

<3 months of age, those >55, or those with suspected impaired cell-mediated immunity because of chronic illness, organ transplantation, pregnancy, malignancy, or immunosuppressive therapy. Metronidazole is added to the empirical regimen to cover gram-negative anaerobes in patients with otitis, sinusitis, or mastoiditis. In hospital-acquired meningitis, and particularly meningitis following neurosurgical procedures, staphylococci and gram-negative organisms including *P. aeruginosa* are the most common etiologic organisms. In these patients, empirical therapy should include a combination of vancomycin and ceftazidime or meropenem. Ceftazidime or meropenem should be substituted for ceftriaxone or cefotaxime in neurosurgical patients and in neutropenic patients, because ceftriaxone and cefotaxime do not provide adequate activity against CNS infection with *P. aeruginosa*. Meropenem is a carbapenem antibiotic that is highly active in vitro against *L. monocytogenes*, has been demonstrated to be effective in cases of meningitis caused by *P. aeruginosa*, and shows good activity against penicillin-resistant pneumococci. In experimental pneumococcal meningitis, meropenem was comparable to ceftriaxone and inferior to vancomycin in sterilizing CSF cultures. When *S. pneumoniae*, *H. influenzae*, *L. monocytogenes*, or aerobic gram-negative bacilli (including *P. aeruginosa* and *E. coli*) are possible meningeal pathogens, based on predisposing and associated conditions, the combination of vancomycin plus meropenem can be recommended as empiric therapy for bacterial meningitis in children and adults. Meropenem should not be used as monotherapy.

TABLE 138-1 Antibiotics Used in Empirical Therapy of Bacterial Meningitis and Focal Central Nervous System Infections^a