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## Antibiotics regulations in Dental Practice.

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### ABSTRACT

The oral cavity and its surrounding tissue are habitats for many bacteria. Therefore a rationale for the use of antibacterial agents rises. Bacterial infections are common in dental and oral clinical practices; as a result, antibiotics prescribed for their treatment is also frequent. On the basis of defined need only the antibiotics should be prescribed otherwise their use may present more of a risk to the patient than the infection being treated or prevented. Literatures revealed that antimicrobials are being used inappropriately by dentists for a variety of conditions[1]. The right to requisition necessary medical agents in connection with dental treatment and prevention and treatment of diseases in the oral cavity or adjacent tissue.

**Keywords:** Antibiotic prophylaxis, Oral flora, Antimicrobial, Dental Practice, Infections.

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## INTRODUCTION

In 1942 the term Antibiotic was coined by Waksman ( literally meaning Against Life , Greek , Anti - Against , Biosis - life ).[1]The precise use of antibiotics is based upon three variables ;a defined indication, the appropriateness of antibiotic and the adverse effects associated with the drug. The misconceptions and misuse of antibiotics resulting in antibiotic abuse which is mainly due to following reasons

1. The belief that antibiotics are safe and do no harm.
2. The belief that antibiotic prophylaxis is commonly successful.
3. Ignoring to check the type of microbial flora before prescribing antibiotic.
4. If the treatment doesn't works out we assume that symptoms might be because of infection and we simply prescribe antibiotics.
5. The purpose of this present review is to focus on the importance, rationale, indications, contraindications, prophylaxis, and the choice of antibiotics for various dental procedures.

### Importance of this review

A study conducted in the USA by the members of the American association of endodontist( AAE) surveyed their prescribing practices and reported that 16.7% of the specialist endodontists prescribed antibiotics for cases of irreversible pulpitis[2]. General dental practitioners are often the first point of contact for patients with irreversible pulpitis and although one study conducted in Belgium reported that a smaller proportion (4.3%) of general dentists continue to prescribe antibiotics for irreversible pulpitis[2]. It is believed that the indiscriminate use of antibiotics may have added significantly to the increase in Methicillin Resistant Staphylococcus Aureus (MRSA) infections with concomitant staggering cogs implications.

Although some dentists continue to prescribe antibiotics, there appears to be very limited evidence that penicillin reduces pain, percussion sensitivity, or the amount of analgesics required in untreated teeth diagnosed with irreversible pulpitis.

### Rationale behind antibiotic usage

The rationale behind the use of antibiotics in Endodontics should be based upon the following criteria's

- Whether antibiotics is indicated in a given Endodontics infection?
- When to advocate prophylactic antibiotic coverage?
- Which antibiotic is most effective in resolving endodontic infections ?

### Necessity of antibiotics

Cardinal rule is that antibiotics are designed primarily to control active microbial infections, not for preventing the possibility of infections, unless the patient is medically compromised[2]. Prophylactic use of antibiotics in a healthy patient in whom there is no evidence of active microbial infection is not supported by sound scientific knowledge. The most chronic endodontic periapical lesions are not infected lesions but are inflammatory lesions. Hence elimination of irritants, especially the pathogenic bacteria in the root canal by careful chemo mechanical debridement is far more effective than antibiotics[2]. Antibiotics should be used in preventing flare ups and treating the chronic endodontic periapical lesions.

### Interaction between Antibiotics and NSAIDS

Antibiotic prescription is almost invariably associated with the prescription of non-steroidal anti-inflammatory drugs (NSAIDS)[3]. There are many potential interactions between these two drug categories- the most common situation being an NSAID-mediated reduction of antibiotic bioavailability and thus effect, though some combination of drugs such as cephalosporins and ibuprofen , or tetracyclines with naproxen, have been shown to exert the opposite effect, i.e, an increase in the bioavailability of the antibiotic[3].

### Antibiotic of choice in dental practice

Literatures revealed that amoxicillin-clavulinic acid, clindamycin and moxifloxacin are the antibiotics of choice for the treatment of odontogenic infections[3]. In the study of sensitivity of different antibiotics, they found amoxicillin-clavulinic acid to offer very good results. Antibiotics commonly used in dental practice, such as erythromycin, metronidazole or azithromycin were found to be ineffective in application to over 30% of the strains<sup>3</sup>. Linezolid was the antibiotic with the best performance, proving effective in 94.6% of the strains. This antibiotic belongs to the family of oxazolidinones, which act by inhibiting protein synthesis, and which are effective against multi resistant gram-positive germs and anaerobes. Linezolid is marketed in Spain under the brand name of zyvoxid[3]. The authors consider amoxicillin to be the drug of choice in processes of this kind, and that clindamycin should be the alternative in the event of treatment failure or of patient allergic to penicillin. They do not recommend antibiotic treatment in chronic gingivitis or periodontal abscesses (except in the presence of dissemination)[4]. There is considerable agreement that the beta-lactam derivatives are the antibiotics of choice for these processes, provides there are no allergies or intolerance.

While some authors consider the natural and semisynthetic penicillins (amoxicillin) to be options of first choice, others prefer the association amoxicillin-clavulanate, due to the growing number of bacterial resistance, as well as its broad spectrum, pharmacokinetic profile, tolerance and dosing characteristics, as has been commented above, some authors have proposed clindamycin as the drug of choice, in view of its good absorption, low incidence of bacterial resistances and the high antibiotic concentrations reached in bone[4].

### Indications for use of antibiotics in dental practice

Antibiotics are typically prescribed in dental practice for some of the following purposes[5] :

- A) As treatment for acute odontogenic infections;
- B) As treatment for non-odontogenic infections;
- C) As prophylaxis against focal infection in patients at risk (endocarditis and joint prostheses);
- D) As prophylaxis against local infection and systemic spread in oral surgery.

### Indications for the use of antibiotics in endodontics:

[6] Active microbial infections with manifestations of local and systemic signs and symptoms such as diffuse swelling with sinus discharge, fever, malaise, lymphadenopathy and elevated white cell count. In High Risk patients - preventing the possibility of any infection following bacteremia[7].

### Antibiotic Prophylaxis and it's necessary:

Administration of prophylactic antibiotics Pre, Intra or Post operative basis, to prevent the bacterial proliferation and dissemination within and from the surgical wound[8]

Prophylactic antibiotic is mandatory if there is any following conditions prevails, such as[9]

- A) Any condition, which causes immunosuppression in a patient.
- B) Any condition which creates an ideal breeding ground for infections in a patient.

### CONCLUSION

Even though antibiotics are life saving therapeutic agents they have to be wisely used. Dentists routinely prescribe antibiotics to prevent pain and swelling during and after dental procedures. Culturing, doing sensitivity tests and knowing better knowledge about the microorganism should be the priority before prescribing any antibiotics. Proper sterilization and a standard infection control should be maintained at all levels. Over the counter sale of antibiotics should be banned which reduces most of the resistance toward antimicrobials.

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