


TABLE 93-7 ANTIMICROBIAL TREATMENT OF INFECTIVE ENDOCARDITIS

CAUSATIVE ORGANISM	NATIVE VALVE		PROSTHETIC VALVE	
	ANTIBIOTIC THERAPY	COMMENTS	ANTIBIOTIC THERAPY	COMMENTS
Penicillin-susceptible viridans streptococci, <i>Streptococcus bovis</i> , and other streptococci with MIC of penicillin ≤ 0.1 $\mu\text{g}/\text{mL}$	Penicillin G or ceftriaxone for 4 wk*	A 2-wk regimen of penicillin G or ceftriaxone combined with gentamicin may be considered in patients with right-sided NVE without evidence of embolic disease (excluding pulmonary emboli) or other complications.	Penicillin G for 6 wk and gentamicin for 2 wk*	Shorter duration of treatment with an aminoglycoside (2 wk) is usually appropriate for PVE due to penicillin-susceptible viridans streptococci, <i>S. bovis</i> , or other streptococci with MIC of penicillin ≤ 0.1 $\mu\text{g}/\text{mL}$.
Relatively penicillin-resistant streptococci (MIC of penicillin > 0.1 to 0.5 $\mu\text{g}/\text{mL}$)	Penicillin G for 4 wk and gentamicin for 2 wk*		Penicillin G for 6 wk and gentamicin for 4 wk*	
<i>Streptococcus</i> species with MIC of penicillin > 0.5 $\mu\text{g}/\text{mL}$, <i>Enterococcus</i> species, or <i>Abiotrophia</i> species	Penicillin G or ampicillin and gentamicin for 4-6 wk*	6 wk of therapy is recommended for patients with symptoms lasting > 3 mo, myocardial abscess, or selected other complications.	Penicillin G or ampicillin and gentamicin for 6 wk*	A recent study by Fernando-Hidalgo et al. showed that the combination of ampicillin and ceftriaxone is as effective as the combination of ampicillin and gentamicin for treating <i>Enterococcus faecalis</i> IE.
Methicillin-susceptible staphylococci	Nafcillin or oxacillin for 4-6 wk, with or without addition of gentamicin for the first 3-5 days of therapy†	In the few patients infected with a penicillin-susceptible staphylococcus, penicillin G may be substituted for nafcillin or oxacillin.	Nafcillin or oxacillin with rifampin for 6 wk and gentamicin for 2 wk†	It may be prudent to delay initiation of rifampin for 1 or 2 days, until therapy with two other effective antistaphylococcal drugs has been initiated.
Methicillin-resistant staphylococci	Vancomycin, with or without addition of gentamicin, for the first 3-5 days of therapy		Vancomycin with rifampin for 6 wk and gentamicin for 2 wk	If the staphylococcus is resistant to gentamicin, an alternative third agent should be chosen on the basis of in vitro susceptibility testing.
Right-sided staphylococcal NVE in selected patients	Nafcillin or oxacillin with gentamicin for 2 wk	This 2-wk regimen has been studied for infections caused by an oxacillin- and aminoglycoside-susceptible isolate. Exclusions to short-course therapy include any cardiac or extracardiac complications associated with IE, persistence of fever for ≥ 7 days, and infection with HIV. Patients with vegetations > 1 - 2 cm should probably be excluded from short-course therapy.		
HACEK organisms‡	Ceftriaxone for 4 wk	Ampicillin and gentamicin for 4 wk is an alternative regimen, but some isolates may produce β -lactamase, thereby reducing the efficacy of this regimen.	Ceftriaxone for 6 wk	Ampicillin and gentamicin for 6 wk is an alternative regimen, but some isolates may produce β -lactamase, thereby reducing the efficacy of this regimen.

Modified from Mylonakis E, Calderwood SB: Infective endocarditis in adults, *N Engl J Med* 345:1318–1330, 2001.

HIV, Human immunodeficiency virus; IE, infective endocarditis; NVE, native valve endocarditis; PVE, prosthetic valve endocarditis.

*Vancomycin therapy is indicated for patients with confirmed immediate hypersensitivity reactions to β -lactam antibiotics.

†For patients who have IE due to methicillin-susceptible staphylococci and are allergic to penicillin, a first-generation cephalosporin or vancomycin may be substituted for nafcillin or oxacillin. Cephalosporins should be avoided in patients with confirmed immediate-type hypersensitivity reactions to β -lactam antibiotics.

‡HACEK organisms: *Haemophilus* spp, *Actinobacillus actinomycetcomitans*, *Cardiobacterium hominis*, *Eikenella corrodens*, and *Kingella kingae*.

cure rates are significantly lower (40% to 60%). Increased age, diabetes, aortic valve involvement, and developing complications of IE including congestive heart failure and emboli to the central nervous system are all highly predictive of increased mortality and morbidity.

Infective Endocarditis Prophylaxis

The most recent American Heart Association guidelines state that not all patients require antibiotic prophylaxis and that prophylaxis should be considered only for a specific subset of patients. Antibiotic prophylaxis is indicated for patients with prosthetic heart valves, cardiac transplant recipients with valvular disease, patients with a history of IE, and patients with certain forms of congenital heart disease. Among patients with

congenital heart disease, only those with unrepaired or partially repaired lesions and those with prosthetic material should receive prophylactic antibiotics (grade IIa recommendation).

Typically, antibiotic regimens used for prophylaxis against IE prior to invasive procedures above the waist are directed against viridans streptococci. For invasive dental procedures, the recommended prophylactic agent is amoxicillin, 2 g PO as a single dose 30 to 60 minutes before the procedure. In patients with penicillin allergy, clindamycin or a macrolide may be substituted.

ENDARTERITIS AND SUPPURATIVE PHLEBITIS

The term *infectious endarteritis* refers to an intravascular infection of the arteries that affects coarctation of the aorta, aortic