# Adult sepsis empiric antibiotic guide based on presumed site of infection

Safer Care Victoria

- These guidelines are intended for use with adult patients (**≥18 years**).
- These guidelines DO NOT replace an Infectious Diseases consult (if available)
- Empirical regimens are intended for initial therapy ONLY – senior medical consultation required before second dose of antibiotics
- Ensure the patient's clinical findings and investigations are concordant with the presumed site of infection; if uncertain, use the recommendations for unknown site of infection
- The following guidelines are aligned to the Therapeutic Guidelines (TG): Antibiotic (published March 2025). Please refer to the TG for more detailed information if required or seek expert advice
- All doses recommended in this guideline are for normal renal function with CrCl > 50 ml/min, dose reductions may be required for patients with renal impairment – see Table 2.80 (TG) for advice
- Review recent microbiology for resistance (e.g. EBSL, MRSA, resistant Gram negatives) if available
- High risk of multidrug-resistant organisms: recent overseas hospitalisation (≤ 12 months) or travel to high-risk regions (≤ 6 months – South Asia, Asia, Southern/Eastern Europe)

| **No allergy to penicillin** | **Non-life-threatening penicillin allergy** | **Life-threatening penicillin allergy** |
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| **UNKNOWN SOURCE OF INFECTION** | | |
| gentamicin or tobramycin IV (see dosing table) **PLUS** flucloxacillin 2 g IV 4-hourly | gentamicin or tobramycin IV (see dosing table) **PLUS** cefazolin 2 g IV 6-hourly | gentamicin or tobramycin IV (see dosing table) **PLUS** vancomycin IV (see dosing table) |
| • Add **vancomycin IV** (see dosing table) if MRSA is suspected or if septic shock<br>• Add **ceftriaxone 2 g IV 12-hourly** if *Neisseria meningitidis* infection suspected (**ciprofloxacin 400 mg IV 8-hourly** if life-threatening penicillin allergy)<br>• Use **meropenem 1 g IV 8-hourly** PLUS **vancomycin IV** (see dosing table) if high risk of multidrug-resistant organism | | |
| **FEBRILE NEUTROPENIA** | | |
| piperacillin/tazobactam 4.5 g IV 6-hourly | cefepime 2 g IV 8-hourly **OR** ceftazidime 2 g IV 8-hourly | ciprofloxacin 400 mg IV 12-hourly **PLUS** vancomycin IV (see dosing table) |
| • Add **vancomycin IV** (see dosing table) if sepsis<br>• Add **gentamicin or tobramycin IV** and **vancomycin IV** if septic shock or critically ill<br>• Consider adding vancomycin IV (see dosing table) if increased risk of MRSA or line-related infection suspected<br>• Use **meropenem 1 g IV 8-hourly** if colonised or recently infected with multidrug-resistant organism<br>• Consider adding **metronidazole 500 mg IV 12-hourly** (to cefepime and ciprofloxacin regimens) if intra-abdominal infection possible<br>• Seek specialist advice if fungal infection suspected | | |
| **INTRAVASCULAR DEVICE SOURCE (remove device)** | | |
| gentamicin or tobramycin IV (see dosing table) **PLUS** vancomycin IV (see dosing table) | gentamicin or tobramycin IV (see dosing table) **PLUS** vancomycin IV (see dosing table) | gentamicin or tobramycin IV (see dosing table) **PLUS** vancomycin IV (see dosing table) |
| Consider adding **antifungal** cover if severe sepsis, high risk (e.g. prolonged IV access, prolonged neutropenia or TPN – add caspofungin 70mg load) | | |
| **RESPIRATORY TRACT SOURCE** | | |
| ceftriaxone 2 g IV 24-hourly **PLUS** azithromycin 500 mg IV 24-hourly | ceftriaxone 2 g IV 24-hourly **PLUS** azithromycin 500 mg IV 24-hourly | moxifloxacin 400 mg IV 24-hourly |
| • Consider oral **oseltamivir 75mg 12-hourly** if influenza suspected<br>• Use **ceftriaxone 1g IV 12-hourly** in critically ill patients with severe sepsis or septic shock<br>• Replace **ceftriaxone** with **piperacillin-tazobactam 4.5g IV 6-hourly** OR **meropenem 1g IV 8-hourly** (if life-threatening penicillin allergy) if severe or requiring ICU support AND known respiratory colonisation with *Pseudomonas*.<br>• Consider adding **gentamicin or tobramycin IV** (see dosing table) if sepsis or septic shock.<br>• Consider adding **vancomycin IV** (see dosing table) if strongly suspect *Staphylcoccus aureus* in severe cases (e.g. rapid clinical deterioration or cavitating pneumonia) | | |
| **URINARY TRACT SOURCE** | | |
| gentamicin or tobramycin IV (see dosing table) **PLUS** ceftriaxone 1 g IV 12-hourly | gentamicin or tobramycin IV (see dosing table) **PLUS** ceftriaxone 1 g IV 12-hourly | gentamicin or tobramycin IV (see dosing table) **AND** seek expert advice |
| • If gentamicin is contraindicated use **ceftriaxone 2g IV 24-hourly**, OR **ceftriaxone 1 g IV 12-hourly** if critically ill or septic shock<br>• Use **meropenem 1 g IV 8-hourly** if high risk of multidrug-resistant organism | | |

| No allergy to penicillin | Non-life-threatening penicillin allergy | Life-threatening penicillin allergy |
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| **BILIARY OR GASTROINTESTINAL SOURCE** | | |
| gentamicin or tobramycin IV (see dosing table) **PLUS** ampicillin 2 g IV 6-hourly **PLUS** metronidazole 500 mg IV 12-hourly **OR** piperacillin/tazobactam 4.5 g IV 6-hourly (if gentamicin contraindicated) | ceftriaxone 2 g IV 24-hourly **PLUS** metronidazole 500 mg IV 12-hourly **OR** ceftriaxone 1 g IV 12-hourly **PLUS** metronidazole 500 mg IV 12-hourly (if critically ill or septic shock) | gentamicin or tobramycin IV (see dosing table) **PLUS** clindamycin 600 mg IV 8-hourly |
| **CNS SOURCE** | | |
| ceftriaxone 2 g IV 12-hourly | ceftriaxone 2 g IV 12-hourly | moxifloxacin 400 mg IV 24-hourly |

- Add **dexamethasone 10 mg IV 6-hourly** for 4 days – starting before or with the first dose of antibiotic (and up to 4 hours after)
- Add **benzylpenicillin 2.4 g IV 4-hourly** for patients at risk of *Listeria monocytogenes* (immunocompromised, > 50 years old, alcohol abuse, debilitated, diabetic or pregnant)
- Add **vancomycin IV** (see dosing table) if patient has known or suspected otitis media or sinusitis, been recently treated with beta-lactam antibiotics or lumbar puncture contraindicated
- Add **aciclovir 10 mg/kg IV 8-hourly** if viral encephalitis is suspected
- Add **cefepime 2g IV 8-hourly** plus vancomycin 30mg/kg load (ciprofloxacin 400mg IV TDS for life threatening allergy) for shunts/recent neurosurgery

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| **NECROTISING FASCIITIS** | | |
| meropenem 1 g IV 8-hourly **PLUS** vancomycin IV (see dosing table) **PLUS** clindamycin 600 mg IV 8-hourly | meropenem 1 g IV 8-hourly **PLUS** vancomycin IV (see dosing table) **PLUS** clindamycin 600 mg IV 8-hourly | meropenem 1 g IV 8-hourly **PLUS** vancomycin IV (see dosing table) **PLUS** clindamycin 600 mg IV 8-hourly |

- Add **ciprofloxacin 400 mg IV 8-hourly** if the wound has been immersed in water
- Consider the need for IVIg, discuss with infectious diseases team
- Early referral to surgery **essential**

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| **SKIN OR SOFT TISSUE SOURCE** | | |
| flucloxacillin 2 g IV 6-hourly | cefazolin 2 g IV 8-hourly | vancomycin IV (see dosing table) |

- Add **vancomycin IV** (see dosing table) if at increased risk of MRSA, purulent cellulitis or S. aureus is suspected
- For cellulitis associated with hypotension, septic shock or rapid progression of systemic features use the regimens in necrotising fasciitis
- Add **clindamycin 600mg IV 8-hourly** If ICU support/septic shock

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| **DIABETIC FOOT INFECTION** | | |
| piperacillin/tazobactam 4.5 g IV 6-hourly | ciprofloxacin 400 mg IV 12-hourly **PLUS** clindamycin 900 mg IV 8-hourly | ciprofloxacin 400 mg IV 12-hourly **PLUS** clindamycin 900 mg IV 8-hourly |

Add **vancomycin IV** (see dosing table) if at increased risk of MRSA

**Please refer to Therapeutic Guidelines for antibiotic recommendations for other specific infections including antibiotic guidance for maternal sepsis.**

## VANCOMYCIN DOSING

- Load **25–30 mg/kg** IV (up to 2.5 g)
- Then **15–20 mg/kg** (up to 2 g) IV 12-hourly, use **actual body weight**
- Reduce frequency in renal impairment
- Higher doses may be used with expert advice

## GENTAMICIN AND TOBRAMYCIN DOSING

- Give **4–5 mg/kg IV** stat (round to 40 mg), *higher doses up to 7 mg/kg may be used in selected cases of severe sepsis or septic shock*
- Use **ideal or adjusted body weight** to calculate dose
- Repeated doses not recommended in renal impairment (CrCl < 40 mL/min)
- Empirical therapy should not continue beyond 48 hours

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Authorised and published by the Victorian Government, 1 Treasury Place, Melbourne.
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