University Hospitals of Derby and Burton NHS Foundation Trust

Native and Prosthetic Valve Infective Endocarditis - Microbiology Summary Clinical Guideline

Reference number: CG-ANTI/2023/011

Clinical concerns re infective endocarditis

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Investigation: blood sciences and microbiology

- FBC, CRP, lactate, U&E, and LFT
- If the patient is clinically stable:
  - Blood cultures × 3; drawn approximately 12 hours apart
- If the patient is clinically unstable (haemodynamic instability, sepsis, or septic shock):
  - Blood cultures × 3; drawn approximately 1-15 minutes apart
- Please provide relevant clinical details:
  - For example: “Fever. Intravenous drug user. Systemic phenomena. ?Infective endocarditis”

Investigation: echocardiogram

- First line, TTE
- Please provide relevant clinical details:
  - Symptoms and/or signs of infective endocarditis; past medical history of predisposing cardiac pathology, or social history of intravenous drug usage; *Staphylococcus aureus* or *Candida* species bloodstream infection; persistent bloodstream infection with microorganism typical (or atypical) for infective endocarditis
  - For example: “New murmur. Mitral valve replacement. Bacteraemic with *Staphylococcus aureus*. ?Infective endocarditis”
- Requests are triaged and can be rejected, e.g. requests received without symptoms or signs or differential diagnoses of infective endocarditis

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Treatment[1]

- Empiric, intravenous antibiotics:
  - Native valve infective endocarditis, please note page 2
  - Prosthetic valve infective endocarditis, please note page 3

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Modified Duke’s criteria review (please note microbiology full clinical guideline pages 3 and 4):

- Proven infective endocarditis: 2 major; or 1 major and 3 minor; or 5 minor
- Possible infective endocarditis: 1 major and 1 minor; or 3 minor

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Treatment[2]

- Directed, intravenous antibiotics (please note microbiology full clinical guideline pages 7-9)
- UHDB infective endocarditis meetings (1200- Thursdays)

Empiric antibiotics: native valve infective endocarditis

	After blood cultures × 3
If the patient is (i) clinically stable and (ii) without Duke's criteria for proven or possible native valve infective endocarditis	Withhold antimicrobial chemotherapy

If the patient is (i) clinically stable and (ii) symptom onset is subacute (weeks) in nature	First line, if no investigative history of MRSA:
	• Amoxicillin 2 g intravenously 4 hourly; **and**
	• Gentamicin 1 mg/kg intravenously 12 hourly, target pre dose trough < 1 mg/l and target post dose peak 3-5 mg/l
	Second line, if drug history of penicillin allergy or investigative history of MRSA:
	• Gentamicin 1 mg/kg intravenously 12 hourly, target pre dose trough < 1 mg/l and target post dose peak 3-5 mg/l; **and**
	  ○ Vancomycin intravenously, dose as per hospital guidelines, target pre dose level 15-20 mg/l; **or**
	  ○ Teicoplanin intravenously, dose as per hospital guidelines, target pre dose level 30-40 mg/l

If the patient's symptom onset is acute (day[s]) in nature	Gentamicin 1 mg/kg intravenously 12 hourly, target pre dose trough < 1 mg/l and target post dose peak 3-5 mg/l; **and** • Vancomycin intravenously, dose as per hospital guidelines, target pre dose level 15-20 mg/l; **or** • Teicoplanin intravenously, dose as per hospital guidelines, target pre dose level 30-40 mg/l
If there is clinical concern regarding **sepsis** with the differential diagnosis including native valve infective endocarditis	Teicoplanin intravenously, dose as per hospital guidelines, target pre dose level 30-40 mg/l; **and** • Antibiotic(s) as per sepsis hospital guidelines. ○ For example, piperacillin tazobactam and teicoplanin

Empiric antibiotics: prosthetic valve infective endocarditis

	After blood cultures × 3
If the patient is (i) clinically stable and (ii) without Duke's criteria for proven or possible prosthetic valve infective endocarditis	Withhold antimicrobial chemotherapy

If the patient is (i) clinically stable and (ii) symptom onset is subacute (weeks) in nature
Or
If the patient's symptom onset is acute (day[s]) in nature
	First line:
	• Rifampicin 300-600 mg per oral 12 hourly (300 mg if creatinine clearance < 30 ml/min; 600 mg if ≥ 30 ml/min); **and**
	• Gentamicin 1 mg/kg intravenously 12 hourly, target pre dose trough < 1 mg/l and target post dose peak 3-5 mg/l; **and**
	• Glycopeptide:
	  ○ Vancomycin intravenously, dose as per hospital guidelines, target pre dose level 15-20 mg/l; **or**
	  ○ Teicoplanin intravenously, dose as per hospital guidelines, target pre dose level 30-40 mg/l
	Second line, if vancomycin/teicoplanin is contraindicated:
	• Rifampicin 300-600 mg per oral 12 hourly (300 mg if creatinine clearance < 30 ml/min; 600 mg if ≥ 30 ml/min); **and**
	• Gentamicin 1 mg/kg intravenously 12 hourly, target pre dose trough < 1 mg/l and target post dose peak 3-5 mg/l; **and**
	• Daptomycin 8-10 mg/kg intravenously 24 hourly

If there is clinical concern regarding **sepsis** with the differential diagnosis including prosthetic valve infective endocarditis	Teicoplanin intravenously, dose as per hospital guidelines, target pre dose level 30-40 mg/l; **and** • Antibiotic(s) as per sepsis hospital guidelines. ○ For example, piperacillin tazobactam and teicoplanin

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Document control

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