

# Antimicrobial prophylaxis against infective endocarditis for dental procedure. - A brief commentary

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## Abstract

For over a half century, guidelines for the prevention of infective endocarditis (IE) have recommended antibiotic prophylaxis for certain patients receiving dental care. Much emphasis has been attributed historically on the baseless concept that dental procedures are main cause of cases of IE and dentistry carried the blame for induce endocarditis without much supporting evidence.

In 2007, the American Heart Association (AHA) and British Society for Antimicrobial Chemotherapy (BSAC) updated the recommendations for IE prophylaxis before dental procedures and those recommendations are clearly evidence-based<sup>9</sup>. The dental treatment is a very rarely cause of IE and antibiotic prophylaxis do not give assurances as preventive. So, the value of antibiotic prophylaxis in prevention of IE has been questioned for over 20 years<sup>3</sup>.

In reviewing the literature<sup>2</sup>, we did not find support that antibiotic prophylaxis actually prevents endocarditis from dental procedure only an extremely small number of cases of IE might be prevented by antibiotic prophylaxis for dental procedure. There is increasing evidence that spontaneous bacteremia are more likely to cause IE in at risk patients than specific episodes of dental treatment<sup>568</sup>. The majority of infective endocarditis cases caused by oral bacteria result from chewing, flossing, tooth brushing and others daily activities, and the presence of dental disease may increase the risk of bacteremia associated with these daily events<sup>8</sup>. Anyway the role of dental procedures in the production of infective endocarditis has probably been overestimated in relation to oral health condition thus more attention should be given to the importance of good oral hygiene and control of dental biofilm in the prevention of IE. In short, the care of the oral health must be the first step in the prevention of infective endocarditis from dental origin than antibiotic prophylaxis.

Almost a year after the issued of new recommendations for prevention of IE, we still seeing most patients and health care professionals resistant to adopt this new recommendations and persisting to prescribe antibiotic prophylaxis when the need no longer exists. Only a few patients will be elected to receive antibiotic prophylaxis according to the AHA and BSAC, thus only employ in the very highest risk patients<sup>8</sup>. (Tables 1, 2, 3)

The prescription of antibiotics carries the risk for both, patient and community, through the undesirable effects and the fact of introducing microorganisms mutants or genetically transfer the microbial resistance, respectively.

The scientific community has focused the link between the overuse of antibiotics and the increasing prevalence of the drug resistant organisms<sup>14710</sup>.

This concern is overt when evaluating ambulatory patients wich receiving short courses of antibiotics and they became an important reservoir of resistant microorganisms<sup>7</sup>. Antibiotic resistance is a serious incident and capable to be prevented through common sense and clinical judgment. Health care professionals have misused antibiotics for too long and carry the blame of antibiotic resistance. The risks associated with widespread antibiotic use and lack of efficacy data take us back to rethink our practice

The new guidelines should be seen as great progress based on evidence that currently exists and must be followed until more evidence arise. We need further debate, especially as there are increasing environmental concerns over the misuse of antibiotics. We are now experiencing a shift thus we need time to change this scenario.

**Figure 1**

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 prosthetic material occurs within 6 months after the procedure.

**Figure 2**

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 noninfected 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.

**Figure 3**

Table 3

Regimens for antibiotic prophylaxis				
Situation	Agent	Single Dose	30-60 minutes before procedure	
Oral	Amoxicillin	Adults	2g	Children 50mg/kg
		Children		
Unable to take oral medication	Ampicillin or Cefazolin or ceftriaxone	Adults	2g IM or IV*	Children 50mg/kg IM or IV
		Children	1g IM or IV	50mg/kg IM or IV
Allergic to penicillins or ampicillin oral	Cephalexin**† or Clindamycin or Azithromycin or Clarithromycin	Adults	2g	Children 50mg/kg
		Children	600mg	20mg/kg
		Adults	500mg	Children 15mg/kg
		Children		
Allergic to penicillins or ampicillin and unable to take oral medication	Cefazolin or Ceftriaxone † or Clindamycin	Adults	1g IM or IV	Children 50mg/kg IM or IV
		Children	600mg IM or IV	20mg/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.

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