

those older than 6 months with severe signs and symptoms (see *Streptococcus pneumoniae* [Pneumococcal] Infections, p 717, and Appropriate and Judicious Use of Antimicrobial Agents, p 868). A watch-and-wait option can be considered for older children and those with nonsevere disease. Optimal duration of therapy is uncertain. For younger children and children with severe disease at any age, a 10-day course is recommended; for children 6 years and older with mild or moderate disease, a duration of 5 to 7 days is appropriate. Otolgia should be treated symptomatically. Patients who fail to respond to initial management should be reassessed at 48 to 72 hours to confirm the diagnosis of AOM and exclude other causes of illness. If AOM is confirmed in the patient managed initially with observation, amoxicillin should be administered. If the patient has failed initial antibacterial therapy, a change in antibacterial agent is indicated. Suitable alternative agents should be active against penicillin-nonsusceptible pneumococci as well as beta-lactamase-producing *H influenzae* (in the United States, approximately 30%–40% of *H influenzae* isolates produce beta-lactamase) and *Moraxella catarrhalis*. Such agents include high-dose oral amoxicillin-clavulanate; oral cefdinir, cefpodoxime, or cefuroxime; or 3 daily doses of intramuscular ceftriaxone. Patients who continue to fail to respond to therapy with one of the aforementioned oral agents should be treated with a 3-day course of parenteral ceftriaxone. Macrolide resistance among *Streptococcus pneumoniae* is high, so clarithromycin and azithromycin are not considered appropriate alternatives for initial therapy even in patients with a type I (immediate, anaphylactic) reaction to a beta-lactam agent. In such cases, treatment with clindamycin (if susceptibility is known) or levofloxacin is preferred. For patients with a history of non-type I allergic reaction to penicillin, agents such as cefdinir, cefuroxime, or cefpodoxime can be used orally.

ISOLATION OF THE HOSPITALIZED PATIENT: In addition to standard precautions, in patients with invasive Hib disease, droplet precautions are recommended for 24 hours after initiation of effective antimicrobial therapy.

CONTROL MEASURES (FOR INVASIVE HIB DISEASE):

Care of Exposed People. Secondary cases of Hib disease have occurred in unimmunized or incompletely immunized children exposed in a child care or household setting to invasive Hib disease. Such children should be observed carefully for fever or other signs/symptoms of disease. Exposed young children in whom febrile illness develops should receive prompt medical evaluation.

Chemoprophylaxis.¹ The risk of invasive Hib disease is increased among unimmunized household contacts younger than 4 years. Rifampin eradicates Hib from the pharynx in approximately 95% of carriers and decreases the risk of secondary invasive illness in exposed household contacts. Child care center contacts also may be at increased risk of secondary disease, but secondary disease in child care contacts is rare when all contacts are older than 2 years. Indications and guidelines for chemoprophylaxis in different circumstances are summarized in Table 3.9.

- **Household.** See Table 3.9 for details regarding prophylaxis for household members of a person with invasive Hib disease, when at least 1 household member fits the listed criteria. Given that most secondary cases in households occur during the first week

¹Centers for Disease Control and Prevention. Prevention and control of *Haemophilus influenzae* type b disease: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Recomm Rep*. 2014;63(RR-1):1–14

Table 3.9. Indications and Guidelines for Rifampin Chemoprophylaxis for Contacts of Index Cases of Invasive *Haemophilus influenzae* Type b (Hib) Disease^a

Chemoprophylaxis Recommended

- For all household contacts^b in the following circumstances:
 - Household with at least 1 child younger than 4 years who is unimmunized or incompletely immunized^c
 - Household with a child younger than 12 months who has not completed the primary Hib series
 - Household with an immunocompromised child, regardless of that child's Hib immunization status or age
- For preschool and child care center contacts when 2 or more cases of Hib invasive disease have occurred within 60 days (see text)
- For index patient, if younger than 2 years or member of a household with a susceptible contact and treated with a regimen other than cefotaxime or ceftriaxone, chemoprophylaxis at the end of therapy for invasive infection

Chemoprophylaxis Not Recommended

- For occupants of households with no children younger than 4 years other than the index patient
- For occupants of households when all household contacts are immunocompetent, all household contacts 12 through 48 months of age have completed their Hib immunization series, and when household contacts younger than 12 months have completed their primary series of Hib immunizations
- For preschool and child care contacts of 1 index case
- For pregnant women

^aSimilar criteria may be used for Hia; however, the criteria for Hib immunization are not applicable.

^bDefined 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.

^cComplete 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.

after hospitalization of the index case, when indicated, prophylaxis should be initiated as soon as possible. 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.

- **Child care and preschool.** When 2 or more cases of invasive Hib disease have occurred within 60 days and unimmunized or incompletely immunized children attend the child care facility or preschool, rifampin prophylaxis for all attendees (irrespective of their age and vaccine status) and child care providers should be considered. In addition to these recommendations for chemoprophylaxis, unimmunized or incompletely immunized children should receive a dose of vaccine and should be scheduled for completion of the recommended age-specific immunization schedule (https://redbook.solutions.aap.org/SS/Immunization_Schedules.aspx). Data are insufficient on the risk of secondary transmission to recommend chemoprophylaxis for attendees

Table 3.10. *Haemophilus influenzae* Type b (Hib) Conjugate Vaccines Licensed and Available for Use in Infants and Children in the United States^a

Vaccine	Trade Name	Components	Manufacturer
PRP-T	ActHIB	PRP conjugated to tetanus toxoid	Sanofi Pasteur
PRP-T ^a	Hiberix	PRP conjugated to tetanus toxoid	GlaxoSmithKline Biologicals
PRP-OMP	PedvaxHIB	PRP conjugated to OMP	Merck & Co, Inc
DTaP-IPV-Hib ^b	Pentacel	DTaP-IPV + PRP-T	Sanofi Pasteur
DTaP-IPV-Hib-HepB	Vaxelis	DTaP-IPV + PRP-OMP + HepB	Sanofi Pasteur and Merck & Co, Inc

PRP-T indicates polyribosylribitol phosphate-tetanus toxoid; OMP, outer membrane protein complex from *Neisseria meningitidis*; DTaP, diphtheria and tetanus toxoids and acellular pertussis; IPV, inactivated poliovirus vaccine; HepB, hepatitis B vaccine.

^aHib conjugate vaccines may be administered in combination products or as reconstituted products, provided the combination or reconstituted vaccine is licensed by the US Food and Drug Administration (FDA) for the child's age and administration of the other vaccine component(s) also is justified.

^bThe DTaP-IPV liquid component is used to reconstitute a lyophilized ActHIB vaccine component to form Pentacel.

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 local or state health department.

- **Index case.** See Table 3.9.
- **Dosage.** For prophylaxis, rifampin should be administered orally, once a day for 4 days (20 mg/kg; maximum dose, 600 mg). The dose for infants younger than 1 month is not established; some experts recommend lowering the dose to 10 mg/kg. For adults, each dose is 600 mg. If rifampin is contraindicated, administering a single dose of ceftriaxone can be considered, although the durability of eradication using this approach has not been well established.
- **Invasive Hia.** Clinicians can consider chemoprophylaxis of household contacts of index cases of invasive Hia disease in those households with a child younger than 4 years or with an immunocompromised child. For these individuals and contacts, chemoprophylaxis recommendations for Hib may be followed; however, because there is not a licensed vaccine for Hia the criteria regarding vaccination do not apply. A similar approach as Hib also may be considered for preschool and child care contacts in consultation with the local or state public health department.

Immunization.¹ Three single-antigen (monovalent) Hib conjugate vaccine products and 2 combination vaccine products that contain Hib conjugate are available in the United States (see Table 3.10). The Hib conjugate vaccine consists of the Hib capsular

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