Clinical Guideline on Antibiotic Prophylaxis for Patients At Risk

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Purpose

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.

Background

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

Practitioners must keep in mind that 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. Postprocedural 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.

Patients with cardiac conditions associated with endocarditis

Numerous cardiac conditions place patients at risk for endocarditis following dental manipulation. The American Academy of Pediatric Dentistry (AAPD) endorses the American Heart Association's (AHA) guideline on prevention of bacterial endocarditis.[1] In addition to those diagnoses listed in the AHA guidelines, patients with a history of intravenous drug abuse[2] and certain syndromes (eg, Down, Marfan) may be at risk for developing bacterial endocarditis due to associated cardiac anomalies.

Patients with compromised immunity

Patients with a compromised immune system may not be able to tolerate a transient bacteremia following invasive dental procedures. Discussion of antibiotic prophylaxis for patients undergoing chemotherapy, irradiation and bone marrow transplantation appears in a separate AAPD guideline.[3] 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.

Table 1. Suggested Antibiotic Prophylactic Regimens*

Children not allergic to penicillin	Amoxicillin 50 mg/kg (maximum 2 g) orally 1 h prior to dental procedure
Children not allergic to penicillin and unable to take oral medications	Ampillicin 50 mg/kg (maximum 2 g) IV or IM within 30 min before dental procedure
Children allergic to penicillin	Clindamycin 20 mg/kg (maximum 600 mg) orally 1 h prior to dental procedure
Children allergic to penicillin and unable to take oral medications	Clindamycin 20 mg/kg (maximum 600 mg) IV or IM or Cefazolin 25 mg/kg (maximum 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.[1]

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. Ventriculoatrial or ventriculovenus shunts for hydrocephalus are at risk for bacteremia induced infections. Vascular catheters, such as those required by patients undergoing dialysis, chemotherapy, or frequent administration of blood products, are also susceptible. The AAPD endorses the recommendations of the American Dental Association and the American Academy of Orthopaedic Surgeons for management of patients with prosthetic joints.[4] Consultation with the child's physician may be necessary for management of patients with other implanted devices (eg, Harrington rods, external fixation devices).

References

1. Dajani AS, et al. Prevention of bacterial endocarditis: Recommendations by the American Heart Association. *JAMA.* 1997;227:1974-1801.
2. Dajani AS, Taubert KA. Infective endocarditis. In: Allken DA, Gutgesell HP, Clark EB, Driscoll DJ, eds. *Moss and Adams' Heart Disease in Infants, Children, and Adolescents.* Lippincott Williams & Wilkins; 2001:1297-1308.
3. American Academy of Pediatric Dentistry. Clinical guideline on dental management of pediatric patients receiving chemotherapy, bone marrow transplantation, and/or radiation. *Pediatr Dent.* 2003; 25(7):108-110.
4. American Dental Association, American Academy of Orthopaedic Surgeons. Antibiotic prophylaxis for dental patients with total joint replacements. *J Am Dent Assoc.* 1997;128:1004-1007.