

Guideline on Antibiotic Prophylaxis for Dental Patients at Risk for Infection

Originating Committee
Clinical Affairs Committee
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Adopted

1990

Revised

1991, 1997, 1999, 2002, 2005, 2007^Δ

Purpose

The American Academy of Pediatric Dentistry (AAPD) recognizes that numerous medical conditions predispose patients to bacteremia-induced infections. Because it is not possible to predict when a susceptible patient will develop an infection, prophylactic antibiotics are recommended when these patients undergo procedures most likely to produce bacteremia. This guideline is intended to help practitioners make appropriate decisions regarding antibiotic prophylaxis for dental patients at risk.

Methods

This guideline is based on a review of current dental and medical literature pertaining to postprocedural bacteremia-induced infections. A MEDLINE search was performed using the keywords “subacute bacterial endocarditis”, “bacteremia”, “antibiotic prophylaxis”, and “dental infection”.

Background

Bacteremia is anticipated following invasive dental procedures.^{1,2} Only a limited number of bacterial species commonly are implicated in resultant postoperative infections. An effective antibiotic regimen should be directed against the most likely infecting organism, with antibiotics administered shortly before the procedure. When procedures involve infected tissues, additional doses may be necessary.

Antibiotic usage may result in the development of resistant organisms. Utilization of antibiotic prophylaxis for patients at risk does not provide absolute immunity from infection. Post-procedural symptoms of acute infection (eg, fever, malaise, weakness, lethargy) may indicate antibiotic failure and need for further medical evaluation.

Appropriateness of antibiotic prophylaxis should be decided on an individual basis. Some medical conditions that may predispose patients to postprocedural infections are discussed below. This is not intended to be an exhaustive list; rather, the categorization should help practitioners identify children who may be at increased risk. If a patient reports a syndrome or medical condition with which the practitioner is not familiar, it is appropriate to contact the child’s physician to determine susceptibility to bacteremia-induced infections.

Recommendations

Patients with cardiac conditions^Δ

Numerous cardiac conditions place patients at risk for endocarditis following dental manipulation. The AAPD endorses the American Heart Association’s (AHA) guideline

on prevention of bacterial infective endocarditis (IE).³ The 2007 AHA guideline recommends IE prophylaxis only for those whose underlying cardiac conditions are associated with the highest risk of adverse outcome.³ Such conditions include prosthetic heart valves, previous history of IE, unrepaired cyanotic congenital heart disease (CHD), completely repaired congenital heart defect with prosthetic material or device during the first 6 months after the procedure, repaired CHD with residual defects at the site or adjacent to the site of a prosthetic patch or device, and cardiac transplantation recipients who develop valvulopathy.³ In addition to those diagnoses listed in the AHA guidelines, patients with a history of intravenous drug abuse⁴ and certain syndromes (eg, Down syndrome, Marfan syndrome) may be at risk for developing bacterial endocarditis due to associated cardiac anomalies. Consultation with the patient's physician may be necessary to determine susceptibility to bacteremia-induced infections.

For patients with high-risk cardiac conditions, IE prophylaxis is recommended for all dental procedures that involve manipulation of the gingival tissue or periapical region of teeth or perforation of oral mucosa.³ Table 1 lists the suggested prophylaxis regimens.

Table 1. Suggested Antibiotic Prophylactic Regimens*

Children not allergic to penicillin	Amoxicillin 50 mg/kg (max=2 g) orally 1 h prior to dental procedure
Children not allergic to penicillin and unable to take oral medications	Ampicillin 50 mg/kg (max=2 g) IV or IM within 30 min before dental procedure
Children allergic to penicillin	Clindamycin 20 mg/kg (max=600 mg) orally 1 h prior to dental procedure or azithromycin 15 mg/kg (max=500 mg) orally 1 h prior to procedure
Children allergic to penicillin and unable to take oral medications	Clindamycin 20 mg/kg (max=600 mg) IV or cefazolin 25 mg/kg (max=1 g) IV or IM within 30 min before dental procedure

*No second dose is recommended for any of these regimens. Adapted from Prevention of Bacterial Endocarditis: Recommendations by the AHA.³

TABLE 5. Regimens for a Dental Procedure

Situation	Agent	Regimen: Single Dose 30 to 60 min Before Procedure	
		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.

Patients with compromised immunity
Patients with a compromised immune system may not be able to tolerate a transient bacteremia following invasive dental procedures. This category includes, but is not limited to, patients with the following conditions:

1. human immunodeficiency virus (HIV);
2. severe combined immunodeficiency (SCIDS);
3. neutropenia;
4. immunosuppression;
5. sickle cell anemia;
6. status post splenectomy;
7. chronic steroid usage;
8. lupus erythematosus;
9. diabetes;
10. status post organ transplantation.

Discussion of antibiotic prophylaxis for patients undergoing chemotherapy, irradiation, and hematopoietic cell transplantation appears in a separate AAPD guideline (pages 185-190).⁵

Patients with shunts, indwelling vascular catheters, or medical devices

Bacteremia following an invasive dental procedure may lead to colonization of shunts or indwelling vascular catheters. Vascular catheters, such as those required by patients undergoing dialysis, chemotherapy, or frequent administration of blood products, are susceptible to bacterial infections. Ventriculoatrial (VA) or ventriculovenous (VV) shunts for hydrocephalus are at risk of bacteremia-induced infections due to their vascular access. In contrast, ventriculoperitoneal (VP) shunts do not involve any vascular structures and, consequently, do not require antibiotic prophylaxis. The AAPD endorses the recommendations of the American

Dental Association and the American Academy of Orthopaedic Surgeons for management of patients with prosthetic joints.⁶ Antibiotic prophylaxis is not indicated for dental patients with pins, plates, and screws, nor is it indicated routinely for most dental patients with total joint replacements. Antibiotics may be considered when high-risk dental procedures (Table 2) are performed for dental patients within 2 years following implant surgery or for patients who have had previous joint infections. Consultation with the child's physician may be necessary for management of patients with other implanted devices (eg, Harrington rods, external fixation devices).

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Table 2. Dental Procedures Associated With Higher Incidence of Bacteremia

Dental extractions	100
Periodontal procedures including surgery, subgingival placement of antibiotics/fibers/strips, scaling and root planning, probing, recall maintenance	101
Dental implant placement and replantation of avulsed teeth	102
Endodontic instrumentation or surgery only beyond the apex	103
Initial placement of orthodontic bands, but not brackets	104
Intraligamentary and intraosseous local anesthetic injections	105
Prophylactic cleaning of teeth or implants where bleeding is anticipated	106
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References

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^Only the section on Patients with Cardiac Conditions was amended May, 2007 to reflect newly published recommendations by the American Heart Association regarding antibiotic prophylaxis for patients at risk for infectious endocarditis.