Haemophilus influenzae, Invasive Disease
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Overview [2, 3, 6, 7, 8]

Haemophilus influenzae invasive disease (*Hi*) is caused by the bacterium *Haemophilus influenzae* (*H. influenzae*). *H. influenzae* may be either encapsulated (typeable) or unencapsulated (unencapsulated strains lack capsule genes and are designated nontypable[2]). Six antigenically distinct capsular types of *H. influenzae* (types a - f) that can cause *Hi* in persons of any age and are often severe, particularly among infants. Nontypeable strains can also cause *Hi* but more commonly cause mucosal infections. All *Hi* isolates should be serotyped.

Hi includes clinical syndromes of meningitis, bacteremia or sepsis, epiglottitis, pneumonia, septic arthritis, osteomyelitis, pericarditis and cellulitis. In contrast, syndromes of mucosal infections such as bronchitis, sinusitis and otitis media, which are considered noninvasive disease. Noninvasive *H. influenzae* infections are not reportable to the Missouri Department of Health and Senior Services.

Before the introduction of effective vaccines, *H. influenzae* serotype b (Hib) was the cause of more than 95% of *Hi* among children; and the leading cause of bacterial meningitis in the United States among children younger than 5 years of age. Meningitis occurred in approximately two-thirds of children with invasive Hib disease, resulting in hearing impairment or severe permanent neurologic sequelae, such as mental retardation, seizure disorder, cognitive and developmental delay, and paralysis in 15% - 30% of survivors. Approximately 4% of all cases were fatal. The most striking feature of Hib disease is its age-dependent susceptibility. Hib disease is not common beyond 5 years of age.

H. influenzae bacteria, including Hib, are spread person-to-person by direct contact or through respiratory droplets like by coughing and sneezing. Usually the bacteria remain in the nose and throat causing no harm. Sometimes the bacteria can enter the blood and spread, causing serious infection in the individual. Most of the time, *H. influenzae* bacteria are spread by people who have the bacteria in their noses and throats but who are not ill themselves (asymptomatic). The incubation period is unknown, but likely 2 - 4 days. Persons remain communicable as long as organisms are present, which may be for a prolonged time. Persons are noncommunicable within 24 - 48 hours after starting appropriate antibiotic treatment. Humans are the only known reservoir for *H. influenzae*.

There's a vaccine that can prevent Hib disease, but not the other types ("strains") of *H. influenzae*. Hib vaccine is recommended for all children younger than 5 years of age in the United States and is usually given to infants starting at 2 months of age.

Without treatment, infections caused by Hib can be rapidly fatal. This is particularly true of meningitis and epiglottitis. For a complete description of *Hi,* refer to the following texts:

- American Academy of Pediatrics. *Red Book: 2012 Report of the Committee on Infectious Diseases.* 29th ed. 2012.

- *Epidemiology and Prevention of Vaccine-Preventable Diseases*, "Pink Book", CDC. 12th ed., second printing, May 2012; http://www.cdc.gov/vaccines/pubs/pinkbook/hib.html.
- Murphy, Timothy F. *Haemophilus Species* (Including *H. influenzae and* Chancroid). In: Gerald L. Mandell, John E. Bennett, & Raphael Dolin, Eds. *Principles and Practice of Infectious Diseases*, 7th ed.

2015 Case Definition - *Haemophilus influenzae*, invasive disease[4] – (1/15)

Clinical Criteria

Invasive disease may be manifest as pneumonia, bacteremia, meningitis, epiglottitis, septic arthritis, cellulitis, or purulent pericarditis; less common infections include endocarditis and osteomyelitis.

Laboratory Criteria for Diagnosis

- Detection of *Haemophilus influenzae* type b antigen in cerebrospinal fluid [CSF]; or
- Detection of *Haemophilus influenzae*-specific nucleic acid in a specimen obtained from a normally sterile body site (e.g., blood or CSF), using a validated polymerase chain reaction (PCR) assay; or
- Isolation of *Haemophilus influenzae* from a normally sterile body site (e.g., CSF, blood, joint fluid, pleural fluid, pericardial fluid).

Epidemiologic Linkage

Not applicable for case classification.

Case Classification

Confirmed

- Isolation of *Haemophilus influenzae* from a normally sterile body site (e.g., CSF, blood, joint fluid, pleural fluid, pericardial fluid) OR
- Detection of *Haemophilus influenzae*-specific nucleic acid in a specimen obtained from a normally sterile body site (e.g., CSF, blood, joint fluid, pleural fluid, pericardial fluid), using a validated PCR assay.

Probable

- Meningitis with detection of *Haemophilus influenzae* type b antigen in CSF.

Case Classification Comment(s)

Positive antigen test results from urine or serum samples are unreliable for diagnosis of *Haemophilus influenzae* disease and should not be used as a basis for case classification.

Isolates of *Haemophilus influenzae* are important for antimicrobial susceptibility testing.

Information Needed for Investigation

Verify the diagnosis. For all *Hi* cases prior to case classification; obtain demographic, clinical, laboratory information, and other epidemiological information necessary to complete the Disease Case Report (CD-1). Complete the Record of Investigation of Bacterial Meningitis or Bacteremia Case Report (CD-2M) on all probable and confirmed cases of *Hi*. The information to

complete the forms can be obtained from the attending physician, hospital, laboratory, patient, or a knowledgeable family member. ***NOTE:*** Early notification of *Hi* cases by health care providers in children younger than 5 years is important to ensure isolates are saved for serotyping. Ensure appropriate confirmatory laboratory tests are performed for all *Hi* cases. Rapid identification of invasive Hib cases is important to allow for early administration of chemoprophylaxis and Hib vaccine to household and childcare classroom contacts of case-patients, if appropriate (see the table on chemoprophylaxis).[8]

Establish the extent of illness. Determine whether household or other close contacts are or have been ill with symptoms compatible with *Hi* by contacting the health care provider, patient, or family member. For information on the clinical features of *Hi*, please refer to CDC's website at: http://www.cdc.gov/hi-disease/about/symptoms.html. If the case is a child who attends a child care facility or a school, determine the serotype and whether any other children in that setting are or have been ill with symptoms. ***NOTES***: Exposed children in whom febrile illness develops should receive prompt medical evaluation. A sample parent and physician notification letter are provided at the end of this manual section. These may be adapted as necessary, duplicated, and distributed as needed.

Risk factors for disease.[6] *H. influenzae*, including Hib, are a bacterium that can cause a severe infection, occurring mostly in infants and children younger than 5 years of age. Adults 65 years and older are also at higher risk for disease. American Indian/Alaska Native populations are also at increased risk for *Hi*. People with certain medical conditions are at higher risk for developing a *H. influenzae* infection. Those medical conditions include:

- Sickle cell disease.
- Asplenia (no spleen).
- HIV (human immunodeficiency virus) infection.
- Antibody and complement deficiency syndromes.
- Malignant neoplasms (a type of tumor).

Risk factors related to disease transmission for consideration are:

- Does the case or a member of the case's household attend a child care center, nursery school, or any school setting?
- Does the case or a member of the case's family work as a health care provider or other high risk setting?
- Identification of young children who are household or childcare contacts of patients with Hib invasive disease and assessment of their vaccination status may help identify persons who should receive antimicrobial prophylaxis or who need to be immunized.[8]

Provide information on *H. influenzae* to persons at risk for infection and the general public. Efforts should be made to promote *Hi* awareness and provide prevention information to the public to reduce the risk of disease. *Hi* can cause serious and potentially life-threatening complications. CDC's website provides information on *H. influenzae* at: http://www.cdc.gov/hi-disease/index.html.

An excellent informational sheet, *Haemophilus influenzae* type b (Hib): Questions & Answers Information about the disease and vaccines, and Hib is a serious disease...Make sure your child is protected is also available from the Immunization Action Coalition.

***H. influenzae* Surveillance.** *H. influenzae* surveillance information is used to monitor the effectiveness of Hib immunization programs and vaccines, to assess progress toward Hib disease elimination, and to describe the epidemiology of (non-b) *Hi*. Hib surveillance data can be used to characterize populations or geographic areas in which additional efforts may be needed to raise awareness and reduce disease incidence.

NOTES: Conduct close surveillance of Hib contacts for at least 30 days following onset of the index case to assure prompt medical evaluation, and treatment of anyone who develops a febrile illness.[3, 9] Establish close contact with key local medical providers to assure prompt reporting of any additional cases.

Notification

- If Hib is suspected, the local public health agency (LPHA) should contact the District Communicable Disease Coordinator, the Senior Epidemiology Specialist for the District immediately, or the Missouri Department of Health and Senior Services (MDHSS) - BCDCP, phone (573) 751-6113, Fax (573) 526-0235, or for afterhours notification contact the MDHSS/ERC at (800) 392-0272 (24/7).
- If a Hib case(s) is associated with a childcare center, BCDCP or the LPHA will contact the Bureau of Environmental Health Services (BEHS), phone (573) 751-6095, Fax (573) 526-7377 and the Section for Child Care Regulation, phone (573) 751-2450, Fax (573) 526-5345.
- If a Hib case(s) is associated with a long-term care facility, BCDCP or the LPHA will contact the Section for Long Term Care Regulation, phone (573) 526-8524, Fax (573) 751-8493.
- If a Hib case(s) is associated with a hospital, hospital-based long-term care facility, or ambulatory surgical center BCDCP or the LPHA will contact the Bureau of Health Services Regulation phone (573) 751-6303, Fax (573) 526-3621.

Control Measures

The following recommendations are provided for the control of invasive Hib disease. ***NOTES***: There is a vaccine that can prevent Hib disease, but not the other types of *H. influenzae*.[6] Currently, chemoprophylaxis is not recommended for contacts of people with invasive disease caused by (nontype b) H. influenzae strains.[2]

Rapid identification of cases is important to allow for early administration of chemoprophylaxis and Hib vaccine, if needed, to household and childcare classroom contacts of case-patients.[8] Therefore children's immunization records should be reviewed and unimmunized or incompletely immunized children should receive a dose of vaccine and should be scheduled for completion of the recommended age-specific immunization schedule. [2]

In patients with invasive Hib disease, droplet precautions are recommended for 24 hours after initiation of effective antimicrobial therapy. Rifampin chemoprophylaxis is not recommended for pregnant women.[2]

For information on the medical management of invasive Hib disease see the American Academy of Pediatrics. *Red Book: 2012 Report of the Committee on Infectious Diseases.* 29th ed. 2012, *Principles and Practice of Infectious Diseases*, 7th ed., Pennsylvania: Churchill Livingstone Elsevier, 2010 or other suitable reference; several such references are listed at the end of this document.

Rifampin Chemoprophylaxis. Because of the need to make rapid decisions about chemoprophylaxis, the serotype should be determined and reported for all *Hi* isolates. It is particularly important that serotype be reported for cases in children younger than 5 years of age; the second highest priority is for cases among children 5–14 years of age.[8]

Chemoprophylaxis is **not** recommended for contacts of people with invasive disease caused by (nontype B) *H. influenzae* strains, because secondary disease is rare.[2] See the following table extracted from the American Academy of Pediatrics, *Red Book: 2012 Report of the Committee on Infectious Diseases.* 29th ed. for recommended chemoprophylaxis in different circumstances:

Indications and Guidelines for Rifampin Chemoprophylaxis for Contacts of Index Cases of Invasive *Haemophilus influenzae* Type B (Hib) Disease[2]

Chemoprophylaxis Recommended
☆ For all household contacts† in the following circumstances:
o Household with at least 1 contact younger than 4 years of age who is unimmunized or incompletely immunized.§
o Household with a child younger than 12 months of age who has not completed the primary Hib series.
o Household with a contact who is an immunocompromised child, regardless of that child's Hib immunization status.
☆ For preschool and child care center contacts when 2 or more cases of Hib invasive disease have occurred within 60 days and unimmunized or incompletely immunized children attend the facility. Chemoprophylaxis should be provided to all attendees irrespective of their age and vaccine status; and child care providers should be considered.
☆ For index patient, if younger than 2 years of age or member of a household with a susceptible contact and treated with a regimen other than cefotaxime or ceftriaxone, chemoprophylaxis usually is provided just before discharge from hospital.
Chemoprophylaxis **Not** Recommended
▪ For occupants of households with **no** children younger than 4 years of age other than the index patient.
▪ For occupants of households when all household contacts 12 through 48 months of age have completed their Hib immunization series and when household contacts younger than 12 months of age have completed their primary series of Hib immunizations.

▪ For preschool and child care contacts of 1 index case.[¥]
▪ For pregnant women.

[†] Defined as people residing with the index patient or nonresidents who spent 4 or more hours with the index patient for at least 5 of the 7 days preceding the day of hospital admission of the index case.

[§] Complete immunization is defined as having had at least 1 dose of conjugate vaccine at 15 months of age or older; 2 doses between 12 and 14 months of age; or the 2- or 3-dose primary series when younger than 12 months with a booster dose at 12 months of age or older.

[¥] Data are insufficient on the risk of secondary transmission to recommend chemoprophylaxis for attendees and child care providers when a single case of invasive Hib disease occurs; the decision to provide chemoprophylaxis in this situation is at the discretion of the health department.[2]

The recommended dose is 20 mg/kg once daily (maximal daily dose 600 mg) for 4 days has eradicated the carrier state in approximately 95% of carriers and significantly reduced the incidence of secondary Hib disease[‡] in household members.[2, 7] The dose for infants younger than 1 month of age is not established; some experts recommend lowering the dose to 10 mg/kg. For adults, each dose is 600 mg.[2] ***NOTE***: If rifampin prophylaxis is indicated, it should be initiated as soon as possible to be effective in preventing secondary Hib disease[‡]. Because some secondary cases occur later, initiation of prophylaxis 7 days or more after hospitalization of the index patient still may be of some benefit.[2]

COMMENTS: Chemoprophylaxis does not eliminate the need for contact surveillance. Parents and child care staff should be advised of the risk of secondary Hib disease[‡] despite chemoprophylaxis.[9] Careful observation of exposed, unimmunized, or incompletely immunized children who are household, child care, or nursery school contacts of patients with invasive Hib disease is essential. Exposed children in whom febrile illness develops should receive prompt medical evaluation.[2]

[‡] Secondary Hib disease is defined as illness occurring 1 to 60 days following contact with an ill case, and accounts for less than 5% of all invasive Hib disease.[3]

Guidelines for obtaining Rifampin to be provided by MDHSS to Local Pharmacies for Chemoprophylaxis. If contacts can pay for chemoprophylaxis, or have insurance that will pay (including Medicaid), then one of these sources should be used. ***NOTE:*** Some retail pharmacy chains offer a free antibiotic program to their patrons. These resources should also be explored when trying to get contacts prophylaxed in a timely manner. If the contact is unable to obtain chemoprophylaxis from any of the above means, then MDHSS can supply rifampin. Since chemoprophylaxis should begin promptly after diagnosis of the primary case, generally this will mean MDHSS will be replacing the pharmacy's supply of rifampin used to fill approved prescriptions, if needed. In addition, MDHSS will pay up to $3.00 per prescription (administrative costs to the pharmacy) for each rifampin prescription dispensed by the pharmacy for approved prescriptions.

Contact the District Communicable Disease Coordinator, the Senior Epidemiology Specialist for the District, or MDHSS - BCDCP, phone (573) 751-6113, to receive approval, or for afterhours, contact the MDHSS/ERC at (800) 392-0272 (24/7). In order to receive mediations and/or

administrative payment for **approved** chemoprophylaxis of Hib invasive disease, the pharmacy must:

1. Submit a bill to the MDHSS district office (or to the local public health agency, which can then be forwarded to the MDHSS district office). The bill must be labeled "Bill to Missouri Department of Health and Senior Services, Bureau of Communicable Disease Control and Prevention, P. O. Box 570, Jefferson City, MO 65102-0570."
2. The bill must include the invoice date; to include the month, day and year the service was provided. The invoice should include the pharmacy's name and address, number of clients receiving approved rifampin prescriptions, and the total amount requested.
3. A list of names of the persons receiving rifampin must be attached to the bill.
4. Partial or open bottles of medication become the property of the pharmacy.
5. Unopened bottles of MDHSS rifampin should be retrieved from the pharmacy and returned to the MDHSS district office.
6. Physicians or health care providers may wish to provide chemoprophylaxis for persons not meeting the guidelines listed in the above table. MDHSS is unable to provide rifampin or administrative cost reimbursement unless the above guidelines are followed.

Routine Childhood / Adult Immunizations. Hib conjugate vaccines licensed for use in infants are highly immunogenic. More than 95% of infants will develop protective antibody levels after a primary series of two or three doses. Clinical efficacy has been estimated at 95% to 100%. Invasive Hib disease in a completely vaccinated infant is uncommon.[3]

The Advisory Committee on Immunization Practices (ACIP) "Recommended Immunization Schedule for Persons Age 0 Through 18 Years, 2014" is available on CDC's website at: http://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html. The ACIP "Recommended Adult Immunization Schedules, 2014" is available on CDC's website at: http://www.cdc.gov/vaccines/schedules/hcp/adult.html.

Hib invasive disease does not always result in development of protective anti-PRP antibody levels. Children younger than 24 months of age who develop invasive Hib disease should be considered susceptible and should receive Hib vaccine.[6] Vaccination of these children should start as soon as possible during the convalescent phase of the illness. The schedule should be completed as recommended for the child's age.[3] ***NOTES***: Children >24 months of age who develop Hib invasive disease usually develop a protective immune response and do not need immunization.[8] Some children with immunological impairment may benefit from more doses of conjugate vaccine than usually indicated.[2] ***COMMENT***: Immunologic evaluation should be performed in children who experience Hib invasive disease despite 2 to 3 doses of vaccine and in children with recurrent invasive disease attributable to type b strains.[2]

Laboratory Procedures

Most hospital and commercial microbiologic laboratories have the ability to isolate *H. influenzae* from cultured specimens. Confirming a case of Hib disease requires culturing and isolating the bacteria from a normally sterile body site. Normally sterile-site specimens for isolation of

invasive *H. influenzae* include CSF, blood, joint fluid, pleural effusion, pericardial effusion, peritoneal fluid, subcutaneous tissue fluid, placenta and amniotic fluid. All *Hi* isolates should be tested for antimicrobial susceptibility according to guidelines in M2-A9 Performance Standards for Antimicrobial Disk Susceptibility Tests (January 2006) from the Clinical Laboratory Standards Institute.[8]

All *H. influenzae* isolates associated with invasive infection should be serotyped.[2, 8] This is an extremely important laboratory procedure, especially those obtained from children younger than 15 years of age.[8] This test determines whether an isolate is type b, which is the only type that is potentially vaccine preventable.[6]

Because the type b capsular antigen can be detected in body fluids, including urine, blood and CSF of patients, clinicians often request a rapid antigen detection test for diagnosis of Hib disease. Antigen detection may be used as an adjunct to culture, particularly in the diagnosis of patients who have received antimicrobial agents before specimens are obtained for culture. The method for antigen detection is latex agglutination (LA). LA is a rapid and sensitive method used to detect Hib capsular polysaccharide antigen in CSF, serum, urine, pleural fluid or joint fluid but false *negative* and false *positive* reactions can occur.[8]

NOTE: If the Hib antigen is detected in CSF but a positive result is not obtained from culture or sterile site, the patient should be considered as having a probable case of Hib disease and reported as such. Because antigen detection tests can be positive in urine and serum of persons without Hib invasive disease, persons who are identified exclusively by positive antigen tests in urine or serum should not be reported as cases. Real-time PCR detects DNA of all *H. influenzae* in blood, CSF, or other clinical specimens. A major advantage of PCR is that it allows for detection of *H. influenzae* from clinical samples in which the organism could not be detected by culture methods, such as when a patient has been treated with antibiotics before a clinical specimen is obtained for culture. Even when the organisms are nonviable following antimicrobial treatment, PCR can still detect *H. influenzae* DNA. Isolation of the bacterium is needed to confirm *Hi*, determine the serotype, and test for antimicrobial susceptibility.

***NOTE*:** All *Hi* isolates should be sent to the Missouri State Public Health Laboratory for confirmation and typing. The Missouri State Public Health Laboratory only accepts isolates from sterile sites. Information on acceptable specimens and the shipment of specimens for testing by the MSPHL may be viewed at: http://health.mo.gov/lab/specialbacteriology.php.

A manual summarizing laboratory techniques used in the isolation and identification and characterization of *Neisseria meningitidis*, *Streptococcus pneumoniae* and *H. influenzae* from the cerebrospinal fluid or blood of patients with clinical meningitis or bacteremia may be found on CDC's website at: http://www.cdc.gov/meningitis/lab-manual/index.html. [6]

Reporting Requirements

Hi (including meningitis) is a Category 2A disease and shall be reported to the local health authority or to the MDHSS within 24 hours of first knowledge or suspicion by telephone, facsimile, or other rapid communication. For afterhours notification, contact the MDHSS/ERC at (800) 392-0272 (24/7).

As a Nationally Notifiable Condition, all *Hi* **cases prior to classification** are a **STANDARD** report to the Centers of Disease Control and Prevention (CDC). **STANDARD** reporting requires MDHSS to report to CDC by electronic transmission via WebSurv within the next normal reporting cycle.

1. For confirmed and probable *Hi* cases, the local public health agencies should complete a Disease Case Report (CD-1) and a Record of Investigation of Bacterial Meningitis or Bacteremia Case Report (CD-2M).
2. Entry of the CD-1 by the local public health agencies into WebSurv negates the need for the paper CD-1 to be forwarded to the District Health Office.
3. Send the completed CD-2M to the District Health Office.
4. MDHSS will report to CDC following the above reporting criteria (see box).
5. All outbreaks or suspected outbreaks must be reported as soon as possible (by phone, fax, or email) to the District Communicable Disease Coordinator. This can be accomplished by completing the Missouri Outbreak Surveillance Report (CD-51) and faxing or emailing it.
6. Within 90 days from the conclusion of an outbreak, submit the final outbreak report to the District Communicable Disease Coordinator.

References

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2. American Academy of Pediatrics. *Haemophilus influenzae Infections*. In: Pickering LK, Baker CJ, Kimberlin DW, Long SS, eds. *Red Book: 2012 Report of the Committee on Infectious Disease*, 29th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2012: 345-352.
3. Centers for Disease Control and Prevention. *Epidemiology and Prevention of Vaccine-Preventable Diseases*, *Haemophilus influenzae* type b. Atkinson W, Hamborsky J, Wolfe S, eds. 12th ed., second printing. Washington DC: Public Health Foundation, 2012: 87-99. http://www.cdc.gov/vaccines/pubs/pinkbook/index.html (1/15).
4. Centers for Disease Control and Prevention. National Notifiable Diseases Surveillance System (NNDSS) and Case Definitions. http://wwwn.cdc.gov/nndss/ (1/15).
5. Advisory Committee on immunization Practices (ACIP) Recommended Immunization Schedules for Persons Aged 0 Through 18 Years and Adults Aged 19 Years and Older - United States, 2013. http://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html and http://www.cdc.gov/vaccines/schedules/hcp/adult.html (1/15).

6. Centers for Disease Control and Prevention. *Haemophilus influenza* Disease (Including Hib): http://www.cdc.gov/hi-disease/index.html (1/15).
7. Murphy, Timothy F. *Haemophilus Species* (Including *H. influenzae and* Chancroid). In: Gerald L. Mandell, John E. Bennett, & Raphael Dolin, Eds. *Principles and Practice of Infectious Diseases*, 7th ed., Pennsylvania: Churchill Livingstone Elsevier, 2010: 2911-2919.
8. Centers for Disease Control and Prevention, *Chapter 2: Haemophilus influenzae type b (Hib), Manual for the Surveillance of Vaccine-Preventable Diseases* (5th Edition, 2011). http://www.cdc.gov/vaccines/pubs/surv-manual/chpt02-hib.html (1/15).
9. The Blue Book: Guidelines for the Control of Infectious Diseases: *Haemophilus influenzae* Infections. http://ideas.health.vic.gov.au/bluebook/haemophilus.asp (1/15).

Sample Letter to Parents of Exposed Children

(Chemoprophylaxis Recommended)

[*Date*]

To Parent(s) of Children at
[*Child Care Center's Name*]
[*Parent's Address*]

Dear Parent(s):

A second child who attends the [*Child Care Center's Name*] has been diagnosed as having [*clinical syndrome*] caused by *Haemophilus influenzae* type b (Hib) and unimmunized or incompletely immunized children attending the facility.

So that others do not get this illness, the Missouri Department of Health and Senior Services (MDHSS) recommends a preventive medication [*Drug Name*] to be provided to all child care providers and children irrespective of their age and vaccine status. The preventive medication is an antibiotic and will help protect your child from Hib disease.

Your child may also need to receive the Hib vaccine if your child is not up-to-date with this immunization. Receiving the vaccine is an important intervention in that the antibiotic only provides short-term protection. A review of your child's immunization records has determined that your child [*Child's Name*] [*does / does not*] need to receive Hib vaccine.

NOTE: If arrangements need to be made for administration of the Hib vaccine, you will need to add a paragraph regarding this. Example:

[*Local Public Health Agency*] can provide Hib vaccine to your child. Our office hours are [*Office Hours a.m. / p.m.*]. You can contact us at [*Local Public Health Agency's Phone Number*] to set up an appointment /or we will be at [*Child Care Facility Name*] on [*Date*] at [*Onsite Clinic Hours a.m. / p.m.*] to administer the immunization. You will need to be present to receive information on the immunization and sign the consent form.

Hib disease is rare in persons over five years of age, but all persons who were in contact with the sick child should be monitored for the next 30 days. A child that develops a fever or headache or any other unusual symptoms should receive a prompt medical evaluation, and treatment if indicated. Meningitis can begin with an ear or sinus infection and go on to fever, vomiting, listlessness or stiff neck. Some children with meningitis may have long-lasting neurological problems. In some cases death can occur.

An information sheet on Hib disease is enclosed. If you have questions, please contact your health care provider or the [*Local Public Health Agency*] at [*Phone Number*].

Sincerely,

NOTE: If the rifampin is being provided through MDHSS; then arrangements need to be made. The local public health agency may need to add a paragraph on where and how to obtain the medication. Example:

The MDHSS will provide rifampin free-of-charge for your child. You may pick up the medication at [*Pharmacy's Name / Address*] after [*Date / Time a.m. / p.m.*].

Sample Health Care Provider Notification Letter

[*Date*]

[*Health Care Provider's Name*]
[*Address*]
[*City, State, Zip Code*]

Dear [*Health Care Provider's Name*]:

A second case of *Haemophilus influenzae* type b [*clinical syndrome*] has been diagnosed in a child enrolled in the [*Child Care Center's Name*]. This child care center has incompletely immunized children in attendance. Children from this child care center are being referred to their health care provider for chemoprophylaxis with rifampin. We are also recommending that children be up-to-date with their Hib immunization(s). The Advisory Committee on Immunization Practices (ACIP) "Recommended Immunization Schedule for Persons Age 0 Through 18 Years, 2014" is available on CDC's website at: http://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html.

Please be alert to the presence of this disease in your community. If you have any questions, please contact your [*Local Public Health Agency*] at [*Phone Number*].

Sincerely,