**Bacterial meningitis directed therapy**

- For meningitis due to Listeria monocytogenes, penicillin and amoxy/ampicillin appear equally efficacious. Use:
  - (i) benzylpenicillin 2.4 g (child: 60 mg/kg up to 2.4 g) IV, 4-hourly OR
  - (ii) amoxy/ampicillin 2 g (child: 50 mg/kg up to 2 g) IV, 4-hourly.
- In patients hypersensitive to penicillin, trimethoprim+sulfamethoxazole may be used alone:
  - (i) trimethoprim+sulfamethoxazole 160+800 mg (child: 4+20 mg/kg up to 160+800 mg) IV, 6-hourly.
- There is limited evidence that combination therapy with beta lactam plus trimethoprim+sulfamethoxazole improves outcomes. The value of adding an aminoglycoside is not clear.
- The usual duration of therapy is 3 weeks, with extension to 6 weeks in immunocompromised patients. Oral therapy with trimethoprim+sulfamethoxazole may be used to complete the course after initial 3 weeks if there has been a good response to IV therapy.

**Meningococcal meningitis:**
- For Neisseria meningitidis (meningococcal meningitis), use:
  - (i) benzylpenicillin 1.8 g (child: 45 mg/kg up to 1.8 g) IV, 4-hourly for 3 to 5 days.
- For patients hypersensitive to penicillin (excluding immediate hypersensitivity), use:
  - (i) ceftriaxone 4 g (child: 100 mg/kg up to 4 g) IV, daily for 3 to 5 days OR
  - ceftriaxone 2 g (child: 50 mg/kg up to 2 g) IV, 12-hourly for 3 to 5 days.
- For patients with immediate penicillin or cephalosporin hypersensitivity, use:
  - (i) ciprofloxacin 400 mg (child: 10 mg/kg up to 400 mg) IV, 12 hourly for 3 to 5 days.
- Prophylaxis and/or immunisation is essential for close contacts (see chemoprophylaxis for meningitis). Prophylaxis is also necessary for patients who have received only benzylpenicillin, since this does not reliably clear nasal carriage.

**Streptococcus pneumonia meningitis:**
- MICs to penicillin and ceftriaxone/cefotaxime should be determined for all Streptococcus pneumoniae isolates. For strains with a penicillin MIC =0.125 mg/L, use vancomycin plus either ceftriaxone or cefotaxime (see Empirical therapy for doses).
- If the organism is proven to be susceptible, use:
  - (i) benzylpenicillin 2.4 g (child: 60 mg/kg up to 2.4 g) IV, 4-hourly for 7 days OR
  - amoxy/ampicillin 2 g (child: 50 mg/kg up to 2 g) IV, 4-hourly for 7 days.
- For patients with immediate penicillin or cephalosporin hypersensitivity, use:
  - (i) ciprofloxacin 400 mg (child: 10 mg/kg up to 400 mg) IV, 12-hourly for 7 days.
- Prophylaxis and/or immunisation is essential for close contacts (see chemoprophylaxis for meningitis).

**H. influenzae meningitis:**
- For meningitis due to Haemophilus influenzae type b, use:
  - (i) ceftriaxone 4 g (child: 100 mg/kg up to 4 g) IV, daily for 7 days OR
  - ceftriaxone 2 g (child: 50 mg/kg up to 2 g) IV, 12-hourly for 7 days.
- If the organism is proven to be susceptible, use:
  - (i) benzylpenicillin 2.4 g (child: 60 mg/kg up to 2.4 g) IV, 4-hourly for 7 days OR
  - amoxy/ampicillin 2 g (child: 50 mg/kg up to 2 g) IV, 4-hourly for 7 days.
- For patients with immediate penicillin or cephalosporin hypersensitivity, use:
  - (i) ciprofloxacin 400 mg (child: 10 mg/kg up to 400 mg) IV, 12-hourly for 7 days.

**Listeria meningitis:**
- For meningitis due to Listeria monocytogenes, penicillin and amoxy/ampicillin appear equally efficacious. Use:
  - (i) benzylpenicillin 2.4 g (child: 60 mg/kg up to 2.4 g) IV, 4-hourly OR
  - (ii) amoxy/ampicillin 2 g (child: 50 mg/kg up to 2 g) IV, 4-hourly.

**Cryptococcal meningitis:**
- Monitoring of CSF pressure is a critical part of management to ensure that communicating hydrocephalus does not develop and cause permanent neurological sequelae. Consultation with those experienced in the management of this condition is strongly recommended.
- The standard treatment for cryptococcal meningitis is:
  - (i) amphotericin B deoxycholate 0.7 mg/kg IV, daily (dosage to be adjusted according to tolerance) for 6 to 10 weeks PLUS
  - (ii) flucytosine 25 mg/kg IV or orally, 6-hourly for 6 to 10 weeks (monitor plasma levels)
- If the organism is proven to be susceptible, use:
  - (i) benzylpenicillin 2.4 g (child: 60 mg/kg up to 2.4 g) IV, 4-hourly for 7 days OR
  - amoxy/ampicillin 2 g (child: 50 mg/kg up to 2 g) IV, 4-hourly for 7 days.
- If the CSF is culture negative after 2 weeks of therapy, cease the amphotericin B deoxycholate and flucytosine and commence:
  - (i) fluconazole 800 mg (child: 20 mg/kg up to 800 mg) orally or IV for the first dose, then 400 mg (child: 10 mg/kg up to 400 mg) orally daily for at least 10 weeks of therapy.
- Itraconazole has been successfully used when fluconazole cannot be used.
- In the immunocompromised, long-term suppressive therapy may be required. If there has been a successful response after 10 weeks of fluconazole at the above dose, reduce the dose to:
  - (i) fluconazole 200 mg (child: 5 mg/kg up to 200 mg) orally, daily indefinitely as secondary prophylaxis.

**Group B strep meningitis**
- Streptococcus agalactiae is the commonest cause of meningitis in the newborn. Use:
  - (i) benzylpenicillin 60 mg/kg up to 2.4 g IV, 4-hourly for 14 to 21 days.

**Streptococcus pneumonia meningitis:**
- MICs to penicillin and ceftriaxone/cefotaxime should be determined for all Streptococcus pneumoniae isolates. For strains with a penicillin MIC >0.125 mg/L, use vancomycin plus either ceftriaxone or cefotaxime (see Empirical therapy for doses).
- Itraconazole has been successfully used when fluconazole cannot be used.
- In the immunocompromised, long-term suppressive therapy may be required. If there has been a successful response after 10 weeks of fluconazole at the above dose, reduce the dose to:
  - (i) fluconazole 200 mg (child: 5 mg/kg up to 200 mg) orally, daily indefinitely as secondary prophylaxis.

**H. influenzae meningitis:**
- For meningitis due to Haemophilus influenzae type b, use:
  - (i) ceftriaxone 4 g (child: 100 mg/kg up to 4 g) IV, daily for 7 days OR
  - ceftriaxone 2 g (child: 50 mg/kg up to 2 g) IV, 12-hourly for 7 days.
- If the organism is proven to be susceptible, use:
  - (i) benzylpenicillin 2.4 g (child: 60 mg/kg up to 2.4 g) IV, 4-hourly for 7 days OR
  - amoxy/ampicillin 2 g (child: 50 mg/kg up to 2 g) IV, 4-hourly for 7 days.
- For patients with immediate penicillin or cephalosporin hypersensitivity, use:
  - (i) ciprofloxacin 400 mg (child: 10 mg/kg up to 400 mg) IV, 12-hourly for 7 days.
- Prophylaxis and/or immunisation is essential for close contacts (see chemoprophylaxis for meningitis). Prophylaxis is also necessary for patients who have received only benzylpenicillin, since this does not reliably clear nasal carriage.