

Infective Endocarditis (IE)

Native Valve (NVE):

Empiric Therapy

Staphylococcus aureus

Viridans group streptococci (VGS)

Enterococci

HACEK organisms

Prosthetic Valve (PVE):

Empiric Therapy

Staphylococcus aureus

Viridans group streptococci (VGS)

Group A, B,C,G streptococci

Enterococci

HACEK organisms



Native or Prosthetic Valve Infective Endocarditis

General approach

- Draw blood cultures, ideally 2 to 3 sets over 1 hour.
- Tailor therapy to culture and sensitivities, once available.
- Right-sided infective endocarditis (RSIE) accounts for only 5–10% of cases; the majority involves the tricuspid valve and generally occurs among injection drug users and where intravenous lines and wires (e.g. pacemakers) are present.
- Left-sided IE (LSIE) involves the mitral or aortic valve.

Empiric therapy:

Drug	Dose	Route	Duration
Ceftriaxone	2 g q24h	IV	Until diagnosis is confirmed
AND			
Vancomycin	Load 30 mg/kg, then 15 mg/kg q8-12h	IV	Until diagnosis is confirmed

Endocarditis

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Staphylococcus aureus
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Remember to check cultures, revise your diagnosis



Native Valve Infective Endocarditis

Staphylococcus aureus

Mean duration of bacteremia with *S. aureus* is approximately 7 days. Cultures should be drawn daily for 3 days, then every 3 days until clear. Infectious diseases should always be consulted for cases of *S. aureus* bacteremia; **it is the responsibility of the MRP to consult ID**. Consider echocardiogram and investigation for occult sources, such as osteomyelitis.

Preferred regimens, if susceptible

Drug	Dose	Route	Duration
Cloxacillin	2 g q4h	IV	6 weeks for left-sided IE or complicated right- sided IE
	OR		
Cefazolin	2 g q8h	IV	2 weeks for uncomplicated right-sided IE

If severe penicillin/cefazolin allergy, or MRSA with vancomycin MIC ≤ 2 $\mu\text{g/mL}$

Vancomycin	Load 30 mg/kg, then 15 mg/kg q8-12h	IV	6 weeks
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If MRSA with vancomycin MIC > 2 $\mu\text{g/mL}$ - Consult Infectious Diseases

Uncomplicated right-sided IE: no evidence of renal failure, extrapulmonary metastatic infections, aortic or mitral valve involvement, meningitis, or infection by MRSA

Endocarditis

Native Valve:

Empiric Therapy

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Enterococci
HACEK organisms

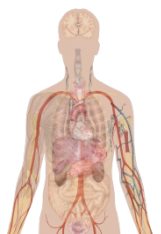
Prosthetic Valve:

Empiric Therapy

Staphylococcus aureus
Viridans group streptococci (VGS)
Group A, B, C, G streptococci
Enterococci
HACEK organisms



Remember to check cultures, revise your diagnosis



Prosthetic Valve Infective Endocarditis

Staphylococcus aureus

Preferred regimens, if susceptible

Drug	Dose	Route	Duration
Cloxacillin	2 g q4h	IV	6 weeks
AND			
Rifampin	300 mg TID	PO	6 weeks
AND			
Gentamicin	1 mg/kg q8h	IV	2 weeks

If severe penicillin allergy, or MRSA with vancomycin MIC ≤ 2 $\mu\text{g/mL}$

Vancomycin	Load 30 mg/kg, then 15 mg/kg q8-12h	IV	6 weeks
AND			
Rifampin	300 mg TID	PO	6 weeks
AND			
Gentamicin	1 mg/kg q8h	IV	2 weeks

If MRSA with vancomycin MIC > 2 $\mu\text{g/mL}$ - Consult Infectious Diseases

Endocarditis

Native Valve:

Empiric Therapy

Staphylococcus aureus
Viridans group streptococci (VGS)
Enterococci
HACEK organisms

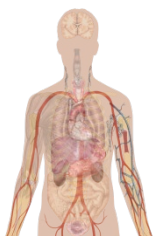
Prosthetic Valve:

Empiric Therapy

Staphylococcus aureus
Staphylococcus epidermidis (SE)
Group A, B, C, G Streptococci
Enterococci
HACEK organisms



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Native or Prosthetic Valve Infective Endocarditis

Viridans group streptococci (VGS) and β -hemolytic (group A,B,C,G) streptococci

VGS – Penicillin-susceptible MIC ≤ 0.12 $\mu\text{g}/\text{mL}$ or β -hemolytic *Strep*

Drug	Dose	Route	Duration
Penicillin G	3 MU q4h	IV	4 weeks (NVE)
	4 MU q4h	IV	6 weeks (PVE)
OR			
Penicillin + Gentamicin	3 MU q4h	IV	2 weeks (NVE)
	3 mg/kg q24h	IV	

VGS – Penicillin MIC >0.12 - <0.5 $\mu\text{g}/\text{mL}$ & ceftriaxone MIC ≤ 1 $\mu\text{g}/\text{mL}$

Ceftriaxone	2 g q24h	IV	4 weeks (NVE)
Penicillin + Gentamicin	4 MU q4h	IV	6 weeks (PVE)
	3 mg/kg q24h	IV	

VGS – Penicillin-resistant MIC ≥ 0.5 $\mu\text{g}/\text{mL}$ & Ceftriaxone MIC ≤ 1 $\mu\text{g}/\text{mL}$

Ceftriaxone	2 g q24h	IV	4 weeks (NVE) 6 weeks (PVE)
ADD			
Gentamicin	3 mg/kg q24h	IV	4 weeks (NVE) 6 weeks (PVE)

If severe penicillin/ceftriaxone allergy, or ceftriaxone MIC ≥ 2 $\mu\text{g}/\text{mL}$

Vancomycin	Load 30 mg/kg, then 15 mg/kg q8-12h	IV	4 weeks (NVE) 6 weeks (PVE)
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Endocarditis

Native Valve:

Empiric Therapy

Staphylococcus aureus
Viridans group streptococci (VGS)
Enterococci
HACEK organisms

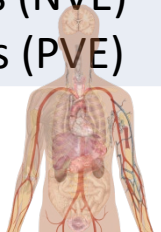
Prosthetic Valve:

Empiric Therapy

Staphylococcus aureus
Viridans group streptococci (VGS)
Group A, B, C, G Streptococci
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Native or Prosthetic Valve Infective Endocarditis

Enterococci

Preferred regimens, if susceptible

Drug	Dose	Route	Duration
Ampicillin	2 g q4h	IV	4 weeks For symptoms <3 mo 6 weeks For symptoms >6 mo

Consult ID to consider ADDING:

Ceftriaxone	2g q12h	IV	4-6 weeks
OR			
Gentamicin	1 mg/kg q8h	IV	4-6 weeks

If severe penicillin allergy

Vancomycin	Load 30 mg/kg, then 15 mg/kg q8-12h	IV	6 weeks
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Consult ID to consider ADDING:

Gentamicin	1 mg/kg q8h	IV	6 weeks
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Staphylococcus aureus
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Native or Prosthetic Valve Infective Endocarditis

HACEK organisms

Haemophilus spp, Aggregatibacter spp, Cardiobacterium hominis, Eikenella corrodens, Kingella spp

Tailor to culture and susceptibilities:

Drug	Dose	Route	Duration
Ceftriaxone	2 g q24h	IV	4 weeks (NVE) 6 weeks (PVE)
Ampicillin	2 g q4h	IV	4 weeks (NVE) 6 weeks (PVE)

If severe penicillin allergy

Drug	Dose	Route	Duration
Ciprofloxacin	400 mg q12h	IV	4 weeks (NVE) 6 weeks (PVE)
Ciprofloxacin	500 mg BID	PO	4 weeks (NVE) 6 weeks (PVE)

Endocarditis

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Prosthetic Valve:

Empiric Therapy

Staphylococcus aureus
Stenotrophomonas maltophilia (S/M)
Group A, B, C, G Streptococci
Enterococci
HACEK organisms



Remember to check cultures, revise your diagnosis

