THE STEWARDSHIP SCOOP

The Antimicrobial and Diagnostic Stewardship Program (ADSP) team is here to bring you the latest

August 2026

AGENTS FOR CNS INFECTIONS

Central Nervous System (CNS) penetration of antimicrobials depends on drug properties, blood-brain barrier integrity, and meningeal inflammation, all of which influence the ability to achieve therapeutic concentrations in the CSF.

Clinical Utility of Common Antimicrobials in CNS Infections

Antimicrobial	Used for CNS Infection?	General comment: ID consult for CNS Infections **Agent Specific Comments**
Vancomycin	✓	Outcomes driven by high serum levels and inflammation, targeting AUC on the higher end of the range
Oxacillin / Nafcillin	✓	First-line for MSSA CNS infections at higher doses; clinical efficacy present despite inflammation-dependent CNS penetration
Cefazolin	✗	With current dosing, cefazolin should not be used for CNS infections
Piperacillin-tazobactam	✗	AVOID – tazobactam does not achieve therapeutic concentrations in the CSF; not recommended for CNS infections
Cefepime	✓	Clinical efficacy in healthcare-associated meningitis and *Pseudomonas* CNS infections; effective at high doses
Ceftazidime	✓	Alternative to cefepime for susceptible infections, including *Pseudomonas*
Ceftaz-avi or ceftol-tazo	⚠	The cephalosporin likely penetrates the CNS well, but the inhibitor may not achieve therapeutic concentrations. Alternatives should be used if possible. Consult ID.
Meropenem	✓	High doses show clinical efficacy in bacterial meningitis
Metronidazole	✓	Used in combination with an above cephalosporin in most cases; effective for CNS abscesses and general anerobic coverage
Linezolid	✓	Effective alternative to vancomycin for MRSA or VRE CNS surgical infections – great CNS penetration (caution due to pancytopenia with courses >2 weeks)
Daptomycin	✗	AVOID – does not effectively penetrate the CNS
Azoles	⚠	Fluconazole and Voriconazole both effectively penetrate the CNS; other azoles, including posaconazole and itraconazole, are less good, ID consult recommended
Amphotericin B	✓	The liposomal formulation effectively penetrates the CNS tissue well

Example Pharmacist Triage for a CNS Infection

Patient on empiric pip-tazo for hospital-onset fever → Concern for CNS infection → Discuss switch with team to: Cefepime +/- Metronidazole

Pearl: Pip-tazo should not be used for CNS infections, the green checked antibiotics in the chart above provide more consistent penetration. Oxacillin/nafcillin is best for MSSA, while vancomycin and linezolid are both effective in the CNS for resistant Gram-positive infections.