemophilus Influenzae B Invasive Disease



Case Definition

Confirmed Case: Clinically compatible illness with identification of *Haemophilus influenzae* or its antigen from any normally sterile site.* This protocol does not apply to non-typeable or encapsulated non-type b organisms.

Clinical Case: Buccal cellulitis or epiglottitis in a child less than five years of age with no other causative organism isolated.

* false positive tests can occur on occasion with latex agglutination tests within 21 days of immunization.

Reporting Requirements

- All specimens positive for *Haemophilus influenzae* B arising from persons with invasive disease must be reported by laboratory.
- All cases must be reported by attending health care professional.

Clinical Presentation/Natural History

This organism can cause meningitis, epiglottitis, pneumonia, septic arthritis, bacteremia, cellulitis, pericarditis, empyema and osteomyelitis. Other serogroups rarely cause meningitis. Meningitis is usually associated with a bacteremia. The onset can be subacute or (usually) acute; symptoms include fever, vomiting, lethargy and meningeal irritation, with bulging fontanelle in infants or stiff neck and back in older children. Progressive stupor or coma is common.

Etiology

Haemophilus influenzae B bacterium

Epidemiology

Reservoir and Source: Humans

Transmission: By droplet infection and direct/indirect contact with discharges from nose and throat during the infectious period. The portal of entry is most commonly the nasopharynx.

Occurrence:

General: Worldwide. Most prevalent in the two-month to three-year old age group; unusual over five years of age. In developing countries, peak incidence is in children less than six months of age; in the United States in children six to 12 months of age. Secondary cases may occur in families and day care centres. In the era before widespread use of *Haemophilus influenzae* B conjugate vaccines, this was the most common bacterial meningitis in children two months to five years of age in the United States.

Canada: In 1997 there were 60 cases reported.

Manitoba: In 1999 there were two cases of *Haemophilus influenzae* B meningitis and two invasive cases that were not meningitis.

Incubation Period: Unknown; probably two to four days.

Susceptibility and Resistance: Universal susceptibility less than five years of age. Immunity is associated with the presence of circulating bactericidal and/or anticapsular antibody, acquired transplacentally, from prior infection or from immunization.

Period of Communicability: As long as organisms are present, which may be for a prolonged period even without nasal discharge. Non-communicable within 24 hours after starting effective antibiotic therapy.

Diagnosis

Diagnosis may be made by isolation of organisms from pus, blood or CSF. Specific capsular polysaccharide can be identified if necessary by Counter Immune Electrophoresis or Latex Agglutination techniques.

Key Investigations

- Immunization history. In the event of a vaccine failure, special investigations may be warranted. Contact the CDC Unit, Public Health Branch, Manitoba Health for further details.

Control

Management of Cases:

Treatment:

- Ampicillin has been the preferred drug (parenteral 200–400 mg/kg/day). However, since approximately 30% of strains are now resistant due to B-lactamase production, ceftriaxone, cefotaxime or chloramphenicol is recommended concurrently or singly until antibiotic sensitivities are known.
- **The patient should be given rifampin prior to discharge from the hospital to assure elimination of the organism unless cefotaxime or ceftriaxone is used for treatment.**

Public Health Measures:

- Isolation: Droplet precautions for 24 hours after start of chemotherapy.

Management of Contacts:

- Public Health will determine whether chemoprophylaxis for contacts is indicated and if so, arrange availability. With the advent of effective immunization, the role of chemoprophylaxis of contacts has diminished.

- Education of parents regarding the risk of secondary cases in contacts less than five years old, especially infants and the need for prompt evaluation and treatment if fever or stiff neck develops.
- **In the household/home day care setting,** chemoprophylaxis should be provided to those with significant contact, regardless of age or immunization status, when one or more of the contacts is less than 12 months of age and has not received three doses of vaccine (at least one month apart) or is between 12 months and five years of age and has not been immunized appropriately for age or has uncertain immunity because of immunosuppressive disease. Significant household/home day care contact is defined as living with the index patient or having spent four or more hours with the index patient for at least five of the seven days preceding hospital admission.
- **In the non-home child care setting, attended by children less than two years of age** who have not been adequately immunized (see bullet above) and where children generally spend 25 hours per week or more together, chemoprophylaxis should be provided to all staff and children who have attended within seven days prior to hospitalization of the index case.
- **In the non-home child care setting attended by children over two years of age** who have not adequately been immunized, chemoprophylaxis need not be given.
- When chemoprophylaxis is indicated, persons should be excluded until they are taking rifampin. Persons entering a setting where rifampin is being given should also receive it. All persons entering a setting where rifampin has been used within two months must be age-appropriately immunized.
- Rifampin should be given as soon as possible. Prophylaxis of contacts initiated seven days or more after hospitalization, although not optimal, may still be of benefit.

Rifampin Dosages:

Adults:	600 mg orally once daily for 4 days.
Children:	20 mg/kg (maximum 600 mg) orally once daily for 4 days
Infants younger than 1 month:	10 mg/kg orally once daily for 4 days

- Manitoba Health and First Nations and Inuit Health Branch (FNIHB) provide rifampin to contacts of *Haemophilus influenzae* B disease at no charge. This can be arranged by contacting the FNIHB Medical Officer of Health or the local provincial Medical Officer of Health. After regular office hours a Medical Officer of Health on-call can be reached by calling 945-0183.
- Children who have not been appropriately immunized for age should be brought up to date.

Management of Outbreaks:

- Utilize chemoprophylaxis as above and ensure age appropriate immunization.
- When two or more cases of disease occur in a child care setting with inadequately immunized attendees (see first bullet under **Management of Contacts**), all attendees and staff should receive rifampin prophylaxis regardless of age or immunization status.

Preventive Measures:

- Immunization with *Haemophilus influenzae* B conjugate vaccine.

Additional Resources

For Health Care Professionals

- Fact sheet on *Haemophilus influenzae* B disease (to be revised).
- Fact sheet on Rifampin entitled “Important notes about Rifampin” (see section on Meningococcal invasive disease).