**Table 1. Treatment of specific types of endocarditis.**

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| **Organism** |  **Therapy** | **Duration of Therapy**  | **Evidence Grade** |
| Native Valve Endocarditis Caused by Highly Penicillin-Susceptible viridans Group Streptococci and Streptococcus bovis Minimum inhibitory concentration <0.12 ug/mL | Aqueous crystalline penicillin G sodium (12-18 million U/24 h IV either continuously or in 4 or 6 equally divided doses )ORCeftriaxone sodium (2g/24hIV/IMin1dose) | 4 weeks | IA |
|   | Aqueous crystalline penicillin G sodium 1 (2-18 million U/24 h IV either continuously or in 6 equally divided doses) OR Ceftriaxone (2g/24hIV/IM in1dose) Gentamicin is listed as part of the treatment, but no level of evidence is provided for this particular intervention | 2 weeks | IB |
|   | Vancomycin (unable to tolerate penicillin or ceftriaxone) | 4 weeks | IB |
| Therapy of Native Valve Endocarditis Caused by Strains of viridans Group Streptococci and Streptococcus bovis Relatively Resistant to Penicillin Minimum inhibitory concentration (MIC) >0.12 ug/mL–<0.5 ug/mL | Aqueous crystalline penicillin G sodium (24 million U/24 h IV either continuously or in 4-6 equally divided doses)ORCeftriaxone(2g/24hIV/IMin1dose)OR Vancomycin (for patients who are not able to tolerate penicillin or ceftriaxone; 30mg/kg per 24 h IV in 2 equally divided doses not to exceed 2 g/24 h, unless serum concentrations are inappropriately low) | 4 weeks | IB |
|   | PLUSGentamicin 3mg/kg per24hIV/IM in1dose | 2 weeks | No level of evidence |
| Patients with endocarditis caused by penicillin-resistant (MIC >0.5 ug/mL) strains should be treated with regimen recommended for enterococcal endocarditis. |
| Therapy for Endocarditis Caused by Staphylococci in the Absence of Prosthetic Materials (MSSA) | Nafcillin OR oxacillin (12 g/24 h IV in 4-6 equally divided doses) PLUSOptional addition of gentamicin for 3-5 days (no level of recommendation provided for this practice) | 6 weeks | IA |
|   | For penicillin-allergic (nonanaphylactoid type patients): Cefazolin 6 g/24 h IV in 3 equally divided doses | 6 weeks | IB |
| Therapy for Endocarditis Caused by Staphylococci in the Absence of Prosthetic Materials (MRSA) | Vancomycin 30mg/kg per 24 h IV in 2 equally divided doses | 6 weeks | IB |
| Native valve staphylococcal endocarditis | Routine use of rifampin is not recommended for treatment of native valve staphylococcal endocarditis | IIaC |
| Endocarditis in the Presence of Prosthetic Valves or Other Prosthetic Material Caused by Staphylococci | Coagulase-Negative Staphylococci Because of the potential for changes in the patterns of antibiotic susceptibility during therapy, organisms recovered from surgical specimens or blood from patients who have had a relapse should be retested for antibiotic susceptibility |   | IIaC |
| Enterococci | Enterococci should be routinely tested *in vitro* for susceptibility to penicillin and vancomycin (MIC determination) and for high-level resistance to gentamicin and streptomycin |   | IA |
| Therapy for Native Valve or Prosthetic Valve Enterococcal Endocarditis Caused by Strains Susceptible to Penicillin, Gentamicin, and Vancomycin | Ampicillin sodium (12 g/24 h IV in 6 equally divided doses) OR Aqueous crystalline penicillin G sodium (18-30 million U/24 h IV either continuously or in 6 equally divided dosesPLUS Gentamicin sulfate (3 mg/kg per 24 h IV/IM in 3 equally divided 4-6 doses) (4-6 weeks) | 4-6 weeks | IA |
|   | Vancomycin (30 mg/kg per 24 h IV in 2 equally divided 6 doses)PLUS Gentamicin sulfate (3 mg/kg per 24 h IV/IM in 3 equally divided 4-6 doses) | 6 weeks | IB |
| Therapy for Native or Prosthetic Valve Enterococcal Endocarditis Caused by Strains Susceptible to Penicillin, Streptomycin, and Vancomycin and Resistant to Gentamicin | Ampicillin sodium (12 g/24 h IV in 6 equally divided doses)ORAqueous crystalline penicillin G sodium (24 million U/24 h IV continuously or in 6 equally divided doses)PLUS Streptomycin sulfate (15 mg/kg per 24 h IV/IM in 2 equally divided doses) | 4-6 weeks | IA |
|   | Vancomycin (recommended only for patients unable to tolerate penicillin or ampicillin) (30 mg/kg per 24 h IV in 2 equally divided doses)PLUS Streptomycin sulfate (15 mg/kg per 24 h IV/IM in 2 equally divided doses) | 6 weeks | IB |
| Therapy for Native or Prosthetic Valve Enterococcal Endocarditis Caused by Strains Resistant to Penicillin and Susceptible to Aminoglycoside and Vancomycin | Beta-Lactamase–producing strainAmpicillin-sulbactam(12 g/24 h IV in 4 equally divided doses)PLUSGentamicin sulfate (3 mg/kg per 24 h IV/IM in 3 equally divided doses) | 6 weeks | IIaC |
|   | Beta-Lactamase-producing strainVancomycin:for patients unable to tolerate Ampicillin-sulbactam (30 mg/kg per 24 h IV in 2 equally divided doses)PLUSGentamicin sulfate (3 mg/kg per 24 h IV/IM in 3 equally divided doses) | 6 weeks | IIaC |
|   | Intrinsic penicillin resistanceVancomycin hydrochloride (30 mg/kg per 24 h IV in 2 equally divided doses)PLUSGentamicin sulfate (3 mg/kg per 24 h IV/IM in 3 equally divided doses) | 6 weeks | IIaC |
| Therapy for Native or Prosthetic Valve Enterococcal Endocarditis Caused by Strains Resistant to Penicillin, Aminoglycoside, and Vancomycin | E. faeciumLinezolid(1200 mg/24 h IV/PO in 2 equally divided doses)ORQuinupristin-dalfopristin 22.5 mg/kg per 24 h IV in 3 equally divided doses | ≥ 8 weeks | IIaC |
|   | E. faecalisImipenem/cilastatin (2 g/24 h IV in 4 equally divided doses)PLUSAmpicillin sodium (12 g/24 h IV in 6 equally divided doses)ORCeftriaxone sodium (4 g/24 h IV/IM in 2 equally divided doses)PLUSAmpicillin sodium (12 g/24 h IV in 6 equally divided doses) | ≥ 8 weeks | IIbC |
| Therapy for Both Native and Prosthetic Valve Endocarditis Caused by HACEK Microorganisms (Haemophilus parainfluenzae, H aphrophilus, Actinobacillus actinomycetemcomitans, Cardiobacterium hominis, Eikenella corrodens, and Kingella kingae) | Ceftriaxone sodium (2g/24hIV/IMin1dose) | 4 weeks | IB |
|   | Ampicillin-sulbactam (12 g/24 h IV in 4 equally divided doses) | 4 weeks | IIaB |
|   | Ciprofloxacin(1000mg/24h PO or 800mg/24hIV in 2 equally divided doses) | 4 weeks | IIbC |
| Enterobacteriaceae | Cardiac surgery in combination with prolonged courses of combined antibiotic therapy is a cornerstone of treatment for most patients with endocarditis caused by Gram-negative bacilli, particularly in the setting of left-sided involvement |   | IIaB |
| Enterobacteriaceae | Specific aminoglycoside used is a critical variable and cannot be totally predicted from MIC data alone because pharmacodynamic characteristics differ markedly in animal models of IE caused by Gram-negative aerobic bacilli. Thus, determinations of tube-dilution MBC often are necessary to guide therapy |   | IIbC |
| Class I: Conditions for which there is evidence, general agreement, or both that a given procedure or treatment is useful and effectiveClass II: Conditions for which there is conflicting evidence, a divergence of opinion, or both about the usefulness/ efficacy of a procedure or treatmentClass IIa: Weight of evidence/opinion is in favor of usefulness/efficacyClass IIb: Usefulness/efficacy is less well established by evidence/opinionClass III: Conditions for which there is evidence, general agreement, or both that the procedure/treatment is not useful/effective and in some cases may be harmfulLevel of Evidence A: Data derived from multiple randomized clinical trialsLevel of Evidence B: Data derived from a single randomized trial or nonrandomized studies Level of Evidence C: Consensus opinion of experts |