C.S. MOTT CHILDREN'S HOSPITAL
MICHIGAN MEDICINE

GUIDELINES FOR TREATMENT OF BACTERIAL MENINGITIS IN PEDIATRICS (COMMUNITY- OR INTRAPARTUM-ACQUIRED)

Common Pathogens	Empiric Therapy	Duration of Therapy	Comments/Reference
<1 month* *S. agalactiae*, *E. coli,* *L. monocytogenes*, *Klebsiella* spp	0-7 days (<2000 g): **Ampicillin** 50 mg/kg/dose IV q12h + **Cefotaxime** 50 mg/kg/dose IV q12h 0-7 days (>2000 g): **Ampicillin** 50 mg/kg/dose IV q8h + **Cefotaxime** 75 mg/kg/dose IV q12h 8 days-30 days (<1200 g): **Ampicillin** 50 mg/kg/dose IV q12h + **Cefotaxime** 50 mg/kg/dose IV q12h 8 days-30 days (1200-2000 g): **Ampicillin** 50 mg/kg/day IV q8h + **Cefotaxime** 37.5 mg/kg/dose IV q6h or 50 mg/kg/dose IV q8h 8-30 days (>2000 g): **Ampicillin** 50 mg/kg/dose IV q6h or 67 mg/kg/dose IV q8h + **Cefotaxime** 50 mg/kg/dose IV q6h or q8h	If an organism is identified, the typical duration of therapy is: *N. meningitides*: 7 days *H. influenzae*: 7 days *S. pneumoniae:* 10-14 days *S. agalactiae*: 14-21 days Aerobic GNRs: 21 days *L. monocytogenes*: ≥21 days	• CT prior to lumbar puncture if: ○ Immunocompromised ○ History of CNS disease (mass lesion, stroke) ○ New onset seizures ○ Papilledema ○ Abnormal level of consciousness ○ Focal neurologic deficit • The use of dexamethasone has demonstrated a decrease in morbidity in children with meningitis due to *H. influenzae* type B and in adults with meningitis due to *S. pneumoniae*. Dexamethasone may be considered for pediatric patients with meningitis due to either *H. influenzae* or *S. pneumoniae*. • Dexamethasone should be administered 10-20 min before antimicrobial therapy for maximal efficacy and continued for 2-4 days. • If dexamethasone is utilized for meningitis, then rifampin (10-20 mg/kg/day, max 600 mg/day) should also be administered. • If an organism is identified via CSF culture, then definitive therapy should be narrowed to a single agent with good CSF penetration and activity against the causative organism. • If history or physical exam findings are concerning for HSV encephalitis, consider the use of acyclovir.
1 - 2 months *S. pneumoniae,* *N. meningitidis,* *S. agalactiae,* *H. influenzae*	**Cefotaxime** 75 mg/kg/dose IV q6h or q8h + **Vancomycin** IV		
2 months- 18 years *N. meningitidis,* *S. pneumoniae*	Preferred: **Ceftriaxone** 50 mg/kg/dose IV q12h (max: 2 g/dose) + **Vancomycin** IV Non-life threatening penicillin or cephalosporin allergy: **Meropenem** 40 mg/kg/dose q8h (max: 2 g/dose) + **Vancomycin** IV Life threatening penicillin allergy: **Aztreonam** 40 mg/kg/dose q6h (max: 2 g/dose) + **Vancomycin** IV	**If an organism is identified, the typical duration of therapy is:** *N. meningitides*: 7 days *S. pneumoniae:* 10-14 days	

Common Pathogens	Empiric Therapy	Duration of Therapy	Comments/Reference
Basilar skull fracture *S. pneumoniae*, *H. influenzae*, Group A strep	Preferred: **Ceftriaxone** 50 mg/kg/dose IV q12h (max: 2 g/dose) + **Vancomycin** IV Non-life threatening PCN/cephalosporin allergy: **Meropenem** 40 mg/kg/dose IV q8h (max: 2 g/dose) + **Vancomycin** IV Life threatening penicillin allergy: **Aztreonam** 40 mg/kg/dose IV q6h (max: 2 g/dose) + **Vancomycin** IV	7-21 days (plus)	• Patients with significant barrier disruption are at increased risk of resistant-gram negative organisms thus requiring broadening of ceftriaxone to cefepime • Adjust cefepime, vancomycin, meropenem, and aztreonam in patients with renal dysfunction • CT prior to lumbar puncture if: ○ Immunocompromised ○ History of CNS disease (mass lesion, stroke) ○ New onset seizures ○ Papilledema ○ Abnormal level of consciousness ○ Focal neurologic deficit • For infants and children with CSF shunts, vancomycin alone may be appropriate if GNRs are not identified on gram-stain
Penetrating trauma *S. aureus*, Coag-negative *Staphylococci*, Aerobic gram-negative bacilli (including *Pseudomonas*)	Preferred: **Cefepime** 50 mg/kg/dose IV q8h (max: 2 g/dose) + **Vancomycin** IV Non-life threatening PCN/cephalosporin allergy: **Meropenem** 40 mg/kg/dose IV q8h (max: 2 g/dose) + **Vancomycin** IV Life threatening penicillin allergy: **Aztreonam** 40 mg/kg/dose IV q6h (max: 2 g/dose) + **Vancomycin** IV		
Post neurosurgery Aerobic gram-negative bacilli (including *Pseudomonas*) *S. aureus*, Coag-negative *Staphylococci*	Preferred: **Cefepime** 50 mg/kg/dose IV q8h (max: 2 g/dose) + **Vancomycin** IV Non-life threatening PCN/cephalosporin allergy: **Meropenem** 40 mg/kg/dose IV q8h (max: 2 g/dose) + **Vancomycin** IV Life threatening penicillin allergy: **Aztreonam** 40 mg/kg/dose IV q6h (max: 2 g/dose) + **Vancomycin** IV		

Common Pathogens	Empiric Therapy	Duration of Therapy	Comments/Reference
Presence of CSF shunt Aerobic gram-negative bacilli (including *Pseudomonas*), *S. aureus*, Coag-negative *Staphylococci, Propionibacterium acnes*	Preferred: **Cefepime** 50 mg/kg/dose IV q8h (max: 2 g/dose) + **Vancomycin** IV Non-life threatening PCN/cephalosporin allergy: **Meropenem** 40 mg/kg/dose IV q8h (max: 2 g/dose) + **Vancomycin** IV Life threatening penicillin allergy: **Aztreonam** 40 mg/kg/dose IV q6h (max: 2 g/dose) + **Vancomycin** IV	7-21 days (plus)	• CSF shunt infections: Gold standard for infection clearance is removal of shunt. Prior to replacement of shunt, cultures should be negative for: ○ Coagulase negative Staphylococci + normal CSF findings: 3 days ○ Coagulase negative Staphylococci + abnormal CSF findings: 7 days ○ S. aureus: 10 days ○ Gram negative bacilli: 10-14 days (plus) • For infants and children with CSF shunts, vancomycin alone may be appropriate if GNRs are not identified on gram-stain • Adjust cefepime, vancomycin, meropenem, and aztreonam in patients with renal dysfunction

*These guidelines are not intended for use in neonatal patients who have been hospitalized beyond the initial postpartum time period.

Reference:

Tunkel AR et al. Practice Guidelines for the Management of Bacterial Meningitis. Clin Infect Dis. 2004. 39 (9), 1267-84.

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