

CLINICAL PRACTICE



Infective Endocarditis and Dentistry: Outcome- based Research

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ABSTRACT

Antibiotic prophylaxis for prevention of infective endocarditis has long been recommended for patients receiving dental care. Two studies of patients with endocarditis found limited risk associated with dental treatment. It is imperative that guidelines for therapy be based on outcome studies and on evidence of safety, efficacy and cost effectiveness.

MeSH Key Words: antibiotic prophylaxis; dental care; endocarditis infective/prevention and control.

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For years, guidelines for the prevention of infective endocarditis have recommended antibiotic prophylaxis for certain patients receiving dental care. The guidelines are revised from time to time, with the most recent revision completed in 1997. These guidelines have been based on animal studies and reports of individual patients where infective endocarditis has developed. Over the years, case reports and potential legal implications have motivated health care providers, including physicians and dentists, to recommend and institute antibiotic prophylaxis before dental procedures for individuals with specific heart conditions, particularly those with valvular disease, valve replacement or valvular regurgitation.

The most recent guidelines for the prevention of infective endocarditis and their implications for dental practice were recently

reviewed in a paper published in the *Journal*.¹ That paper highlighted that infective endocarditis is an extremely rare condition and that the attendance for dental management is common in Western society. Correlation between dental visits and subsequent endocarditis does not prove cause and effect, especially in light of the fact that dental treatment is a possible cause of very few cases of infective endocarditis.

Two important outcome studies have recently been published.^{2,3} These two outcome-based studies have similar findings and indicate that the current guidelines, which are not based on population-based outcome studies, require further review.

A Dutch study² assessed 427 patients with endocarditis and found that 64% of these patients would have been eligible for antibiotic prophylaxis based on

previously known cardiac conditions. Twenty-three per cent had undergone a procedure that would have indicated prophylaxis within one-half year of onset of endocarditis, and 11% had undergone a procedure within 30 days of onset. It was thought that prophylaxis may have prevented 17% of cases within 180 days of onset, a period of time that extends beyond what many believe to be the appropriate incubation period, and 11% of cases within 30 days, representing only 5.3% of cases. Therefore, even if antibiotic prophylaxis was 100% effective and was provided for all at-risk patients receiving dental treatment, only a small fraction of cases of endocarditis (5.3%) would be potentially prevented.

A more recent study assessed patients in 54 hospitals in the Philadelphia area.³ A total of 287 cases of endocarditis were

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identified; excluded from analysis were patients with endocarditis associated with intravenous drug use. It was found that in the three months preceding the diagnosis of endocarditis, dental treatment was no more frequent in these patients than in non-infected age- and sex-matched control patients. Of the 273 patients with endocarditis, 38% knew of cardiac conditions; of the control patients, only 6% were aware of cardiac conditions. Patients with endocarditis had a history of mitral valve prolapse, congenital heart disease, valve surgery, rheumatic fever or heart murmur more frequently than did control patients. In the at-risk patients with known cardiac lesions, dental therapy was significantly less common than among the control patients. In this study, dental treatment was not seen to represent a risk for infective endocarditis, even in patients with cardiac valve abnormalities. However, the presence of cardiac valvular abnormalities did represent a risk factor. No dental procedures other than tooth extraction in the two months prior to hospital admission were identified as risk factors; however, dental extractions were uncommon. Of the patients with endocarditis who had a known cardiac valvular abnormality and dental treatment (10.6%) in the previous three months, those who had dental therapy one month prior to diagnosis of endocarditis (4.4%) were found to be at no significantly increased risk from dental treatment, although the number of at-risk patients was small. The statistical risk for endocarditis did not change regardless of whether antibiotics were used in dental treatment. Very few cases of infective endocarditis would be prevented even if antibiotic prophylaxis was provided for dental procedures and was 100% effective.

It is important to recognize that failures of prophylactic antibiotic regimens have been recorded and indeed have been used to assist in modifying guidelines for prophylaxis coverage. Additional concerns about antibiotic prophylaxis

include cost effectiveness and the increased risk of resistant bacteria in society.^{1, 4}

It is imperative that guidelines for therapy be based on outcome studies (when available) and on evidence of safety, efficacy and, increasingly, cost effectiveness. The new data available about infective endocarditis, including the limited risk associated with dental treatment, the time of incubation and the increasingly available outcome-based evidence, require continual review of the current historically and empirically based recommendations. Current recommendations are essentially based on animal models and limited human studies. As these guidelines adapt to current information, it becomes increasingly important that the medical, dental and legal professions and the public be informed and up-to-date about knowledge and guidelines. ■

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Letters

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Canada consistently documents dentists as having the second highest employment income by occupation (physicians being the highest).

Dr. Christensen is proposing that "real change is needed immediately to keep the fee guide system from collapsing." I am proposing that a debate of this nature cannot take place in a "dental vacuum." The mission statement of the Royal College of Dental Surgeons of Ontario (the licensing body of *all* dentists in Ontario) is "Protecting the public and guiding the dental profession."

It is not in the best interest of the public to seriously consider raising dental fees, regardless of what is occurring in the United States. If there were to be one criterion for assessing whether the present level of dental fees is appropriate, it would have to be: Are the fees affordable to Canadians and do they still ensure that dentists' overhead is adequately covered? It should not be based on the fees that American dentists are billing.

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