



Review Article

Dentistry with antibiotic prophylaxis

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ABSTRACT

Prophylactic antibiotics are being used before dental treatment especially to prevent IE (infective endocarditis) has been reduced which contributes to decreased unnecessary use of antibiotics and over development of antibiotic resistant bacteria since 20 years. Medically compromised patients with history of prior prosthetic joint complications, both advanced/congenital cardiac problems or immunologically compromised with chronic disease like uncontrolled diabetes, antibiotic prophylaxis is still recommended.

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1. Introduction

Over use of antibiotics results in a global crisis which leads to increased number of bacterial species which are antibiotics resistant that were commonly used for the treatment of infections. Overuse of these antibiotics may lead to bacterial emergence.

Efforts to reduce antibiotics use in healthcare, especially dentistry. These efforts are reduced antibiotics use in food production in animals to increase growth, elimination of use of antibiotics when disease is not associated with a bacterial infection, reduced usage with endodontic treatment when there is pulpal involvement, prophylactic antibiotics before dental treatment.

Goff and colleagues¹ reviewed and examined the prophylactic antibiotics need before dental treatment for IE prevention in cardiac disease history patients and for prosthetic joints infection prevention. Traditionally, these

were two main indications for prophylactic antibiotics in dentistry.

There is lack of clarity for prophylactic antibiotics requirement, that causes confusion between patient, dentist and patient's physician. Goff et al.¹ reviewed the 65 years ago published guidelines to prevent IE. ADA (American Dental Association) in 1972 involved, with the elimination of the post-procedural dose but retention of the pre-procedural dose, a significant change occurred in 1997. The prophylaxis rationale are questioned as bacteremia can be there following toothbrushing and to reduce the oral microbial burden, proper oral hygiene performed daily is more important than prophylactic antibiotics. Unnecessary antibiotics use can be associated with adverse events for the patient as well as for the society.

Data analysis from Medicare and commercial insurance carriers examined data for a four-year period which included 91,438 patients with 168,420 dental visits and found that more than 80% of prophylactic antibiotics prescriptions for were unnecessary.²

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Table 1: Classification of surgical procedures according to risk of infection

Type of surgery	Definition	Examples	Indications for surgical antibiotic prophylaxis
Clean surgery	Healthy skin incised. Mucosa of respiratory, alimentary, Genito urinary tract and oropharyngeal cavity not traversed.	Hemiorrhaphy, mastectomy, cosmetic surgery	Not recommended
	Insertion of prosthesis or artificial device	Hip replacement, heart valve	Recommended
Clean contaminated	Respiratory, alimentary, Genito urinary tract is penetrated under controlled conditions without unusual contamination	Laryngectomy, uncomplicated appendectomy, cholecystectomy, transurethral resection of prostate gland	Recommended
Contaminated	Macroscopic soiling of operative field	Large bowel resection, biliary Genito urinary tract surgery with infected bile or urine	Strongly Recommended

Epidemiological modelling indicated that to prevent infection of the prosthesis, adverse events impact with prophylactic antibiotics far exceed any benefit of using these drugs. Orthopedic surgeons continue to recommend prophylactic antibiotics for prosthetic joint replacement patients.³ That patients considered as being at high risk who receive prophylactic antibiotics for their entire lives. 0.8 and 1.5%⁴ joint prosthesis patients with infection experience, and the infection consequences can be more severe and there is need for prosthesis placement, overprescribing antibiotics consequences can also be detrimental. Clostridium difficile Super-infection can occur with antibiotics administration.^{5,6} This infection causes morbidity and occasionally mortality. Long term antibiotics overuse is associated with resistant bacteria development. In US, joint replacement is a common surgical procedure.⁷

The three antibiotics used in adult surgical prophylaxis, where weight-based dosing is recommended, are cefazolin, vancomycin, and gentamicin. For patients receiving cefazolin, 2 g is the current recommended dose except for patients weighing greater than or equal to 120 kg, who should receive 3 g.

To prevent infective endocarditis, prophylactic antibiotic is not recommended.⁸ For patients with cardiac disease history, current recommendations for prophylactic antibiotics to prevent IE.

1. Homografts and transcatheter-implanted prosthesis in case of Prosthetic cardiac valves.
2. Prosthetic material like annuloplasty rings and chords for cardiac valve repair.
3. Infectious endocarditis history.
4. Valve regurgitation which is related to a abnormal valve- heart transplant
5. Congenital heart disorders (CHD) like conduits, palliative shunts, unrepaired cyanotic CHD, repaired

CHD with vascular regurgitation, residual shunts at the site of a prosthetic device.⁹

In children, CHD disorders which require antibiotics prophylaxis, it is recommended in case of Cyanotic CHD which is not fully repaired and the use of conduits and shunts, congenital defect which is completely replaced with prosthetics, for six months after the procedure and repaired CHD with residual defects like abnormal flow at or near the prosthetic device.^{10,11}

To prevent prosthetic joint infections, antibiotic prophylaxis current recommendations are as follows:

1. Prophylactic antibiotics are not recommended for patients who received prosthetic joints.
2. Prophylactic antibiotics are recommended, if patient has joint replacement surgery complications history.
3. Orthopedist should recommend antibiotic regimen, If prophylactic antibiotics are indicated.

2. Recommended Antibiotic Prophylaxis Regimen

If patient is allergic to penicillin Clindamycin 600 mg orally, $\frac{1}{2}$ -1 hour before treatment.

3. Conclusions

Prophylactic antibiotics before dental treatment has been reduced in 20 years due to that there is reduced use of unnecessary antibiotics. Antibiotic prophylaxis is still recommended for medically compromised patients with advanced or congenital cardiac problems, history of prosthetic joint complications.

4. Source of Funding

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5. Conflict of Interest

None.

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