

Central Nervous System: Meningitis

ACUTE BACTERIAL MENINGITIS

Clinical Syndrome	Preferred Regimen	Alternative Regimen	Diagnostics and Clinical Considerations
<p>Age < 50</p> <p>Most commonly isolated organisms:</p> <ul style="list-style-type: none"> • <i>S. pneumoniae</i> • <i>N. meningitidis</i> • <i>H. influenzae</i> 	<p>Ceftriaxone 2 gm IV Q12H AND Vancomycin 15 mg/kg IV AND Dexamethasone 0.15 mg/kg IV Q6H given 10 to 20 minutes <u>before</u> the first dose of antimicrobial therapy and continue for 4 days for pneumococcal meningitis (discontinue for all other microorganisms)</p>	<p><u>PCN allergy (anaphylaxis):</u> Vancomycin 15 mg/kg IV AND Moxifloxacin 400 mg IV Q24H AND Dexamethasone 0.15 mg/kg IV Q6H given 10 to 20 minutes <u>before</u> the first dose of antimicrobial therapy and continue for 4 days for pneumococcal meningitis (discontinue for all other microorganisms)</p>	<ul style="list-style-type: none"> • Consult Infectious Diseases • Obtain lumbar puncture and blood cultures <u>prior</u> to starting therapy • Consider proceeding to antibiotics directly if lumbar puncture is delayed for any reason • Patients with the following conditions should receive head CT prior to lumbar puncture: <ul style="list-style-type: none"> - Immuno-compromised (HIV) - History of CNS lesion, stroke or focal infection - New onset seizure - Papilledema - Abnormal level of consciousness - Focal neurologic deficit • Typical CSF findings in bacterial meningitis <ul style="list-style-type: none"> - Cloudy CSF - Glucose < 40 mg/dL OR <50% serum - Protein 100-500 - WBC 1000-5000 - > 90% PMNs • Narrow therapy based on CSF culture results • If CSF culture negative, consult ID • Repeat lumbar puncture if no improvement in 48 hours and consider viral panel
<p>Age ≥ 50</p> <p>Most commonly isolated organisms:</p> <ul style="list-style-type: none"> • <i>S. pneumoniae</i> • <i>N. meningitidis</i> • <i>H. influenzae</i> • <i>L. monocytogenes</i> • Aerobic gram negative bacilli 	<p>Ceftriaxone 2 gm IV Q12H AND Vancomycin 15 mg/kg IV AND Ampicillin 2 gm IV Q4H AND Dexamethasone 0.15 mg/kg IV Q6H given 10 to 20 minutes <u>before</u> the first dose of antimicrobial therapy and continue for 4 days for pneumococcal meningitis (discontinue for all other microorganisms)</p>	<p><u>PCN allergy (anaphylaxis):</u> Vancomycin IV 15 mg/kg AND Moxifloxacin 400 mg IV Q24H AND SMX/TMP 5 mg/kg IV Q6H AND Dexamethasone 0.15 mg/kg IV Q6H given 10 to 20 minutes <u>before</u> the first dose of antimicrobial therapy and continue for 4 days for pneumococcal meningitis (discontinue for all other microorganisms)</p>	<ul style="list-style-type: none"> • Typical CSF findings in bacterial meningitis <ul style="list-style-type: none"> - Cloudy CSF - Glucose < 40 mg/dL OR <50% serum - Protein 100-500 - WBC 1000-5000 - > 90% PMNs • Narrow therapy based on CSF culture results • If CSF culture negative, consult ID • Repeat lumbar puncture if no improvement in 48 hours and consider viral panel

CNS= central nervous system; CSF= cerebral spinal fluid; CT= computed tomography; H= hour(s); HIV= human immunodeficiency virus; ID= infectious diseases; IV= intravenous; PCN= Penicillin; PMNs= poly morphonuclear cells; Q= every; SMX/TMP= Sulfamethoxazole/Trimethoprim; WBC= white blood cell

Central Nervous System: Meningitis

HEALTH CARE-ASSOCIATED VENTRICULITIS AND MENINGITIS

Clinical Syndrome	Preferred Regimen
Empiric or targeted treatment	<u>Consult Infectious Diseases</u>

ASEPTIC/ VIRAL/OTHER MENINGITIS AND HERPES SIMPLEX TYPE 2

Clinical Syndrome	Preferred Regimen	Diagnostics and Clinical Considerations
Aseptic/Viral/Other <ul style="list-style-type: none"> Respiratory viruses Enteroviruses (90%) Arboviruses West Nile Virus Epstein Barr Virus Lyme Syphilis 	Supportive care If Lyme Suspected: Ceftriaxone 2 gm IV Q24H	<ul style="list-style-type: none"> <u>Consult Infectious Diseases</u> Send CSF and order: <ul style="list-style-type: none"> Viral culture HSV PCR Enteroviral PCR Lyme Antibody (IgG index, requires simultaneous serum) VDRL Typical CSF findings in viral meningitis <ul style="list-style-type: none"> Clear CSF Glucose 30-70 mg/dL Protein 30-150 WBC 100-1000 < 90% PMNs, increased lymphocytes
Herpes Simplex Type 2	Acyclovir 10 mg/kg* IV Q8H Treat for 7 to 10 days	

CSF= cerebral spinal fluid; H= hour(s); HSV= Herpes Simplex Virus; IV= intravenous; LP= lumbar puncture; PCR= Polymerase Chain Reaction; PMNs= poly morphonuclear cells; Q= every; VDRL= Veneral Disease Research Laboratory Test; WBC= white blood cell

* Acyclovir mg/kg dosing based on ideal body weight.

NOTE: *If dexamethasone or imaging studies (LP or CT) is not immediately available DO NOT delay administration of antibiotics.*

NOTE: *Dosing based on normal renal function. Refer to Table of Contents for section on Vancomycin Dosing and Monitoring in Adult Patients and Antimicrobial Dosing for Adult Patients Based on Renal Function*

References:

- Tunkel AR, et al. Practice guidelines for the management of bacterial meningitis. *Clin Infect Dis*. 2004 Nov 1;39(9):1267-84.
- Tunkel AR, et al. 2017 Infectious Diseases Society of America's Clinical Practice Guidelines for Healthcare-Associated Ventriculitis and Meningitis. *Clin Infect Dis*. 2017 Feb 14.