

Intraventricular (IVT) or Intrathecal (IT) Use of Antibiotics

Used for central nervous system (CNS) infections:

- Ventriculitis
- Meningitis
- Shunt or reservoir infections
- Suppurative intracranial infections (brain abscess, subdural empyema, epidural abscess)

General principles

- No antibiotic is approved by the Food and Drug Administration (FDA) for IVT or IT administration
- Use is generally reserved for life-threatening infections
- Dosing regimens should be individualized and depend on factors including ventricle size & volume
- Goal is to achieve a concentration in the CSF that is not achievable with systemic therapy alone
- Measuring CSF concentration allows for individualization (ideally 10x the MIC)
- Doses must be prepared in a preservative-free medium to prevent toxicity
- IVT/IT antimicrobials should be given with concomitant systemic therapy
- Duration of treatment is highly individualized and depends on clinical condition

Available IVT/IT antimicrobials

Medication	Concentration	Usual Dose	Comments
Vancomycin	5 mg/mL	5-20 mg/day	
Gentamicin	5 mg/mL	1-8 mg/day	
Tobramycin	5 mg/mL	5-20 mg/day	
Amikacin	5 mg/mL	5-50 mg/day	
Amphotericin B deoxycholate	0.5 mg/mL	0.1-0.5 mg/day	Deoxycholate formulation preferred; liposomal may be used if not tolerated

References:

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