

A SHORT HISTORY OF INFECTIVE ENDOCARDITIS PREVENTION IN DENTAL MEDICINE GUIDELINES EVOLUTION

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ABSTRACT

Impressive steps have been made since 1955, when the first guideline on infective endocarditis prophylaxis was issued, until the present days. If in the past prophylaxis was begun 2 days before the procedure and continued for 2 more days after the intervention, a single dose is now recommended in the present. National Institute for Health and Care Excellence in the United Kingdom recommends no prophylaxis, but some claim an increase in infective endocarditis has been demonstrated following this recommendation.

Key words: infective endocarditis, prophylaxis, antibiotic

INTRODUCTION

Infective endocarditis is a severe, potentially life-threatening disease affecting the endocardium, more frequent in patients with congenital cardiopathies, rheumatismal valvular dysfunction, palliative shunt procedure or mechanical valves, that may cause severe valvular regurgitation, myocardial abscesses with or without fistula formation or intractable congestive heart failure, leading to death if left untreated.

EVOLUTION OF GUIDELINES

Several cardiology professional associations- American Heart Association (AHA), European Society of Cardiology (ESC) and National Institute for Health and Care Excellence (NICE) have issued recommendations regarding the prevention of bacterial endocarditis starting with the second half of the 19th century, although dental procedures were first linked to endocarditis in 1923 (1). AHA published its first guideline in

1955 (2), 40 years before the European association (3). The AHA has revised the recommendation most often, with no less than 9 versions published before 2000. All these documents refer not only to dental procedures, but also to interventions regarding the gastro-intestinal and genito-urinary tracts.

Regarding dental procedures, the first antibiotic recommended in the 1955 version was Penicillin, administered 30 minutes before the intervention (4). 5 years later, the emergence of Penicillin resistant strains was acknowledged, yet this medication continued to be the first line recommendation until 1990, when it was replaced by Amoxicillin. At that point (1960), Penicillin allergy was addressed by Chloramphenicol recommendation.

The 1977 AHA guideline version divided heart patients into the high, moderate and low risk groups, depending on their pathology. At that time, high risk patients were considered

to be those with a previous history of endocarditis, prosthetic valve carriers, shunts carriers and complex cyanotic congenital heart disease patients. Moderate risk was considered to be encountered in uncorrected patent ductus arteriosus, ventricular septal defect, primum atrial septal defect, coarctation of the aorta, and bicuspid aortic valve, rheumatic heart disease and hypertrophic cardiomyopathy. The low risk group consisted of innocent heart murmurs patients, cardiac bypass cases, previous Kawasaki or rheumatic fever individuals, cardiac pacemaker or defibrillator carriers and isolated atrial septal defect ostium secundum cases. The maneuvers that were considered to have bacteriemic potential included dental extractions and implant, periodontal procedures, root canals, subgingival placement of antibiotic fibers or strips, placement of orthodontic bands but not brackets and intraligamentary local anesthetic injections (4).

Before 1984, multiple antibiotic doses were recommended. Between 1957 and 1965 treatment with Penicillin was initiated 2 days before the procedure and continued 2 days after the intervention was done. Between 1965 and 1984 prophylaxis begun on the day of the procedure and continued for 2 days afterwards. The 1984 guideline recommended Penicillin V 2 grams orally 1 hour before, then 1 gram 6 hours after the initial dose and since 1990 Amoxicillin was the first line recommendation. The 1990 guideline recommended 3 grams orally 1 hour before the procedure, then half the dose 6 hours after the intervention, and since 1990 only one dose of antibiotic is administered, before the maneuver is performed (4).

The current ESC guidelines recommend that high risk patients undergoing high risk dental procedures should undergo endocarditis prophylaxis.

High risk patients are considered the following:

1. Congenital heart malformation patients that are cyanotic or that underwent palliative procedures (shunts, conduits or other prostheses).
2. Congenital heart malformation patients that underwent complete repair surgery, for the first 6 months after the heart operation
3. Prosthetic valve patients
4. Patients with a personal history of infective endocarditis (5)

High risk procedures are nowadays restricted to those that involve manipulation of the gingival or periapical region of the teeth or perforation of the oral mucosa. (5).

During the last decade indications for antibiotic prophylaxis have been widely restricted by all three international cardiology societies: AHA, ESC and NICE. The 2007 AHA guideline only recommends prophylaxis in high risk patients (6), as do the ESC guidelines in 2009 (7). The AHA guidelines differ from the ESC ones in that that they recommend prophylaxis in heart transplant patients. NICE took things one step further and recommended no prophylaxis whatsoever since 2008 (8): "In summary, this guideline recommends that antibiotic prophylaxis solely to prevent IE should not be given to people at risk of IE undergoing dental and non-dental procedures."

There are voices that claim that this reduction in indication of prophylactic antibiotherapy was a poor idea, followed by a steady increase of infectious endocarditis after the 2009 ESC amendment, especially streptococcus endocarditis (9).

CONCLUSIONS

There has been a dramatic change in

antibiotic prophylaxis indications over time. The current trendline is to restrict antibiotic use to only high-risk patients. NICE guideline recommends no prophylaxis whatsoever. However, the Romanian

Cardiology Society is affiliated to the European Society of Cardiology, therefore in Romania ESC guidelines should be applied.

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