

UPDATED RECOMMENDATIONS FOR ENDOCARDITIS ANTIBIOTIC PROPHYLAXIS SUMMARISED FROM RECOMMENDATIONS BY THE AMERICAN HEART ASSOCIATION

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INTRODUCTION

Bacteraemia may occur spontaneously or may complicate a focal infection or surgical/dental procedures. Blood-borne bacteria may lodge on abnormal heart valves or near structural defects or on normal endocardium causing endocarditis.

Although relatively uncommon, endocarditis is associated with substantial morbidity and mortality despite improvements in antimicrobial therapy and enhanced ability for early diagnosis. Hence, primary prevention of endocarditis is extremely important.

The following is a summary of the new recommendations for antibiotic prophylaxis by the American Heart Association (1,2). These recommendations reflect analyses of the literature regarding procedure-related endocarditis, and are an update of those drawn up in 1990(3), incorporating new data which has become available since that time. Changes from the previous recommendations are also detailed.

Changes in the updated recommendations include:

1. Cardiac conditions are stratified into high-(4,5), moderate-(4,5,6), and negligible-risk categories (no need for prophylaxis) based on potential outcome if endocarditis develops.
2. Procedures that may cause bacteraemia and for which prophylaxis is recommended are clearly specified.
3. Conversely, procedures for which prophylaxis is not recommended are also clearly specified.
4. For oral or dental procedures the initial antibiotic dose is reduced and a follow-up antibiotic dose is no longer recommended. If a series of dental procedures is required, it is prudent to observe an interval of time between procedures to both reduce the potential for the emergence of resistant organisms, and allow repopulation of the mouth with antibiotic susceptible flora. Various studies have suggested an interval of 9 (7) to 14 (8) days. Alternatively, if possible, a combination of procedures should be planned within the same period of prophylaxis.
5. Regimens for gastrointestinal or genitourinary procedures have been simplified.
6. Prophylaxis for mitral valve prolapse has been reviewed. The risk of endocarditis is not increased above that of the normal in prolapse without clinical or echo detectable regurgitation (4). On the other hand, patients with prolapse and regurgitation are at a higher risk of developing endocarditis and should receive prophylaxis (9). The risk is also increased in mitral valve prolapse associated with myxomatous degeneration, and in these patients, the mitral valve leaflets appear thickened on echocardiography (10), even in the absence of regurgitation on echo.
7. For penicillin-sensitive individuals, clindamycin is preferred over erythromycin due to the latter's

higher incidence of gastrointestinal upset and the complicated pharmacokinetics of the various formulations (11).

Doctors should exercise their own judgement in determining the choice of antibiotics and number of doses that are to be administered in special circumstances. It should also be remembered that endocarditis may occur in spite of appropriate prophylaxis. Unusual clinical symptoms or signs following dental or other surgical procedures in patients who are at risk for developing bacterial endocarditis should be regarded with suspicion. Furthermore, most episodes of endocarditis occur in previously normal hearts.

New antibiotic prophylaxis cards.

The following points and regimens will be incorporated in a new antibiotic prophylaxis card. This will have a pale green background as does the current card, in order to avoid confusion between patients and carers.

Antibiotic prophylaxis is indicated in:

- Congenital heart disease except as above
- Acquired valvar dysfunction (e.g., rheumatic heart disease)
- Hypertrophic cardiomyopathy
- Mitral valve prolapse with valvar regurgitation and/or thickened leaflet

High-risk patients:

- Previous bacterial endocarditis
- Prosthetic cardiac valves, including bioprosthetic and homograft valves
- Complex cyanotic congenital heart disease including transposition of the great arteries, tetralogy of Fallot and conditions repaired using surgically constructed systemic-pulmonary shunts or conduits

Patients who normally require antibiotic prophylaxis do not need prophylaxis when undergoing the following procedures:

Respiratory tract	Endotracheal intubation Flexible bronchoscopy ± biopsy† Tympanostomy tube insertion
Gastrointestinal tract	Transesophageal echocardiography† Endoscopy ± gastrointestinal biopsy Dilatation of oesophageal stricture† Biliary tract surgery/procedure involving intestinal mucosa†
Genitourinary tract	Vaginal hysterectomy† Vaginal delivery† Caesarean section Circumcision
In uninfected tissue	Urethral catheterisation Uterine dilatation and curettage Therapeutic abortion Sterilisation procedures Insertion or removal of intrauterine devices
Other	Cardiac catheterisation, including balloon angioplasty Incision or biopsy of surgically scrubbed skin Implanted cardiac pacemakers, defibrillators, and coronary stents

†Prophylaxis is optional for high-risk patients (see above)

There is no need for antibiotic prophylaxis in the following conditions as risk of endocarditis is not greater than the general population:

- Isolated secundum atrial septal defect
- Surgically repaired atrial septal defect, ventricular septal defect and patent ductus arterio-

sus with no residual defects and 6 months after intervention

- Previous coronary artery bypass graft surgery
- Mitral valve prolapse with no valvar regurgitation
- Physiologic, functional or innocent heart murmurs

Regimens for antibiotic prophylaxis:

Dental, oral, respiratory tract, or oesophageal procedures		
Amoxicillin	PO	
Amoxicillin/ampicillin	IM/IV	if unable to take PO
Macrolide	PO	if allergic to penicillins
Non-oesophageal gastrointestinal procedures and genitourinary procedures		
Ampicillin/amoxicillin	IV	
Vancomycin	IV	if allergic to penicillins
<i>High-risk patients (see above)</i>		
Ampicillin/amoxicillin + gentamicin	IV	repeat the penicillin 6 hours later at ½ standard dose
Vancomycin + gentamicin	IV	if allergic to penicillins
Intervention on infected non-oral soft tissues or bone/joint infections		
Flucloxacillin/1 st generation cephalosporin	PO	
Macrolide	PO	if allergic to penicillins
Vancomycin	IV	if unable to take PO or known/suspected MRSA
Routes and administration		
	PO	1 hour before procedure
	IM/IV	complete within ½ hour of starting procedure, including vancomycin infusion
Doses		
Ampicillin/Amoxicillin	PO/IM/IV	50 mg/kg/dose up to 2000 mg
Macrolide: Clindamycin/Erythromycin	PO	20 mg/kg/dose up to 600 mg
Gentamicin	IM/IV	1.5 mg/kg/dose up to 120 mg
Cephalexin/Cefadroxil (or other 1 st generation)	PO	50 mg/kg/dose up to 2000 mg
Flucloxacillin	PO	50 mg/kg/dose up to 2000 mg
Vancomycin	IV	20 mg/kg/dose up to 1000 mg IVI over 1-2 hours

- Previous Kawasaki disease/ rheumatic fever with no valvar dysfunction
- Cardiac pacemakers (intravascular and epicardial) and implanted defibrillators
- If on penicillins already, wait until 14 days after finishing penicillins or use clindamycin instead.
- If procedure involves infected tissue, it may be necessary to provide additional doses of antibiotics for treatment of the established infection.
- IM route is contraindicated in patients who receive heparin or warfarin. IV or PO regimens should be used whenever possible.

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