

Cardiac Diseases and Therapies

ENDOCARDITIS

ANTIBIOTIC PROPHYLAXIS-PREVENTION OF BACTERIAL ENDOCARDITIS

Endocarditis usually develops in patients with underlying valvular heart disease who develop bacteremia with organisms likely to cause endocarditis. The vast majority of cases of endocarditis occur in the absence of any specific predisposing procedure. However, some surgical and dental procedures involving mucosal surfaces or contaminated tissues cause transient bacteremia. The incidence of endocarditis following most procedures in patients with underlying cardiac disease is very low. In general, infective endocarditis is more likely to be associated with daily activities that provide frequent exposure to transient bacteremias than with bacteria caused by dental, gastrointestinal or genitourinary procedures. Maintaining good oral health and hygiene may reduce the incidence of bacteremia from daily activities and is more important than prophylactic antibiotics for a dental procedure in reducing the risk of infective endocarditis.¹ Furthermore, the risk of adverse events related to antibiotic use may exceed the risk of infective endocarditis; and endocarditis may still occur after the use of prophylactic regimens.

CARDIAC CONDITIONS ASSOCIATED WITH THE HIGHEST RISK OF ADVERSE OUTCOME FROM ENDOCARDITIS - WHERE PROPHYLAXIS FOR DENTAL PROCEDURES IS REASONABLE

- Prosthetic cardiac valves or prosthetic material used for cardiac repair
- Previous infective endocarditis
- Unrepaired cyanotic congenital heart disease, including palliative shunts and conduits
- During the first 6 months after complete repair of a congenital heart defect with prosthetic material or device
- Repaired congenital heart disease with residual defects that inhibit endothelialization
- Cardiac transplant recipients who develop cardiac valvulopathy

Note: Except for the above conditions, antibiotic prophylaxis is no longer recommended for any other congenital heart disease.

DENTAL PROCEDURES IN PATIENTS LISTED ABOVE - WHERE ENDOCARDITIS PROPHYLAXIS IS REASONABLE

All dental procedures that involve manipulation of gingival tissue or the periapical region of teeth or perforation of the oral mucosa

Note: The following procedures and events do not need prophylaxis: routine anesthetic injections through non-infected tissue, dental radiography, placement of removable prosthodontic or orthodontic appliances, adjustment of orthodontic appliances, placement of orthodontic brackets, shedding of deciduous teeth, bleeding from trauma to the lips or oral mucosa.

OTHER PROCEDURES FOR WHICH ENDOCARDITIS PROPHYLAXIS IS REASONABLE

Surgical procedures involving the respiratory mucosa may lead to transient bacteremia. The risk of endocarditis as a direct result of endoscopy is small. After most gastrointestinal endoscopy procedures, the types of organisms producing bacteremia are unlikely to cause endocarditis. The rates of bacteremia do not increase with biopsy. For high risk patients, i.e., those listed above, prophylaxis may be considered for invasive procedures.

Respiratory tract - invasive treatment with incision or biopsy

- Tonsillectomy or adenoidectomy
- Surgical operations that involve respiratory mucosa
- Bronchoscopy
- Invasive treatment of established infection (e.g., drainage of abscess or empyema)

Cardiac Diseases and Therapies

ENDOCARDITIS

ANTIBIOTIC PROPHYLAXIS-PREVENTION OF BACTERIAL ENDOCARDITIS

PROPHYLACTIC REGIMENS FOR DENTAL PROCEDURES

Prophylactic antimicrobial therapy should be directed against *Viridans* group streptococci.

Standard General Prophylaxis for Patients at Risk:

Oral Regimens^a

Amoxicillin^b 2 g PO given 30 to 60 minutes
before procedure (children 50 mg/kg)

Penicillin allergic patients:

Clindamycin 600 mg PO 30 to 60 minutes
before procedure (children 20 mg/kg)

or

Cephalexin^c 2 g PO 30 to 60 minutes
before procedure (children 50 mg/kg)

or

Azithromycin *or* 500 mg PO 30 to 60 minutes
Clarithromycin before procedure (children 15 mg/kg)

Unable to Take Oral Medication^c

Ampicillin 2 g IM^c or IV 30 to 60 minutes before
procedure (children 50 mg/kg)

Penicillin allergic patients:

Clindamycin 600 mg IM^c or IV 30 to 60 minutes
before procedure (children 20 mg/kg)

or

Cefazolin^d 1 g IM^c or IV 30 to 60 minutes before
procedure (children 50 mg/kg)

PROPHYLACTIC REGIMENS FOR OTHER PROCEDURES

Antibiotic prophylaxis is reasonable for procedures on respiratory tract or infected skin, skin structures, or musculoskeletal tissue only for patients with underlying cardiac conditions associated with the highest risk of adverse outcome from infective endocarditis.

Use the same regimens as above for the patients at risk.

Note: If the infection is known or suspected to be caused by *Staphylococcus aureus*, the regimen should contain an agent active against *Staph. aureus*, such as an antistaphylococcal penicillin or cephalosporin, or Vancomycin in patients unable to tolerate a beta-lactam. Vancomycin should be administered if the infection is known or suspected to be caused by a Methicillin-resistant strain of *Staph. aureus*.

^a Oral regimens are more convenient and safer. Parenteral regimens are more likely to be effective; they are recommended especially for patients with prosthetic heart valves, those who have had endocarditis previously, or those taking continuous oral Penicillin for rheumatic fever prophylaxis.

^b Amoxicillin is recommended because of its excellent bioavailability and good activity against streptococci and enterococci.

^c Cephalosporins should not be used in patients with immediate-type hypersensitivity reactions to Penicillin.

^d Cephalosporins should not be used in patients with immediate-type hypersensitivity reactions to Penicillin.

Cardiac Diseases and Therapies

ENDOCARDITIS

ANTIBIOTIC PROPHYLAXIS-PREVENTION OF BACTERIAL ENDOCARDITIS

PROPHYLACTIC REGIMENS FOR GENITOURINARY OR GASTROINTESTINAL PROCEDURES ARE **NOT** RECOMMENDED

Only enterococci are likely to cause endocarditis after lower gastrointestinal or genitourinary procedures; however, no published data demonstrate a conclusive link between procedures of the GI or GU tract and the development of IE. No studies demonstrate that administration of antimicrobial prophylaxis prevents infective endocarditis in association with procedures performed on the genitourinary or gastrointestinal tract.

REFERENCES

1. Wilson W, Taubert KA, Gewitz M, et al. Prevention of infective endocarditis: guidelines from the American Heart Association: A guideline from the American Heart Association Rheumatic Fever, Endocarditis, and Kawasaki Disease Committee, Council on Cardiovascular Disease in the Young, and the Council on Clinical Cardiology, Council on Cardiovascular Surgery and Anesthesia, and the Quality of Care and Outcomes Research Interdisciplinary Working Group. *Circulation*. 2007;116:1736-54.
2. Nishimura RA, Carabello BA, Faxon DP et al. ACC/AHA 2008 guideline update on valvular heart disease: focused update on infective endocarditis: A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines: Endorsed by the Society of Cardiovascular Anesthesiologists, Society for Cardiovascular Angiography and Interventions, and Society of Thoracic Surgeons. *Circulation*. 2008;118:887-96.

Originally adapted from: Prevention of Bacterial Endocarditis: Recommendations by the American Heart Association by the Committee on Rheumatic Fever, Endocarditis, and Kawasaki Disease. *JAMA* 1997;277:1794-1801
Updated by: N. Daneman, MD - March 2005
Reviewed by: W.L. Gold, MD, Infectious Disease Service - March 2005
Updated by: Valentina Jelincic, BScPhm - November 2008

Cardiac Diseases and Therapies

ENDOCARDITIS

ANTIBIOTIC PROPHYLAXIS-PREVENTION OF BACTERIAL ENDOCARDITIS

Terms and Conditions

Copyright © University Health Network, 2014. All rights reserved.

The contents of this Handbook are approved and endorsed by the UHN Cardiovascular Subcommittee of the Pharmacy and Therapeutics Committee.

1. Purpose of the Pharmacotherapy Handbook.

Notice to Healthcare Providers:

The Pharmacotherapy Handbook is intended to be used as a tool to aid in the appropriate prescribing and administration of cardiovascular formulary agents.

This information in this Handbook is intended for use by and with experienced physicians and pharmacists. The information is not intended to replace sound professional judgment in individual situations, and should be used in conjunction with other reliable sources of information. Decisions about particular medical treatments should always be made in consultation with a qualified medical practitioner knowledgeable about Cardiovascular illness and the treatments in question.

Due to the rapidly changing nature of cardiovascular treatments and therapies, users are advised to recheck the information contained herein with the original source before applying it to patient care.

Notice to non-Healthcare Providers:

Not Medical Advice. The information contained in the Handbook is not a substitute for professional medical advice, diagnosis or treatment. Never make changes to your medication, nor adjust your dose, without first consulting your health care provider. Always seek the advice of a physician or other qualified healthcare provider concerning questions you have regarding a medical condition, and before starting, stopping or modifying any treatment or medication. Never delay obtaining medical advice or disregard medical advice because of something you have or have not read in the Handbook. If you have, or suspect you have, a health problem, or if you experience an adverse side effect, please consult your doctor. If you have, or suspect you are experiencing a health emergency, please call 911 and/or promptly visit a Hospital Emergency Department in your area.

2. **DISCLAIMER: UNIVERSITY HEALTH NETWORK MAKES NO WARRANTIES OR REPRESENTATIONS AS TO THE ACCURACY OF THE INFORMATION PROVIDED. THE INFORMATION CONTAINED IN OR PRESENTED IN THIS HANDBOOK COMES WITHOUT ANY REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED. ANY IMPLIED WARRANTY OR CONDITION OF FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY OR OTHERWISE, INCLUDING BUT NOT LIMITED TO WARRANTIES OF NON-INFRINGEMENT OF THIRD PARTY RIGHTS, AND FREEDOM FROM COMPUTER VIRUSES, IN RESPECT OF THE HANDBOOK IS EXPRESSLY DISCLAIMED.**

3. **Disclaimer.** Neither UHN, as an entity, nor any of its staff or contractors cannot under any circumstance be held liable for consequences caused by or deriving from the use of the Handbook or any information contained in the Handbook. UHN is not liable for damages arising from use of the Handbook, or from third party websites (via hyperlinks) to which references are made in the Handbook. In no event shall UHN be liable for direct, indirect, consequential, special, exemplary, or other damages related to your use of the Handbook, regardless of how arising or the theory of liability whether arising in contract, tort, negligence or otherwise.

Your use of third-party websites is at your own risk and subject to the terms and conditions of use for such sites, including but not limited to the terms and conditions of <http://pie.med.utoronto.ca/> on which this Handbook is housed.

4. **Governing Law and Jurisdiction.** Any action or claim arising from or related to your use of the Handbook shall be brought in the courts of, and governed exclusively by, the laws of Ontario, Canada and the applicable laws of Canada applicable therein, without regard to its conflicts of laws principles. Unless prohibited by applicable law, you expressly waive the right to participate in a class action proceeding.

Your comments on the usefulness of the resources contained in the Handbook are welcomed and may be forwarded to Amita Woods, Department of Pharmacy Services (amita.woods@uhn.ca).