

Meningitis: Cause

Bacterial:

### Characteristic features of common causes of bacterial meningitis

Organism	Site of entry	Age range	Predisposing conditions
<i>Neisseria meningitidis</i>	Nasopharynx	All ages	Usually none, rarely complement deficiency
<i>Streptococcus pneumoniae</i>	Nasopharynx, direct extension across skull fracture, or from contiguous or distant foci of infection	All ages	All conditions that predispose to pneumococcal bacteremia, fracture of cribriform plate, cochlear implants, cerebrospinal fluid otorrhea from basilar skull fracture, defects of the ear ossicle (Mondini defect)
<i>Listeria monocytogenes</i>	Gastrointestinal tract, placenta	Older adults and neonates	Defects in cell-mediated immunity (eg, glucocorticoids, transplantation [especially renal transplantation]), pregnancy, liver disease, alcoholism, malignancy
Coagulase-negative staphylococci	Foreign body	All ages	Surgery and foreign body, especially ventricular drains
<i>Staphylococcus aureus</i>	Bacteremia, foreign body, skin	All ages	Endocarditis, surgery and foreign body, especially ventricular drains; cellulitis, decubitus ulcer
Gram-negative bacilli	Various	Older adults and neonates	Advanced medical illness, neurosurgery, ventricular drains, disseminated strongyloidiasis
<i>Haemophilus influenzae</i>	Nasopharynx, contiguous spread from local infection	Adults; infants and children if not vaccinated	Diminished humoral immunity

Viral:

### Viral infections of the central nervous system (CNS)

	Meningitis	Encephalitis
<b>Enteroviruses</b>		
Coxsackie A and B viruses	Common	Rare
Echoviruses	Common	Rare
Polioviruses	Common	Rare
<b>Arthropod-borne viruses (arboviruses)</b>		
West Nile virus	Infrequent	Common
St. Louis encephalitis virus	Common	Common
California encephalitis virus	Common	Common
Eastern encephalitis virus	Rare	Common
Western encephalitis virus	Common	Common
Venezuelan equine encephalitis virus	-	Infrequent
Colorado tick fever	-	Infrequent
Powassan encephalitis	-	Rare
<b>Herpesviruses</b>		
Herpes simplex type 1	Rare	Common
Herpes simplex type 2	Common	Rare
Cytomegalovirus	Infrequent	Common
Varicella zoster virus	Infrequent	Infrequent
Epstein Barr virus	Infrequent	Common
Simian herpes B virus	Rare	Common
<b>Other viruses</b>		
Human immunodeficiency virus	Common	Common
Rabies virus	Rare	Common
Lymphocytic choriomeningitis virus	Common	Infrequent
Influenza virus	Rare	Common
Mumps virus	Common	Infrequent
Measles	Common	Rare

\* The terms common, infrequent, and rare refer to the propensity of a viral CNS infection to result in either meningitis or encephalitis and not to how commonly a specific virus causes CNS infection.