Central Nervous System Infections

INFECTION	MOST LIKELY ORGANISMS	THERAPY CATEGORY	ANTIMICROBIALS	COMMENTS
MENINGITIS • less than 4 weeks of age • community-acquired	Group B Strep (GBS) E.*coli* *Listeria* Herpes simplex virus (HSV)	First line	**Cefotaxime IV**: Lexicomp dosages **AND** **Ampicillin IV**: Lexicomp dosages **If suspicion of HSV** add:** **Acyclovir IV**: Lexicomp dosages	If CSF gram stain shows gram positive cocci or gram positive rods, add gentamicin 1 mg/kg/dose IV q8h for synergy in case of GBS or Listeria. **HSV to be suspected if presence of 1 or more of: - Ill-appearing - Altered mental status - Hypothermia - Seizures - Presence of vesicles - Exposure to maternal genital HSV lesions - Elevated ALT - CSF pleocytosis (using standard neonatal reference ranges) with a negative gram stain + leukopenia or thrombocytopenia (*refer to Febrile Young Infant Pathway*)
MENINGITIS • 4 weeks of age and above • community-acquired	Strep *pneumoniae* N. *meningitidis* H. *influenzae* **Up to 3 months of age:** Group B Strep E. *coli*	First line	**Ceftriaxone IV 50 mg/kg/dose q12h (max. 4 g/DAY)** **AND** **Vancomycin* 15 mg/kg/dose IV q6h**	If bacterial meningitis strongly suspected, consider giving dexamethasone 0.15 mg/kg/dose immediately before or concomitantly with first dose of antibiotics Consult ID in patients with CSF leak, anatomic defects and/or penetrating head trauma
		Penicillin allergy	Same	

				*Refer to the Guidelines for the prescription and the therapeutic drug monitoring of vancomycin at the Montreal Children's Hospital
HEALTHCARE-ASSOCIATED MENINGITIS (e.g. CSF shunt infection, post-neurosurgery)	Staph *aureus* CoNS (coagulase-negative staphylococci) *Cutibacterium acnes* *Enterobacterales* *Pseudomonas*	First line	**Meropenem 40 mg/kg/dose IV q8h** (max. 2 g/dose) **AND** **Vancomycin* 15 mg/kg/dose IV q6h**	Switch to cloxacillin if oxacillin-sensitive staph isolated. *Refer to the Guidelines for the prescription and the therapeutic drug monitoring of vancomycin at the Montreal Children's Hospital Pediatric ID consultation advised.
		Penicillin allergy	Same	
ABCESS • Brain abcess or • Subdural abcess or • Epidural abscess • Community-acquired	Strep *spp* Staph *spp* Strep *pneumoniae* Anaerobes	First line	**Ceftriaxone 50 mg/kg/dose IV q12h** (max. 2 g/dose) **AND** **Vancomycin* 15 mg/kg/dose IV q6h** **AND** **Metronidazole 10 mg/kg/dose IV q8h** (max. usual 500 mg/dose)	Consider Meropenem 40 mg/kg/dose IV q8h AND vancomycin for healthcare-associated infection. *Refer to the Guidelines for the prescription and the therapeutic drug monitoring of vancomycin at the Montreal Children's Hospital
		Penicillin allergy	Same	
ENCEPHALITIS • greater than 3 months of age • community-acquired immunocompetent	HSV	First line	**Acyclovir IV** **Less than 12 years old**: 10-15 mg/kg/dose q8h **12 years old and above**: 10 mg/kg/dose q8h **MAY ADD:**	

			Antibiotics for meningitis	

REFERENCES:

Empiric Antimicrobial Therapy Guide: Version 9, May 2025