

Overview.

Antibiotic prophylaxis guidelines exist for two groups of patients:

1. those with **heart conditions** that may predispose them to bacterial endocarditis, and
2. those who have **total joint replacements**, who may be at risk for developing hematogenous infections at the site of the prosthetic.

1. Most patients don't need antibiotics before dental procedures to prevent infective endocarditis.

American Heart Association scientific statement

AHA Statement
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DALLAS, April 20 – 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 transplants 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.”

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:

1. unrepaired or incompletely repaired cyanotic congenital heart disease, including those with palliative shunts and conduits
2. 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
3. any repaired congenital heart defect with residual defect at the site or adjacent to the site of a prosthetic patch or a prosthetic device
4. 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 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.

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2. Dental Work After a Joint Replacement.

Everyone knows that good dental health is important. But for people with artificial joints, a visit to the dentist can be especially significant. The bacteria that cause infections in the teeth or gums can easily travel through the bloodstream and settle in the artificial joint. That can cause even more problems than a toothache.

Representatives from the American Dental Association and the American Academy of Orthopaedic Surgeons developed the following recommendations for people with joint replacements who are planning to have some dental work done. Because there is little data on this topic, these recommendations are guidelines only. Your dentist and your orthopaedic surgeon, working together, will determine an appropriate course of treatment for you.

When do you need preventive antibiotics?

You won't need to get preventive antibiotics for most dental procedures. But because you have an artificial joint, your risk of contracting a blood-borne infection is higher than normal. So preventive treatment is advised if the dental procedure involves high levels of bacteria.

You should get preventive antibiotics before dental procedures if:

- You have an inflammatory type of arthritis such as rheumatoid arthritis or systemic lupus erythematosus.
- Your immune system has been weakened by disease, drugs, or radiation.
- You have insulin-dependent (Type I) diabetes.
- You had a joint replacement less than two years ago.
- You've had previous infections in your artificial joint.
- You are undernourished or malnourished.

- You have hemophilia.

What procedures require preventive antibiotics?

You should get preventive antibiotics for the following dental procedures:

- Dental extractions
- Periodontal (gum disease) procedures
- Dental implant placement and reimplantation of teeth that were knocked out
- Endodontic (root canal) instrumentation or surgery
- Initial placement of orthodontic bands (not brackets)
- Injection of a local anesthetic into the gums near the jaw

- Regular cleaning of teeth or implants where bleeding is anticipated

What kinds of antibiotics are suggested?

The following preventive antibiotics are suggested:

- If you can take oral medications and are not allergic to penicillin, 2 grams of Amoxicillin, Cephalexin, or Cephadrine should be taken one hour before the procedure.
- If you cannot take oral medications and are not allergic to penicillin, 2 grams of Ampicillin or 1 gram of Cefazolin should be administered by injection one hour before the procedure.
- If you are allergic to penicillin, 600 milligrams of Clindamycin should be taken orally or administered by injection one hour before the procedure.



These guidelines are designed to help doctors and dentists make decisions about preventive antibiotics for dental patients with artificial joints. It is not a standard of care or a substitute for the practitioner's clinical judgment, because it is impossible to make recommendations that would cover every situation. Practitioners must exercise their own clinical judgment in determining whether or not preventive antibiotics are appropriate.

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This page's address:

[http://orthoinfo.aaos.org/fact/thr_report.cfm&topcategory=Joint Replacement&Thread_ID=364](http://orthoinfo.aaos.org/fact/thr_report.cfm&topcategory=JointReplacement&Thread_ID=364)

References:

To develop the infective endocarditis guidelines, the ADA serves on an expert writing team assembled by the [American Heart Association](#) . The ADA took the lead in inviting the [American Academy of Orthopaedic Surgeons](#)  to help develop the total joint replacement guidelines. Both sets of guidelines are periodically reviewed to ensure that the recommendations are based on the most recent scientific findings.

If you have any questions about these guidelines, please feel free to contact the ADA Division of Science via [e-mail](#) or by calling 312-440-2878.