MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

GUIDELINES FOR TREATMENT OF PROSTHETIC VALVE INFECTIVE ENDOCARDITIS IN ADULTS

(Infectious Diseases consultation is recommended)

Empiric Therapy[§]	Pathogens		Subsequent Therapy (Renal Dose Adjustments May Be Necessary)	Duration of Therapy	Comments
Early (≤1 year since valve replacement): **Vancomycin** IV[4] + **Cefepime** 2 g IV q8h[1] + **Rifampin** 300 mg PO/IV q8h + **Gentamicin** IV[3] Late (>1year since valve replacement): **Vancomycin** IV[4] + **Ceftriaxone** 2 g IV q24h ± **Rifampin** 300 mg PO/IV q8h ± **Gentamicin** IV[3]	**Viridans group streptococci OR *Streptococcus gallolyticus (bovis)***	Penicillin MIC ≤0.12 mg/L	Preferred: **Penicillin G** 4 million units IV q4h[1,2] ± **Gentamicin** IV[3] for first 2 weeks OR **Ceftriaxone** 2 g IV q24h ± **Gentamicin** IV[3] for first 2 weeks	6 weeks	• Gentamicin is used for gram positive synergy. For Viridans group streptococci and *Streptococcus gallolyticus* with **penicillin MIC <0.5 mg/L, once daily gentamicin (3 mg/kg IV q24h) is preferred**, with gentamicin trough goal ~1 mg/L. • **Traditional gentamicin dosing (1 mg/kg IV q8h) is preferred if MIC ≥0.5 mg/L**, with gentamicin peak goal 3-5 mg/L and trough goal <1 mg/L. • In patients with renal insufficiency, dosing adjustments should be made with PharmD.
			Alternative for Severe PCN Allergy: **Vancomycin** IV[4]	6 weeks	
		Penicillin MIC >0.12 mg/L	Preferred: **Penicillin G** 4 million units IV q4h[1,2] + **Gentamicin** IV[3] OR **Ceftriaxone** 2 g IV q24h + **Gentamicin** IV[3]	6 weeks	
			Alternative for Severe PCN Allergy: **Vancomycin** IV[4]	6 weeks	
	Enterococci		See Native Valve Guideline for antimicrobial selection	≥6 weeks	• For Enterococci strains resistant to vancomycin, aminoglycosides, and penicillin, >6 weeks of therapy is recommended (for all other Enterococci strains 6 weeks of therapy should be used).
	Staphylococci (MSSA or MSSE)		Preferred: **Oxacillin** 2 g IV q4h[2] + **Rifampin** 300 mg PO/IV q8h + **Gentamicin** IV[3] for first 2 weeks	≥6 weeks	• **Traditional gentamicin dosing (1 mg/kg IV q8h) is preferred**, with gentamicin peak goal 3-5 mg/L and trough goal <1 mg/L. • In patients with renal insufficiency, dosing adjustments should be made with PharmD. • Cefazolin may be used instead of Oxacillin in patients with penicillin allergy (non-anaphylaxis) if CNS disease is not present.
	Staphylococci (MRSA or MRSE)		Preferred: **Vancomycin** IV[4] + **Rifampin** 300 PO/IV q8h + **Gentamicin** IV[3] for first 2 weeks	≥6 weeks	• **Traditional gentamicin dosing (1 mg/kg IV q8h) is preferred**, with gentamicin peak goal 3-5 mg/L and trough goal <1 mg/L. • In patients with renal insufficiency, dosing adjustments should be made with PharmD. • Follow baseline and weekly CK with daptomycin therapy
			Alternative for Vancomycin Allergy or Failure: **Daptomycin** 8-10 mg/kg IV q24h[1] + **Rifampin** 300 mg PO/IV q8h + **Gentamicin** IV[3] for first 2 weeks	≥ 6 weeks	
	HACEK Group		See Native Valve Guideline for antimicrobial selection	6 weeks	
	Candida spp.		See Native Valve Guideline for antimicrobial selection	>6 weeks	
	Culture negative, early (≤1 year since valve replacement, pending definitive diagnosis)		**Vancomycin** IV[4] + **Cefepime** 2 gm IV q8h[1] + **Rifampin** 300 mg PO/IV q8h + **Gentamicin** IV[3] for first 2 weeks	6 weeks	• Receipt of antibiotics prior to obtaining cultures is the most common cause of culture negative IE. There are many infectious and non-infectious causes. An evaluation of epidemiological factors, history of prior cardiovascular infections, exposure to antimicrobials, clinical course, severity, and extracardiac sites of infection should be performed to help guide diagnosis and treatment. • **Traditional gentamicin dosing (1 mg/kg IV q 8 hours) is preferred**, with gentamicin peak goal 3-5 mg/L and trough goal <1 mg/L. • In patients with renal insufficiency, dosing adjustments should be made with PharmD.
	Culture negative, late (>1 year since valve replacement, pending definitive diagnosis)		**Vancomycin** IV[4] + **Ceftriaxone** 2 g IV q24h ± **Rifampin** 300 mg PO/IV q8h ± **Gentamicin** IV[3] for first 2 weeks	6 weeks	

§ Prior to confirmation of pathogen

1. Refer to Antimicrobial Dosing Recommendations for dose adjustments in renal dysfunction
2. If candidate for outpatient therapy, may consider administration via continuous infusion (same daily dose)
3. Please refer to the Aminoglycoside Dosing in Adult Patients for guidance on aminoglycoside dosing.
4. Please refer to the Vancomycin Nomogram for guidance on vancomycin dosing and monitoring.
5. Because of the requirement for frequent dosing and the inability to administer via continuous infusion, these drugs are not recommended for home administration
   Last Updated: Jan 19 2016; Approved by: UMHS P & T Committee (Jan 2016)

Antimicrobial Subcommittee Approval: 12/2015	Originated: Unknown
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Revision History: 03/21: Updated vancomycin dosing & hyperlinks	

The recommendations in this guide are meant to serve as treatment guidelines for use at Michigan Medicine facilities. If you are an individual experiencing a medical emergency, call 911 immediately. These guidelines should not replace a provider's professional medical advice based on clinical judgment, or be used in lieu of an Infectious Diseases consultation when necessary. As a result of ongoing research, practice guidelines may from time to time change. The authors of these guidelines have made all attempts to ensure the accuracy based on current information, however, due to ongoing research, users of these guidelines are strongly encouraged to confirm the information contained within them through an independent source.

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