

PATIENT HANDOUT

Endocarditis Prevention: Do I Still Need An Antibiotic Before I Visit the Dentist?

Infective endocarditis, or bacterial endocarditis, is an infection of the heart's valves and lining. It is caused when certain germs (bacteria) found on the skin or in the mouth enter into the blood and travel to the heart.

Many people with heart problems are used to taking an antibiotic before dental procedures or certain operations to prevent this heart infection. But, there are risks from using antibiotics...they can cause allergic reactions and when they are overused, they can stop working to kill certain bacteria. The American Heart Association, American Dental Association, and other organizations have found that only a small number of people are really likely to benefit from taking antibiotics to prevent infective endocarditis. This means that many patients will no longer take antibiotics before visiting their dentist.

In people with poor oral hygiene and dental disease, it's more likely that bacteria from the mouth will enter the blood. It turns out that most cases of infective endocarditis are probably caused by routine daily activities, like chewing food, brushing your teeth, and using toothpicks. So for most patients, just maintaining good oral hygiene, like regular brushing and flossing, and routine dental check-ups will help minimize the risk of getting a heart infection.

I have a heart problem. Should my doctor prescribe an antibiotic for me before a dental procedure?

If you have any of the following conditions, you should continue to take an antibiotic before dental procedures (even if you are only having your teeth cleaned) and before certain operations:

- an artificial heart valve
- a history of infective endocarditis
- certain specific, serious congenital (present from birth) heart conditions
- a heart transplant that develops a problem in a heart valve

On the other hand, if you have the following conditions, you no longer need to take an antibiotic to prevent a heart infection before dental procedures and certain operations (even if you have always taken an antibiotic before a trip to the dentist in the past):

- mitral valve prolapse
- rheumatic heart disease
- bicuspid valve disease
- calcified aortic stenosis
- congenital heart conditions, like ventricular septal defect, atrial septal defect, and hypertrophic cardiomyopathy

If an antibiotic is prescribed for me, when should I take it?

Usually, you will take one dose 30 minutes to 1 hour before your procedure. In some cases, if you already have an infection, the antibiotic you are taking to treat the infection will be all you need. Your doctor can let you know.

If I've had a joint replacement, do I still need antibiotics before a dental procedure?

Yes, you might. This new information only applies to preventing heart infections and doesn't change anything related to preventing infections in joints.

2007 AHA Guidelines for Infective Endocarditis (IE) Prophylaxis

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| Cardiac conditions associated with the highest risk of adverse outcome from endocarditis for which prophylaxis with dental procedures is recommended |
| Prosthetic cardiac valve |
| Previous IE |
| Congenital heart disease (CHD)* <ul style="list-style-type: none"> • Unrepaired cyanotic CHD, including palliative shunts and conduits • Completely repaired congenital heart defect with prosthetic material or device, whether placed by surgery or by catheter intervention, during the first six months after the procedure+ • Repaired CHD with residual defects at the site or adjacent to the site of a prosthetic patch or prosthetic device (which inhibit endothelialization) |
| Cardiac transplantation recipients who develop cardiac valvulopathy |

*Except for the conditions listed above, antibiotic prophylaxis is no longer recommended for any other form of CHD.

+Prophylaxis is recommended because endothelialization of prosthetic material occurs within 6 months after the procedure.

| Regimens for dental procedure | | | |
|--|--------------------------------------|-----------------|-------------------|
| Regimen: Single dose 30 to 60 min before procedure | | | |
| Situation | Agent | Adults | Children |
| Oral | Amoxicillin | 2 g | 50 mg/kg |
| Unable to take oral medication | Ampicillin | 2 g IM or IV | 50 mg/kg IM or IV |
| | OR Cefazolin or ceftriaxone | 1 g IM or IV | 50 mg/kg IM or IV |
| Allergic to penicillins or ampicillin-oral | Cephalexin*+ | 2 g | 50 mg/kg |
| | OR Clindamycin | 600 mg | 20 mg/kg |
| | OR Azithromycin or clarithromycin | 500 mg | 15 mg/kg |
| Allergic to penicillins or ampicillin and unable to take oral medication | Cefazolin or ceftriaxone+ | 1 g IM or IV | 50 mg/kg IM or IV |
| | OR Clindamycin | 600 mg IM or IV | 20 mg/kg IM or IV |

IM indicates intramuscular; IV, intravenous.

**Or other first- or second-generation oral cephalosporin in equivalent adult or pediatric dosage.*

+Cephalosporins should not be used in an individual with a history of anaphylaxis, angioedema, or urticaria with penicillins or ampicillin.

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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 ©2007, American Heart Association.

For full guidelines, go to www.circ.ahajournals.org/cgi/reprint/CIRCULATIONAHA.106.183095.

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Summary of recommendations for infective endocarditis prophylaxis in patients with cardiac conditions associated with the highest risk of adverse outcomes from endocarditis^{a,b,1} (see first table for specific cardiac conditions)

This is a summary adapted from the 2007 AHA guidelines for prevention of infective endocarditis and is not intended as a replacement for review of the actual publication. The full report is available at www.circ.ahajournals.org/cgi/reprint/CIRCULATIONAHA.106.183095.

| Type of procedure | Recommendation | Comments |
|--|---|---|
| Dental procedures | Prophylaxis <u>is recommended</u> for dental procedures that involve manipulation of gingival tissue or the periapical region of teeth or perforation of the oral mucosa (includes routine cleanings, extractions, biopsies, suture removal, & placement of orthodontic bands). | Prophylaxis <u>is not recommended</u> for routine anesthetic injections through noninfected tissue, taking dental radiographs, placement of removable prosthodontic or orthodontic appliances, adjustment of orthodontic appliances, placement of orthodontic brackets, shedding of deciduous teeth, and bleeding from trauma to the lips or oral mucosa. |
| Invasive respiratory tract procedures that involve incision or biopsy of the respiratory mucosa, such as tonsillectomy and adenoidectomy | Prophylaxis <u>is recommended</u> , use same regimen as for dental procedures. Prophylaxis <u>is not recommended</u> for bronchoscopy unless the procedure involves incision of the respiratory tract. | For patients who undergo an invasive respiratory tract procedure to treat an infection, the antibiotic regimen should contain an agent active against viridans group streptococci (regimen for dental procedures). If the infection is known or suspected to be caused by <i>S. aureus</i> , the regimen should contain an agent active against <i>S. aureus</i> , like an antistaphylococcal penicillin or cephalosporin, or vancomycin in patients unable to tolerate a beta-lactam. Vancomycin should be used if the infection may be caused by methicillin resistant <i>S. aureus</i> (MRSA). |
| Genitourinary or gastrointestinal tract procedures, including diagnostic esophagogastroduodenoscopy or colonoscopy | Prophylaxis solely for the purpose of preventing IE <u>is not recommended</u> . | For patients undergoing an elective cystoscopy or other urinary tract manipulation who have an enterococcal urinary tract infection or colonization, antibiotic therapy to eradicate enterococci from the urine before the procedure may be reasonable. If the procedure is not elective, it may be reasonable that the antimicrobial regimen administered contain an agent active against enterococci. Amoxicillin or ampicillin is the preferred agent, and vancomycin may be used for patients unable to tolerate ampicillin. |
| Procedures on infected skin, skin structure, or musculoskeletal tissue | See comments. | It is reasonable that the antimicrobial regimen administered for treatment of the infection contain an agent active against staphylococci and beta-hemolytic streptococci, like an antistaphylococcal penicillin or cephalosporin. Vancomycin or clindamycin may be administered to patients unable to tolerate a beta-lactam or who may have an infection caused by MRSA. |

^aPatients who no longer require antimicrobial prophylaxis for IE include those with mitral valve prolapse, rheumatic heart disease, bicuspid valve disease, calcified aortic stenosis, and congenital heart conditions such as ventricular septal defect, atrial septal defect, and hypertrophic cardiomyopathy.¹

^bThe above guidelines do not address **antibiotic prophylaxis for dental patients with total joint replacements**. The joint replacement guideline (2003 update) is available at http://www.ada.org/prof/resources/pubs/jada/reports/report_prophy_statement.pdf.

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Cite this Detail-Document as follows: 2007 AHA guidelines for infective endocarditis (IE) prophylaxis. Pharmacist's Letter/Prescriber's Letter 2007;23(5):230514.



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American Heart Association Statement on 2007 Guidelines for Prevention of Infective Endocarditis

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Taking a precautionary antibiotic before a trip to the dentist isn't necessary for most people, and in fact, might create more harm than good, according to updated recommendations from the American Heart Association.

The guidelines, published in *Circulation: Journal of the American Heart Association*, are based on a growing body of scientific evidence weighing the effectiveness of antibiotics against possible risks. The updated recommendations say that only people who are at the greatest risk of bad outcomes from infective endocarditis (IE) - an infection of the heart's inner lining or the heart valves - should receive short-term preventive antibiotics before common, routine dental procedures. This includes people with artificial heart valves, a history of previous endocarditis, certain serious congenital heart conditions, and heart transplant patients who develop a problem with a heart valve.

For decades, doctors have given short-term antibiotics prior to a dental procedure to many patients with the belief the drugs would prevent IE. As a result, patients with any kind of heart abnormality from mild, symptomless forms of mitral valve prolapse (MVP) to serious congenital birth defects have been instructed to take an antibiotic prior to dental work, even teeth cleaning.

However, the drugs carry risks, including fatal allergic reactions and possibly making the bacteria that cause IE to become resistant to antibiotics. Although allergic reactions are minimal, new evidence shows the risks outweigh the benefits for most patients receiving these antibiotics.

“We've concluded that if giving prophylactic antibiotics prior to a dental procedure works at all – and there's no evidence that it does work – we should reserve that preventive treatment only for those people who would have the worst outcomes if they get IE. That's a profound change from previous recommendations,” said Walter R. Wilson, M.D., a professor of medicine at the Mayo Clinic in Rochester, Minn., and chair of the writing group.

The new recommendations apply to such common dental procedures as teeth cleaning and extractions. They are based on a comprehensive review of published studies that suggests IE is more likely to occur from bacteria that enter the bloodstream as a result of everyday activities than from a dental procedure.

The statement cites a 1999 study estimating that tooth brushing twice a day for a year carried a 154,000 times greater risk of exposure to blood-borne bacteria than a single tooth extraction, the dental procedure reported to be the most likely to cause a bacterial infection. The writing group found no compelling evidence that antibiotic prophylaxis prior to a dental procedure prevents IE in individuals who are at risk of developing this infection.

“In fact, maintaining good oral health and hygiene appears to be more protective than prophylactic antibiotics,” Wilson said. “This changes the whole philosophy of how we have constructed these recommendations for the last 50 years. Rather than based on the risk of getting IE, they're based on the risk of which patients would have the worst outcome from the infection.”

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Wilson said it's difficult to estimate the number of people affected by the new guidelines. Measurements of the prevalence of mitral valve prolapse range from less than 2 percent to almost 20 percent of the population.

According to American College of Cardiology/American Heart Association guidelines for the management of patients with valvular heart disease, when using current echocardiographic criteria for diagnosing MVP, the prevalence is 1 percent to 2.5 percent of the population. Even this estimate means millions of people have been taking antibiotics prior to dental procedures.

Patients at the greatest danger of bad outcomes from IE and for whom preventive antibiotics prior to a dental procedure are worth the risks include those with:

- artificial heart valves
- a history of having had IE
- certain specific, serious congenital (present from birth) heart conditions, including
 - unrepaired or incompletely repaired cyanotic congenital heart disease, including those with palliative shunts and conduits
 - a completely repaired congenital heart defect with prosthetic material or device, whether placed by surgery or by catheter intervention, during the first six months after the procedure
 - any repaired congenital heart defect with residual defect at the site or adjacent to the site of a prosthetic patch or a prosthetic device
- a cardiac transplant which develops a problem in a heart valve.

“Except for the conditions listed above, antibiotic prophylaxis is no longer recommended for any other form of congenital heart disease,” the statement said.

“These new recommendations are a major change that has evolved over nearly 50 years,” said Michael Gewitz, M.D., chair of the AHA Rheumatic Fever, Endocarditis and Kawasaki Disease Committee, a co-author of the guidelines and professor of pediatrics at New York Medical College and Physician-in-Chief for Maria Fareri Children's Hospital at Westchester Medical Center in Valhalla, N.Y. “Over this time, patients with common heart conditions were told they needed to take antibiotics prior to a dental procedure. Now, they'll be told they no longer

need them. This will likely cause anxiety and concern in patients and health care providers.”

Gewitz says this is especially true for the millions of people, young and old, affected with congenital heart diseases. “There is likely to be some confusion until dentists and primary care doctors, and even specialists, all hear about these changes and get used to them,” he said. “Since patients with congenital heart disease can have complicated circumstances, even after surgical or other treatment, families and primary care doctors should check with their cardiologist if there is any question at all as to which category best fits the individual patient.”

He added that patients and their families should ask careful questions of their providers anytime antibiotics are suggested before a medical or dental procedure. They should also be aware that overuse of antibiotics many times can lead to a worse outcome than if they were not used at all.

Wilson acknowledged that patients and health care professionals may take awhile to get used to the new guidelines. Many dentists and physicians are used to prescribing the drugs to any patient with any possibility of a heart abnormality, no matter how slight. Likewise, many patients are used to taking the antibiotics, which provide a sense of security, he said.

The guidelines say patients who have taken prophylactic antibiotics routinely in the past but no longer need them include people with:

- mitral valve prolapse
- rheumatic heart disease
- bicuspid valve disease
- calcified aortic stenosis
- congenital heart conditions such as ventricular septal defect, atrial septal defect and hypertrophic cardiomyopathy.

“These patients still have a lifelong risk of IE,” Wilson said. “We're just saying that the risk is much greater from a random blood-borne bacterial infection resulting from everyday activities than from a dental or medical procedure.”

The guidelines also do not recommend any prophylactic antibiotics to prevent IE for common gastrointestinal procedures or procedures on the urinary tract. This holds true even for patients with the highest risk of bad outcomes from IE,

Wilson said the revised guidelines were prompted in part by the growing body of scientific

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research that raised questions about the usefulness of widespread prophylactic antibiotic use. The new recommendations are also more in line with international practice.

“Over the years, a number of publications have called into question the rationale and efficacy of prophylaxis,” he said. “We did a very thorough search of the literature and assembled the world’s experts on endocarditis and we based our conclusions on evidence-based medicine.”

The Council on Scientific Affairs of the American Dental Association has approved these guidelines as they relate to dentistry. In addition, the guidelines have been endorsed by the Infectious Diseases Society of America and by the Pediatric Infectious Diseases Society.

The above excerpts are reprinted with permission from the April 19, 2007 American Heart Association statement regarding the newly published guidelines for prevention of infective endocarditis. <http://www.americanheart.org/presenter.jhtml?identifier=3047083>. The full guidelines can be accessed at www.circ.ahajournals.org/cgi/reprint/CIRCULATIONAHA.106.183095.

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Cite this Detail-Document as follows: 2007 AHA guidelines for infective endocarditis (IE) prophylaxis. Pharmacist’s Letter/Prescriber’s Letter 2007;23(5):230514.

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