

# “Endocarditis Prophylaxis”

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Because endocarditis is a life-threatening though relatively uncommon disease, primary prevention of it whenever possible is very important. The American Heart Association has recently issued new recommendations for prophylaxis, updating those issued in 1990. The major changes in these recommendations are:

- 1) Emphasis that most cases of endocarditis are not attributable to an invasive procedure.
- 2) Cardiac conditions are stratified into high-, moderate-, and negligible-risk categories based on potential outcome if endocarditis develops.
- 3) Procedures that may cause bacteremia and for which prophylaxis is recommended are more clearly specified.
- 4) An algorithm was developed to more clearly define when prophylaxis is recommended for patients with mitral valve prolapse.
- 5) For oral or dental procedures the initial amoxicillin dose is reduced to 2 g, a follow-up antibiotic dose is no longer recommended, erythromycin is no longer recommended for penicillin-allergic individuals, but clindamycin and other alternatives are offered.
- 6) For gastrointestinal or genitourinary procedures, the prophylactic regimens have been simplified.

## CARDIAC CONDITIONS ASSOCIATED WITH ENDOCARDITIS

### Endocarditis Prophylaxis Recommended

#### High risk category

Prosthetic heart valves, including bioprosthetic and homograft  
Previous bacterial endocarditis  
Cyanotic congenital heart disease (e.g. single ventricle states, transposition of the great arteries, tetralogy of Fallot)  
Surgically constructed systemic pulmonary shunts or conduits

#### Moderate Risk Category

Most other congenital cardiac malformations (other than above and below)  
Acquired valvular dysfunction (e.g. rheumatic heart disease)  
Hypertrophic cardiomyopathy  
Mitral valve prolapse with valvular regurgitation and/or thickened leaflets

### Endocarditis Prophylaxis Not Recommended

#### Negligible Risk Category (no greater than the general pop.)

Isolated atrial septal defect (secundum)  
Mitral valve prolapse without regurgitation (murmur)  
Surgical repair of atrial septal defect, ventricular septal defect, or patent ductus arteriosus (without residua beyond 6 mo.)  
Previous coronary artery bypass graft surgery  
Physiologic, functional, or innocent heart murmurs  
Previous Kawasaki disease without valvular dysfunction  
Previous rheumatic fever without valvular dysfunction  
Cardiac pacemakers (intravascular and epicardial) and implanted defibrillators

## DETERMINING NEED FOR PROPHYLAXIS

**PATIENT WITH SUSPECTED MITRAL VALVE PROLAPSE (MVP)**

Murmur of Mitral Regurgitation	Presence or Absence of Mitral Regurgitation Not Determined or Not Known	
Prophylaxis	Refer for Evaluation	No Confirmation Available, Immediate Need for Procedure
Murmur and/or Echocardiographic/Doppler Demonstration of Mitral Regurgitation	No Regurgitation or Echocardiographic Findings, If Performed	Prophylaxis
Prophylaxis	No Prophylaxis	

**DENTAL PROCEDURES AND ENDOCARDITIS PROPHYLAXIS**

**Endocarditis Prophylaxis Recommended** (for patients with high- and moderate-risk cardiac conditions)

- Dental Extractions
- Periodontal procedures including surgery, scaling and root planing, probing and recall maintenance
- Dental implant placement and reimplantation of avulsed teeth
- Endodontic (root canal) instrumentation or surgery only beyond the apex
- Subgingival placement of antibiotic fibers or strips
- Initial placement of orthodontic bands but not brackets
- Intraligamentary local anesthetic injections
- Prophylactic cleaning of teeth or implants where bleeding is anticipated

**Endocarditis Prophylaxis Not Recommended**

- Restorative dentistry (operative and prosthodontic) with or without retraction cord
- Local anesthetic injections (nonintraalveolar)
- Intracanal endodontic treatment; post placement and buildup
- Postoperative suture removal
- Placement of removable prosthodontic or orthodontic appliances
- Taking of oral impressions
- Fluoride treatments
- Taking of oral radiographs
- Orthodontic appliance adjustment
- Shedding of primary teeth

**OTHER PROCEDURES AND ENDOCARDITIS PROPHYLAXIS**

**Endocarditis Prophylaxis Recommended**

- Respiratory tract**
  - Tonsillectomy and/or adenoidectomy
  - Surgical operations that involve respiratory mucosa
  - Bronchoscopy with a rigid bronchoscope
- Gastrointestinal tract** (recommended for high-risk patients; optional for medium-risk patients)
  - Sclerotherapy for esophageal varices
  - Esophageal stricture dilation
  - Endoscopic retrograde cholangiography with biliary obstruction
  - Biliary tract surgery
  - Surgical operations that involve intestinal mucosa
- Genitourinary tract**
  - Prostatic surgery
  - Cystoscopy; Urethral dilation

\*Prophylaxis optional for high-risk patients

**Endocarditis Prophylaxis Not Recommended**

- Respiratory tract**
  - Endotracheal intubation
  - Bronchoscopy with a flexible scope, with/without biopsy\*
  - Tympanostomy tube insertion

**Gastrointestinal tract**

Transesophageal echocardiography\*

Endoscopy with or without gastrointestinal biopsy\*

**Genitourinary tract**

Vaginal hysterectomy\* or Vaginal delivery\*

Cesarean section

In uninfected tissue: Urethral catheterization, uterine dilatation and curettage, therapeutic abortion, sterilization procedures, insertion or removal of intrauterine devices.

**Other**

Cardiac catheterization, including balloon angioplasty

Implanted cardiac pacemakers, implanted defibrillators, and coronary stents

Incision or biopsy of surgically scrubbed skin

Circumcision

**PROPHYLACTIC REGIMENS FOR DENTAL, ORAL, RESPIRATORY TRACT,  
OR ESOPHAGEAL PROCEDURES**

<b>Situation</b>	<b>Agent</b>	<b>Regimen*</b>
Standard general prophylaxis	Amoxicillin	<b>Adults:</b> 2.0 g; <b>Children:</b> 50mg/kg orally 1 h before procedure
Unable to take oral medications	Ampicillin	<b>Adults:</b> 2.0 g IM or IV; <b>Children:</b> 50 mg/kg IM or IV within 30 min. before procedure
Allergic to penicillin	Clindamycin	<b>Adults:</b> 600 mg; <b>Children:</b> 20 mg/kg orally 1 h before procedure
	Cephalexin** or cefadroxil**	<b>Adults:</b> 2.0 g; <b>Children:</b> 50 mg/kg orally 1 h before procedure
	Azithromycin or clarithromycin	<b>Adults:</b> 500 mg; <b>Children:</b> 15 mg/kg orally 1 h before procedure
Allergic to penicillin and unable to take oral medications	Clindamycin	<b>Adults:</b> 600 mg; <b>Children:</b> 20 mg/kg IV within 30 min before procedure
	Cefazolin**	<b>Adults:</b> 1.0 g; <b>Children:</b> 25 mg/kg IM or IV within 30 min before procedure

\*Total children's dose should not exceed adult dose.

\*\* Cephalosporins should not be used in individuals with immediate-type hypersensitivity reaction (urticaria, angioedema, or anaphylaxis) to penicillins.

**PROPHYLACTIC REGIMENS FOR GENITOURINARY OR GASTROINTESTINAL  
(EXCLUDING ESOPHAGEAL) PROCEDURES**

<b>Situation</b>	<b>Regimen**</b>
High-risk patients	<b>Adults:</b> ampicillin 2.0 g IM or IV plus gentamicin 1.5 mg/kg (not to exceed 120 mg) within 30 min of starting the procedure; 6 h later, ampicillin 1 g IM/IV or amoxicillin 1 g orally <b>Children*:</b> ampicillin 50 mg/kg IM or IV (not to exceed 2.0 g) plus gentamicin 1.5 mg/kg within 30 min of starting the procedure; 6 hr later, ampicillin 25 mg/kg IM/IV or amoxicillin 25 mg/kg orally
High-risk patients allergic to ampicillin/amoxicillin	<b>Adults:</b> vancomycin 1.0 g IV over 1-2 h plus gentamicin 1.5 mg/kg IV/IM (not to exceed 120 mg); complete injection/infusion within 30 min of starting the procedure <b>Children:</b> vancomycin 20 mg/kg IV over 1-2 h plus gentamicin 1.5 mg/kg IV/IM; complete injection/infusion within 30 min of starting procedure
Moderate-risk patients	<b>Adults:</b> amoxicillin 2.0 orally 1 h before procedure, or ampicillin 2.0 g. IM/IV within 30 min of starting the procedure <b>Children:</b> amoxicillin 50 mg/kg orally 1 h before procedure, or ampicillin 50 mg/kg IM/IV within 30 min of starting the procedure
Moderate-risk patients allergic to ampicillin/amoxicillin	<b>Adults:</b> vancomycin 1.0 g IV over 1-2 h; complete infusion within 30 min of starting the procedure <b>Children:</b> vancomycin 20 mg/kg IV over 1-2 h; complete infusion within 20 min of starting the procedure

\*Total children's dose should not exceed adult dose.

\*\*No second dose of vancomycin or gentamicin is recommended.

**REFERENCE:** JAMA. 1997;277:1794-1801 (June 11) Recommendations of the American Heart Association