Bacterial meningitis in adults
van de Beek, D.

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ADDRESS
Diederik van de Beek
Department of Neurology
Academic Medical Center
University of Amsterdam
P.O. Box 22700
1100 DE Amsterdam
The Netherlands
Telephone +31 20 566 3842
Fax +31 20 697 1438
E-mail d.vandebeek@amc.uva.nl
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BACTERIAL MENINGITIS IN ADULTS

Contra-indications for performing lumbar puncture

- Signs of brain shift
- Papilledema
- Focal neurologic deficits, not including cranial nerve palsy
- Glasgow Coma Scale score below 10
- Septic shock (diastolic blood pressure below 60 mmHg)
- Coagulopathy
- Disseminated intravascular coagulation
- Serious skin infection at site lumbar puncture

Recommendations for empiric antimicrobial therapy in The Netherlands

**Patient group** | **Recommended antibiotics**
--- | ---
Age 16-60 years | Penicillin
Age >60 years | Amoxicillin and third-generation cephalosporin
With risk factor present* and age >16 years | Amoxicillin and third-generation cephalosporin
Recent neurosurgery and age >16 years | Vancomycin and third-generation cephalosporin

* Alcohol abuse, altered immune status, diabetes mellitus, recent head injury, cerebrospinal fluid leak

Corticosteroid for adjunctive corticosteroid therapy

<table>
<thead>
<tr>
<th>Corticosteroid</th>
<th>Dose</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dexamethasone</td>
<td>10 mg 4 times daily</td>
<td>4 days</td>
</tr>
</tbody>
</table>

Recommendations for antimicrobial therapy

**Type of Bacteria** | **Choice of antibiotic**
--- | ---
*Streptococcus pneumoniae*  
Penicillin-susceptible | Penicillin
Intermediate-penicillin-susceptible | Third-generation cephalosporin
Penicillin-resistant | Vancomycin and third-generation cephalosporin

*Neisseria meningitidis*  
Penicillin-susceptible | Penicillin
Penicillin-resistant | Third-generation cephalosporin

*Listeria monocytogenes*  
Penicillin-susceptible | Amoxicillin and aminoglycoside
Penicillin-resistant | Third-generation cephalosporin

*Haemophilus influenzae*  
β-lactamase negative | Amoxicillin
β-lactamase positive | Third-generation cephalosporin

*Staphylococcus aureus*  
Meticillin-sensitive | Flucloxacillin
Meticillin-resistant | Vancomycin and rifampicin

*Escherichia coli*  
Amoxicillin-sensitive | Amoxicillin
Amoxicillin-resistant | Third-generation cephalosporin

* The preferred dose: penicillin, 2 million units every 4 hours; amoxicillin, 2 g every 4 hours; third-generation cephalosporin: ceftriaxone, 2 g every 12 hours, or cefotaxime, 2 g every 4 hours; vancomycin, 1 g every 8 hours; aminoglycoside: gentamicin 4 mg per kg bodyweight daily; flucloxacillin, 2 g every 4 hours; rifampicin 600 mg every 12 hours.

Department of Neurology, Academic Medical Center
Amsterdam, telephone +31-20-5669111
D. van de Beek (tracer 59653), J. de Gans (tracer 62289), 2004
Suspicion for community-acquired bacterial meningitis
Typical signs may be absent, prior antibiotics may mask severity of illness

Assess severity:
- Ventilation
- Circulation
- Neurologic examination

Start investigations:
- Blood cultures
- Blood gases
- Serum laboratory
- Rash: skin biopsy

Shock (diastolic blood pressure<60 mmHg) and/or coagulopathy (coagulant-use or disseminated intravascular coagulation)?

Contra-indications lumbar puncture?
- Papilledema
- Focal neurologic deficits, not including cranial nerve palsy
- Glasgow Coma Scale score<10

Empiric antimicrobial therapy
- Shock: no dexamethasone
- Coagulopathy without shock: dexamethasone 10 mg

Stabilization and/or correction coagulopathy

Contra-indications lumbar puncture?
- Papilledema
- Focal neurologic deficits, not including cranial nerve palsy
- Glasgow Coma Scale score<10

Dexamethasone 10 mg and empiric antimicrobial therapy

Lumbar puncture

Cloudy CSF or apparent progress of disease?

CT scan brain

Space-occupying lesion causing significant brain-shift?

CSF consistent with bacterial meningitis?

Bacterial meningitis:
- Dexamethasone 10 mg and empiric antimicrobial therapy

Reconsider diagnosis