Approach Considerations

Prehospital care of children with bacterial meningitis usually is confined to transporting children who are critically ill or have experienced a seizure. General supportive care is required, depending on the child’s condition. Subsequent diagnosis of a potentially transmissible disease must be communicated to prehospital care providers, especially with \textit{N meningitidis} infections.

Patients must be treated in a facility where emergencies can be managed and nursing and medical staff are experienced in caring for critically ill patients. Accordingly, they may require a transfer to a pediatric hospital or large general hospital. Depending on the child’s condition, admission to a pediatric intensive care unit (ICU) may be warranted.

If the child is critically ill or experiencing a seizure, immediate stabilization and support are necessary. If the child is hemodynamically stable, intravenous (IV) fluids should be administered at maintenance. Careful record of the patient’s weight, urine specific gravity, and serum osmolarity will help guide further fluid therapy. Patients who present with dehydration should be
rehydrated and should not undergo fluid restriction. Seizures should be treated promptly and should be expected at any time during the initial management.

Whenever bacterial meningitis is suspected, a lumbar puncture is indicated (see Workup). Adequate analgesia is essential; in one study, only 1 in 7 infants received any pain management during lumbar puncture. If the child’s condition is unstable or there is suspicion of increased intracranial pressure (ICP), the lumbar puncture should be delayed. In ill children, this delay should not delay the commencement of antibiotic therapy.

If lumbar puncture cannot be performed promptly, administration of antibiotics should be initiated. However, sterilization of cerebrospinal fluid (CSF) will occur. Data suggest that complete CSF sterilization occurs within 2 hours for meningococcal meningitis and within 4 hours for pneumococcal infections.

Consultation with a pediatrician, an infectious disease specialist, or a critical care specialist may be needed. The primary care physician must coordinate the follow-up care and keep all involved specialists informed so that prompt action can be taken if any concerns exist.

In general, pediatric patients with bacterial meningitis require hospitalization to complete their entire parenteral antibiotic course. However, in view of the constant pressure to decrease hospital stays, there are very select occasions when older pediatric patients may reasonably be discharged from the hospital to continue parenteral antibiotics at home.

**Initial Supportive Measures**

**Neonates**

Initiate treatment as soon as bacterial meningitis is suspected. Ideally, blood and CSF cultures should be obtained before antibiotics are administered. If a newborn is on a ventilator and clinical judgment dictates that a lumbar puncture may be hazardous, it can be deferred until the infant is stable. A lumbar puncture performed a few days after initial treatment still reveals cellular and chemical abnormalities, but culture results may be negative.

Establish IV access, and meticulously monitor fluid administration. Neonates with meningitis are prone to develop hyponatremia as a consequence of the syndrome of inappropriate antidiuretic hormone secretion (SIADH). These electrolyte changes also contribute to the development of seizures, especially during the first 72 hours of disease.

Increased ICP secondary to cerebral edema is rarely a management problem in infants. Monitor blood gas levels closely to ensure adequate oxygenation and metabolic stability.

Magnetic resonance imaging (MRI) with gadoteridol, ultrasonography, or computed tomography (CT) with contrast is needed to delineate intracranial pathology. Certainly, some instances warrant automatic CNS imaging (eg, meningitis caused by gram-negative enterics, a complicated course). However, the efforts of a Pediatric Academic Societies meeting resulted in the suggested recommendation that contrast MRI should be performed for neonates with uncomplicated meningitis 7-10 days after treatment initiation to ensure that no complicating
pathology is present. All newborns recovering from meningitis should undergo auditory evoked potential studies to screen for hearing impairment.

**Infants and children**

Management of acute bacterial meningitis in infants and older children involves both supportive measures and appropriate antimicrobial therapy. All patients should have an audiologic evaluation upon completion of therapy.

Closely monitor patients’ fluid and electrolyte status. Check vital signs and neurologic status, and ensure that an accurate record of intake and output is maintained.

By prescribing the correct type and volume of fluid, the risk of brain edema can be minimized. The child should receive sufficient amounts of fluid to maintain systolic blood pressure at around 80 mm Hg, urinary output at 500 mL/m²/day, and adequate tissue perfusion. Although it is important to avoid SIADH, it is equally important to avoiding underhydration of the patient and the risk of decreased cerebral perfusion.

Dopamine and other inotropic agents may be necessary to maintain blood pressure and adequate circulation.

**Antibiotic Therapy**

**Neonates**

In neonates with bacterial meningitis, antibiotics should be administered as soon as venous access is established (see Tables 1 and 2 below). Traditionally, initial antimicrobial treatment consists of ampicillin plus an aminoglycoside (ampicillin plus cefotaxime is also appropriate). If *S. pneumoniae* is suspected, vancomycin should be added. Initial empiric therapy for late-onset disease in preterm infants should include an antistaphylococcal agent plus ceftazidime, amikacin, or meropenem.

Table 1. Antibiotic Dosages for Neonatal Bacterial Meningitis, Adjusted by Weight and Age

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Route</th>
<th>Birth Weight &lt; 2000 g, Age 0-7 Days</th>
<th>Birth Weight &gt; 2000 g, Age 0-7 Days</th>
<th>Birth Weight &lt; 2000 g, Age &gt;7 Days</th>
<th>Birth Weight &gt; 2000 g, Age &gt;7 Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penicillins</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ampicillin</td>
<td>IV, IM</td>
<td>50 mg/kg q12h</td>
<td>50 mg/kg q8h</td>
<td>50 mg/kg q8h</td>
<td>50 mg/kg q6h</td>
</tr>
<tr>
<td>Penicillin G</td>
<td>IV</td>
<td>50,000 U/kg q12h</td>
<td>50,000 U/kg q8h</td>
<td>50,000 U/kg q8h</td>
<td>50,000 U/kg q6h</td>
</tr>
<tr>
<td>Oxacillin</td>
<td>IV, IM</td>
<td>50 mg/kg q12h</td>
<td>50 mg/kg q8h</td>
<td>50 mg/kg q8h</td>
<td>50 mg/kg q6h</td>
</tr>
</tbody>
</table>
Ticarcillin

IV, IM 75 mg/kg q12h 75 mg/kg q8h 75 mg/kg q8h 75 mg/kg q6h

Cephalosporins

Cefotaxime IV, IM 50 m mg/kg g q12h 50 mg/kg q8h 50 mg/kg q8h 50 mg/kg q6h
Ceftriaxone IV, IM 50 mg/kg qd 50 mg/kg qd 50 mg/kg qd 75 mg/kg qd
Ceftazidime IV, IM 50 mg/kg q12h 50 mg/kg q8h 50 mg/kg q8h 50 mg/kg q8h

Table 2. Antibiotics for Neonatal Bacterial Meningitis That Must Be Dosed According to Serum levels (Open Table in a new window)

Antibiotic Route Desired Serum level, µg/mL Dosage Birth Weight Birth Weight Birth Weight Birth Weight
Antibiotic Route Desired Serum level, µg/mL Dosage Birth Weight Birth Weight Birth Weight Birth Weight

Aminoglycosides

Amikacin† IV, IM 20-30 (peak), < 10 (trough) 7.5 mg/kg q12h 10 mg/kg q12h 10 mg/kg q8h 10 mg/kg q8h
Gentamicin† IV, IM 5-10 (peak), < 2.5 (trough) 2.5 mg/kg q12h 2.5 mg/kg q12h 2.5 mg/kg q8h 2.5 mg/kg q8h
Tobramycin† IV, IM 5-10 (peak), < 2.5 (trough) 2.5 mg/kg q12h 2.5 mg/kg q12h 2.5 mg/kg q8h 2.5 mg/kg q8h

Glycopeptide

Vancomycin*† IV, IM 20-40 (peak), < 10 (trough) 15 mg/kg q12h 15 mg/kg q8h 15 mg/kg q8h 15 mg/kg q8h 15 mg/kg q6h

*The dosage stated is the highest within the dosage range.

† Serum levels must be monitored when patient has kidney disease or is receiving other nephrotoxic drugs; adjust doses accordingly.

Ampicillin provides good coverage for gram-positive cocci, including group B streptococci (GBS), enterococci, L monocytogenes, some strains of E coli, and H influenzae type b (Hib). Ampicillin also achieves adequate levels in CSF.
Aminoglycosides (eg, gentamicin, tobramycin, and amikacin) have good activity against most gram-negative bacilli, including *P aeruginosa* and *S marcescens*. However, aminoglycosides achieve only marginal levels in both CSF and ventricular fluid, even when the meninges are inflamed.

Several third-generation cephalosporins, such as cefotaxime and ceftriaxone, achieve good CSF levels and have emerged as effective agents against gram-negative infections. Ceftriaxone competes with bilirubin for binding of albumin, and therapeutic levels of ceftriaxone decrease the reserve albumin concentration in newborn serum by 39%; thus, ceftriaxone may increase the risk of bilirubin encephalopathy, especially in high-risk newborns. Ceftriaxone also causes sludging of bile.

None of the cephalosporins have any activity against *L monocytogenes* and enterococci; therefore, they should not be used alone for initial treatment. A combination of ampicillin and a third-generation cephalosporin is required.

If the offending pathogen is proved to be an ampicillin-susceptible bacterium with a low minimum inhibitory concentration (MIC) for ampicillin, ampicillin may be continued alone. Cefotaxime and ceftriaxone also provide good activity against most penicillin-resistant strains of *S pneumoniae*. Both vancomycin and cefotaxime should be administered in patients with *S pneumoniae* meningitis before antibiotic susceptibility results are available.

Among the aminoglycosides, gentamicin and tobramycin have been used extensively in combination with ampicillin. Despite concerns about the adequacy of their CSF levels, these agents have proven effective when combined with a beta-lactam antibiotic for the treatment of meningitis caused by organisms such as GBS and susceptible enterococci. Routine intrathecal administration of aminoglycosides offers no additional benefit in this setting.

Infections involving *S aureus*, anaerobes, or *P aeruginosa* may require other antimicrobials, such as oxacillin, methicillin, vancomycin, or a combination of ceftazidime with an aminoglycoside. Use of antimicrobial agents should be determined by their CSF penetration and safety.

The duration of antibiotic therapy is dictated by the pathogen responsible for the meningitis and the patient’s clinical course. In most cases, 14-21 days of treatment is adequate for GBS infection. With gram-negative bacillary meningitis, however, it may take longer to sterilize the CSF, and 3-4 weeks of treatment is usually necessary.

If no clinical improvement is noted or the meningitis is determined to be caused by resistant *S pneumoniae* strains or gram-negative enteric bacilli, repeat lumbar puncture is indicated. In neonates with gram-negative bacillary meningitis, examination of CSF during treatment is necessary to verify that cultures are sterile. Reexamination of CSF for chemistries and culture should be performed 48-72 hours after treatment initiation; further specimens are obtained if CSF sterilization is not demonstrated or clinical response is not apparent.

**Infants and children**

Prompt administration of antibiotics to a patient with suspected bacterial meningitis is essential (see Table 3 below). Initial antibiotic selection should provide coverage for the 3 most common pathogens: *S pneumoniae*, *N meningitidis*, and *H influenzae*. All antibiotics should be
administered IV to achieve adequate serum and CSF levels. An intraosseous route is acceptable if venous access is not an option.

Table 3. Dosages and Dosing Intervals for Intravenous Antimicrobials in Infants and Children With Bacterial Meningitis (Open Table in a new window)

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>IV Dosage</th>
<th>Maximum Daily Dose</th>
<th>Dosing Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ampicillin</td>
<td>400 mg/kg/day</td>
<td>6-12 g</td>
<td>q6h</td>
</tr>
<tr>
<td>Vancomycin</td>
<td>60 mg/kg/day</td>
<td>2-4 g</td>
<td>q6h</td>
</tr>
<tr>
<td>Penicillin G</td>
<td>400,000 U/kg/day</td>
<td>24 million U</td>
<td>q6h</td>
</tr>
<tr>
<td>Cefotaxime</td>
<td>200-300 mg/kg/day</td>
<td>8-10 g</td>
<td>q6h</td>
</tr>
<tr>
<td>Ceftriaxone</td>
<td>100 mg/kg/day</td>
<td>4 g</td>
<td>q12h</td>
</tr>
<tr>
<td>Ceftazidime</td>
<td>150 mg/kg/day</td>
<td>6 g</td>
<td>q8h</td>
</tr>
<tr>
<td>Cefepime*</td>
<td>150 mg/kg/day</td>
<td>2-4 g</td>
<td>q8h</td>
</tr>
<tr>
<td>Imipenem†</td>
<td>60 mg/kg/day</td>
<td>2-4 g</td>
<td>q6h</td>
</tr>
<tr>
<td>Meropenem</td>
<td>120 mg/kg/day</td>
<td>4-6 g</td>
<td>q8h</td>
</tr>
<tr>
<td>Rifampin</td>
<td>20 mg/kg/day</td>
<td>600 mg</td>
<td>q12h</td>
</tr>
</tbody>
</table>

*Experience with this agent in pediatric patients is minimal; it is not licensed for treatment of meningitis.

† Because of possible seizures, this agent must be used with caution in treating meningitis.

According to the 2004 Infectious Diseases Society of America (IDSA) practice guidelines for bacterial meningitis, vancomycin plus either ceftriaxone or cefotaxime is recommended for those with suspected bacterial meningitis, with targeted therapy based on the susceptibilities of isolated pathogens.[3] This combination provides adequate coverage for most penicillin-resistant pneumococci and beta-lactamase–resistant Hib. Ceftazidime has poor activity against pneumococci and should not be substituted for cefotaxime or ceftriaxone.

Because vancomycin penetrates the central nervous system (CNS) poorly, a higher dosage (60 mg/kg/day) is recommended when this agent is used to treat CNS infections. Cefotaxime or ceftriaxone is adequate if pneumococci are susceptible to cefotaxime. However, if *S pneumoniae* isolates have a higher MIC for cefotaxime and fall in the intermediate-resistance group, sterilization of the CSF may not be achieved promptly, and a high dosage of cefotaxime (300 mg/kg/day) plus vancomycin (60 mg/kg/day) may be preferred.

In the rare event that a pneumococcal isolate has high resistance to cefotaxime or ceftriaxone, vancomycin alone may not be adequate for prompt sterilization of the CSF, and rifampin should be added to the regimen to provide 4- to 8-fold bactericidal activity against the pathogen. Carbapenem treatment is another valid option for cephalosporin-resistant carbapenem-
susceptible isolates. Meropenem is preferred to imipenem because of the risk of seizures associated with the latter.

The roles of other classes of antibiotics, such as the oxazolidinones (eg, linezolid), in the treatment of bacterial meningitis in infants and children remain to be determined. Fluoroquinolones may be an option for patients in whom either other antibacterials cannot be used or previous therapy has failed, but they should be used with caution because resistance may develop during treatment.

When there is a history of significant hypersensitivity to beta-lactam antibiotics (ie, penicillins and cephalosporins), the choice of alternative agent varies with the cause of the meningitis. Vancomycin and rifampin should be considered for *S pneumoniae*. Chloramphenicol can also be used if the MIC is 4 µg/mL or less. It is recommended for patients with meningococcal meningitis who have significant hypersensitivity to beta-lactam antimicrobial agents.

Examination of the CSF at the end of treatment has not proved helpful for predicting relapses or recrudescence of meningitis. Hib isolates can persist in the nasopharyngeal secretions even after successful treatment of meningitis. For this reason, rifampin 20 mg/kg must be given once daily for 4 days if high-risk children are at home or at a childcare center (unless the medication was ceftriaxone). *N meningitidis* and *S pneumoniae* are usually eradicated from the nasopharynx after successful treatment of meningitis.

Phlebitis at the IV site and antibiotic fever are the most common of several causes of secondary fever in patients with meningitis. Thoroughly evaluate any patient with fever.

**Duration of antimicrobial therapy**

The IDSA 2004 guidelines for management of bacterial meningitis provide the following recommendations for the duration of antibiotic therapy, with the caveat that “the guidelines are not standardized and that duration of therapy may need to be individualized on the basis of the patient’s clinical response”:

- *N meningitidis* - 7 days
- *H influenzae* - 7 days
- *S pneumoniae* - 10-14 days
- *S agalactiae* (GBS) - 14-21 days
- Aerobic gram-negative bacilli - 21 days or 2 weeks beyond the first sterile culture (whichever is longer)
- *L monocytogenes* - 21 days or longer

A meta-analysis of randomized controlled trials evaluated the efficacy and safety of short-course antibiotic therapy for bacterial meningitis.[25] Five open-label trials were included, involving children aged 3 weeks to 16 years. No differences between short-course (4-7 days) and long-course (7-14 days) treatment with IV ceftriaxone were demonstrated with respect to end-of-therapy clinical success, long-term neurologic complications, long-term hearing impairment, total adverse events, and secondary nosocomial infections.
However, the American Academy of Pediatrics (AAP) does not endorse courses of therapy shorter than 5-7 days for meningococcus, 10 days for H influenzae, and 14 days for S pneumoniae. Although the available evidence is limited, some studies show no difference between short-course and long-course antibiotic regimens for treatment of bacterial meningitis in children.

A double-blind, placebo-controlled, randomized, multicountry equivalence study compared 5-day and 10-day ceftriaxone regimens for treatment of purulent meningitis in children (aged 2 months to 12 years). The investigators concluded that antibiotic treatment of purulent meningitis caused by Hib, N meningitidis, or S pneumoniae could be safely discontinued in children who are stable by day 5. However, this should not be considered the standard of care.

**Dexamethasone Therapy**

Experimental studies have revealed a correlation between outcome and the severity of the inflammatory process in the subarachnoid space. In animal models of bacterial meningitis, the use of dexamethasone has been associated with decreased inflammation, reduced cerebral edema and ICP, and lesser degrees of brain damage.

Subsequent controlled, double-blind clinical trials demonstrated the beneficial effects of adjunctive dexamethasone in infants and children with Hib meningitis. The incidence of neurologic and audiologic sequelae was significantly decreased on follow-up examination; clinical benefit was greatest for overall hearing impairment. As a result, the IDSA guidelines recommend adjunctive dexamethasone for these patients in a dosage of 0.15 mg/kg q6h for 2-4 days, initiated 10-20 minutes before (or at least concomitant with) the first antimicrobial dose.

A meta-analysis by Mongelluzzo et al did not find corticosteroids to be beneficial in children with bacterial meningitis. Survival and time to hospital discharge did not differ significantly between the corticosteroid treatment group and the untreated group, even when the 2 groups were subcategorized according to age or causative organism.

A prospective, double-blind, placebo-controlled, multicenter trial in adults with bacterial meningitis documented benefit (a lower percentage of unfavorable outcomes, including death) in patients with pneumococcal meningitis but not in others. Although dexamethasone has not yet been convincingly shown to offer a clear clinical benefit in pediatric patients with S pneumoniae meningitis, a Cochrane review recommended that corticosteroids be considered in nonneonates with bacterial meningitis in high-income countries.

Given the lack of a clear benefit favoring the use of dexamethasone in older infants and children and the concerns that such use may lead to decreased antibiotic penetration in the CSF, the decision to give dexamethasone must be made on a case-by-case basis after the potential risks and benefits have been carefully weighed. The data are likewise insufficient to allow recommendation of adjunctive steroid therapy in neonates with bacterial meningitis.

**Prevention**
Prevention is an important aspect of the management of pediatric bacterial meningitis because it has been shown to reduce mortality and morbidity. Preventive measures can be divided into 2 broad categories, chemoprophylaxis and immunization.

The use of rifampin, ceftriaxone, and ciprofloxacin has been effective chemoprophylaxis (see Table 4 below). Ciprofloxacin and ceftriaxone are more effective against resistant strains of *N meningitidis* up to 4 weeks after treatment. Routine childhood immunizations have been shown to effectively decrease the incidence of certain types of meningitis.

Table 4. Chemoprophylaxis for Bacterial Meningitis Caused by *Haemophilus influenzae* or *Neisseria meningitidis* (Open Table in a new window)

<table>
<thead>
<tr>
<th>Causative Organism</th>
<th>Drug Name</th>
<th>Age of Contact</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Haemophilus influenzae</em></td>
<td>Rifampin</td>
<td>Adults</td>
<td>&gt;600 mg PO qd for 4 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt;1 month</td>
<td>20 mg/kg PO qd for 4 days; not to exceed 600 mg/dose</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt; 1 month</td>
<td>&gt;10 mg/kg PO qd for 4 days</td>
</tr>
<tr>
<td><em>Neisseria meningitidis</em></td>
<td>Rifampin</td>
<td>Adults</td>
<td>600 mg PO q12h for 2 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt;1 month</td>
<td>10 mg/kg PO q12h for 2 days; not to exceed 600 mg/dose</td>
</tr>
<tr>
<td></td>
<td></td>
<td>≤1 month</td>
<td>&gt;5 mg/kg PO q12h for 2 days</td>
</tr>
<tr>
<td></td>
<td>Ceftraxone</td>
<td>&gt;15 years</td>
<td>250 mg IM once</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt;15 years</td>
<td>&gt;125 mg IM once</td>
</tr>
<tr>
<td></td>
<td>Ciprofloxacin</td>
<td>=18 years</td>
<td>&gt;500 mg PO once</td>
</tr>
</tbody>
</table>

**Haemophilus influenzae type b**

The risk of invasive Hib disease is increased among unimmunized household contacts younger than 4 years. Rifampin eradicates the organism from the pharynx of approximately 95% of carriers. The efficacy of rifampin in preventing disease in childcare groups is not established.

Recommendations for rifampin chemoprophylaxis for contacts of index cases of invasive Hib disease include the following:

- All household contacts with at least one contact younger than 4 years who is unimmunized or partially immunized; those with a child younger than 12 months who has not received the primary series; and those with an immunocompromised child (even if older than 4 years), regardless of immunization status
- Nursery and childcare center contacts regardless of age, when 2 or more cases of invasive disease have occurred within 60 days
- The index case if younger than 2 years or with a susceptible household contact and treated with ampicillin or chloramphenicol
Immunizations should be administered in accordance with AAP guidelines. Universal immunization against Hib infection has led to a dramatic decline in the incidence of invasive Hib meningitis.

In June 2012, MenHibrix, a combination vaccine providing immunization against both Hib and meningococcal serogroups C and Y, was approved by the US Food and Drug Administration (FDA) for use in infants. This combination vaccine is indicated in children aged 6 weeks to 18 months for active immunity against invasive disease. It is given as a 4-dose series, usually at well-baby checkups.

The Advisory Committee on Immunization Practices (ACIP) recommends HibMenCY be given to infants at increased risk for meningococcal disease, in 4 doses at 2, 4, 6, and 12 through 15 months; at-risk infants are those with complement component deficiencies, those with known asplenia or sickle cell disease, and those exposed to community outbreaks of serogroup C or Y disease.

**Neisseria meningitidis**

Administration of antimicrobial agents to contacts is divided into high- and low-risk categories. Only contacts stratified as high-risk require prophylaxis. Candidates for chemoprophylaxis against meningococcal disease include the following:

- All household contacts
- Childcare or nursery school contacts during the 7 days before illness onset
- Contacts directly exposed to index case secretions through kissing, sharing toothbrushes or eating utensils, or other markers of close social contact during the 7 days before illness onset
- Persons who had mouth-to-mouth resuscitation or unprotected contact during endotracheal intubation in the 7 days before illness onset
- Contacts who frequently slept or ate in the same dwelling as the index patient during the 7 days before illness onset

Outbreaks or clusters must be managed as mandated by local public health authorities.

A quadrivalent (ie, A, C, Y, W-135) meningococcal conjugate vaccine is recommended for high-risk groups, including patients with immunodeficiency, patients with functional or anatomic asplenia, and patients with deficiencies of terminal components of complement. It has been given to high-risk children as young as 9 months (Menactra) or 2 months (Menveo). The vaccine is also valuable in controlling the epidemics of meningococcal disease.

The ACIP has recommended the quadrivalent meningococcal conjugate vaccine for all children aged 11-12 years, for first-year college students who will be living in a dormitory or a dormitorylike setting, and for other high-risk groups.

As noted above, a combination vaccine against both meningococcal serogroups C and Y conjugate and Hib has been approved by the FDA for use in infants. The HibMenCY is recommended by the ACIP for infants at increased risk for meningococcal disease, such as those:
Streptococcus pneumoniae

Routine chemoprophylactic measures for invasive disease secondary to *S. pneumoniae* are limited to people with specific medical conditions.

The heptavalent pneumococcal conjugate vaccine has been introduced into the primary childhood vaccination schedule. Immunizations should be administered according to AAP guidelines. The polysaccharide vaccine is generally used for those with specific medical conditions.

References


