Guideline on Prevention of Infective Endocarditis in Pediatric Dental Patients at Risk

Originating Council
Council on Clinical Affairs

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Purpose
The American Academy of Pediatric Dentistry (AAPD) intends this guideline to help practitioners make clinical decisions concerning appropriate antibiotic prophylaxis for pediatric dental patients at risk for infective endocarditis (IE).

Methods
The American Heart Association (AHA) has promoted antibiotic prophylaxis for patients at risk for IE since 1955. In 2007, the AHA released its tenth iteration of such guidelines.[1] The AAPD, acknowledging the AHA's expertise and efforts to produce evidenced-based recommendations, continues to endorse the AHA guidelines for antibiotic prophylaxis, now entitled "Prevention of Infective Endocarditis".[1]

Background
Transient bacteremia commonly follows mucosal trauma associated with dental procedures. Because procedure-induced bacteremias may result in a potentially fatal infective endocarditis, the AHA long has promoted antibiotic prophylaxis for dental patients with certain underlying cardiac conditions. The rationale for such recommendations was based largely on expert opinion.[1] During review of relevant literature and studies, and in consultation with national and international experts, the AHA was compelled in 2007 to revise its guideline on prevention of IE. The primary reasons for the revision include:

- "IE is much more likely to result from frequent exposure to random bacteremias associated with daily activities than from bacteremia caused by a dental, GI tract, or GU tract procedure.
- Prophylaxis may prevent an exceedingly small number of cases of IE, if any, in individuals who undergo a dental, GI tract, or GU tract procedure.
- The risk of antibiotic-associated adverse events exceeds the benefit, if any, from prophylactic antibiotic therapy.
- Maintenance of optimal oral health and hygiene may reduce the incidence of bacteremia from daily activities and is more important than prophylactic antibiotics for a dental procedure to reduce the risk of IE."[1]

The recent revision of the AHA guideline was intended to clarify when antibiotic prophylaxis is/is not recommended and to provide more uniform global recommendations. Major changes from the 1997 version[2] include:

> "(1) The Committee concluded that only an extremely small number of cases of infective endocarditis might be prevented by antibiotic prophylaxis for dental procedures even if such prophylactic therapy were 100% effective.
> (2) Infective endocarditis prophylaxis for dental procedures should be recommended only for patients with underlying cardiac conditions associated with the highest risk of adverse outcome from infective endocarditis.
> (3) For patients with these underlying cardiac conditions, prophylaxis is recommended for all dental procedures that involve manipulation of gingival tissue or the periapical region of teeth or perforation of the oral mucosa.
> (4) Prophylaxis is not recommended based solely on an increased lifetime risk of acquisition of infective endocarditis."[1]

Recommendations
Dental practitioners should consider carefully prophylactic measures to minimize the risk of IE in patients with underlying cardiac conditions. These patients should be educated and motivated to maintain personal oral hygiene through daily plaque removal, including flossing. Professional preventive strategies should be based upon the individual's assessed risk for caries and periodontal disease.

Specific recommendations from the 2007 AHA guideline on prevention of IE are included in the following tables. The AHA recommends antibiotic prophylaxis only for those whose underlying cardiac conditions are associated with the highest risk of adverse outcome (see Table 1).[3] Consultation with the patient's physician may be necessary to determine susceptibility to bacteremia-induced infections. Antibiotics are recommended for "all dental procedures that involve manipulation of gingival tissue or the periapical region of teeth or perforation of the oral mucosa"[3] (see table 2). Specific antibiotic regimens can be found in Table 3. Practitioners and patients/parents can review the entire AHA guideline (http://circ.ahajournals.org/cgi/reprint/CIRCULATIONAHA.106.183095) for additional background information as well as discussion of special circumstances (eg, patients already receiving antibiotic therapy, patients on anticoagulant therapy).

References

1. Wilson W, Taubert KA, Gewitz M, et al. Prevention of infective endocarditis: Guidelines from the American Heart Association. Circulation e-published April 19, 2007. http://circ.ahajournals.org/cgi/reprint/CIRCULATIONAHA.106.183095. Accessed May 10, 2007.
2. Dajani AS, Taubert KA, Wilson W, et al. Prevention of bacterial endocarditis: Recommendations by the American Heart Association. JAMA 1997;227:1974-801

Table 1. 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)*
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 6 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 prosphetic material occurs within 6 months after the procedure.

Table 2. DENTAL PROCEDURES FOR WHICH ENDOCARDITIS PROPHYLAXIS IS RECOMMENDED FOR PATIENTS IN TABLE 1

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

* The following procedures and events do not need prophylaxis: routine anesthetic injections through non-infected 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.

Table 3. REGIMENS FOR A DENTAL PROCEDURE

		REGIMEN: SINGLE DOSE 30 TO 60 MIN BEFORE PROCEDURE	
Situation	**Agent**	**Adults**	**Children**
Oral	Amoxicillin	2 g	50mg/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 penicillin or ampicillin and unable to take oral medication	Cefazolin or ceftriaxone†	1g 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.
† Cephalosporings should not be used in an individual with a history of anaphylaxis, angioedema, or urticaria with penicillins or ampicillin.