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Prevention of Infective Endocarditis

This *Heartbeat* will review the new revised American Heart Association (AHA) Guidelines for Prevention of Infective Endocarditis.[1] The 2007 guidelines reflect answers to questions about the effectiveness of antimicrobial prophylaxis for Infective Endocarditis (IE) associated with dental, Gastrointestinal (GI), or genitourinary (GU) tract procedures.

"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 infective endocarditis," noted Chair of the new guidelines writing group Walter R. Wilson, MD, from Mayo Clinic in Rochester, Minnesota, in a statement issued by the AHA. "This changes the whole philosophy of how we have constructed these recommendations for the last 50 years."

The committee did recommend prophylaxis for patients with underlying cardiac conditions associated with the highest risk of an adverse outcome. The recommendations were intended to define more clearly when IE prophylaxis is or is not recommended and to provide more consistent global recommendations (England revised their guidelines to something very similar in 2006).

Sponsoring Organizations: American Heart Association, American Dental Association, Infectious Diseases Society of America, Pediatric Infectious Diseases Society

Background and Purpose:

Morbidity and mortality associated with IE remain high despite great advances in medicine and surgery. Prevention of IE has therefore been a priority for the American Heart Association for more than 50 years. The 2007 document updates the AHA's guidelines, last revised in 1997. The key rationale for the current revision is to address the persistent question of whether antimicrobial prophylaxis effectively prevents IE associated with dental, gastrointestinal, or genitourinary (GU) tract procedures. A crude estimate of the risk for infective endocarditis associated with dental procedures in the United States is 1 case of infective endocarditis for every 14 million dental procedures. This risk rises to 1 case per 114,000 procedures among patients with a prosthetic valve and 1 case per 95,000 procedures among patients with previous infective endocarditis.

Key Points:

1. Prophylactic antibiotics based on a patient's lifetime risk for acquiring IE are no longer recommended for dental, GI, or GU tract procedures. This recommendation follows from the observation that most cases of IE result from bacteremia caused by routine activities such as chewing food, brushing teeth, and flossing. Moreover, no published data clearly indicate that prophylaxis prevents IE from invasive procedures.

2. Dental disease may increase IE risk, but prophylaxis may only prevent an exceedingly small number of cases of IE—if any—and the risk of antibiotic associated adverse events exceeds the benefit, if any. The emphasis should shift from antibiotic prophylaxis for dental procedures to improved dental care and oral health in patients with conditions that carry the highest risk for IE.

3. IE prophylaxis is reasonable (Class IIb, level of evidence C) for dental procedures that involve gingival tissues or the periapical region of a tooth and for procedures that perforate the oral mucosa (such procedures do not include routine anesthetic injections, adjustment of orthodontic appliances, or bleeding from trauma to the oral mucosa—cleaning), in patients with cardiac conditions associated with the highest risk for adverse outcomes from IE:

- prosthetic cardiac valve.
- previous IE.
- Un-repaired congenital heart disease (including palliative shunts and conduits).
- completely repaired congenital heart defect with prosthetic material or device, during the first 6 months after the procedure.
- repaired congenital heart disease with residual defects at the site or adjacent to the site of a prosthetic patch or device.
- cardiac transplantation recipients who develop cardiac valvulopathy.

4. IE prophylaxis is no longer recommended for patients with mitral valve prolapse, hypertrophic cardiomyopathy, structural disorders like ventricular or atrial septal defects or valvular stenosis or regurgitation.

5. If administered, antibiotics should be given in a single dose before the procedure. The preferred antibiotic is amoxicillin (2 g in adults and 50 mg/kg in children). This medication should be given to patients 30 to 60 minutes before the procedure. High-risk adults with penicillin allergy may receive cephalexin, 2 g; clindamycin, 600 mg; or either azithromycin or clarithromycin, 500 mg.

6. IE prophylaxis is not strongly recommended for respiratory tract procedures and not recommended at all for bronchoscopy, unless incision of the respiratory tract mucosa is necessary. High-risk patients undergoing drainage of a known respiratory tract abscess should receive antibiotics before the procedure.

7. IE prophylaxis is not recommended for GU or GI procedures including colonoscopy or esophagogastroduodenoscopy. Again, antibiotics may be considered prior to procedures designed to treat infections in the gastrointestinal or genitourinary tracts.

8. High-risk patients undergoing procedures on infected skin also may receive pre-procedure antibiotic prophylaxis, and this antibiotic should be active against staphylococci.

Comment:

These guidelines represent a marked change in approach to IE prevention, limiting the situations in which antimicrobial prophylaxis is considered reasonable and eschewing strong endorsement of prophylaxis in any setting (the guidelines contain no Class I recommendations). The shift is away from antibiotics and toward dental health. The authors also called for further studies so that future recommendations may be built on a stronger evidence base.

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[1]WILSON W, ET AL. PREVENTION OF INFECTIVE ENDOCARDITIS. GUIDELINES FROM THE AMERICAN HEART ASSOCIATION. CIRCULATION ONLINE APRIL 19, 2007.