International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 05 Issue 09 September 2022
DOI: 10.47191/ijcsrr/V5-i9-24, Impact Factor: 5.995
IJCSRR @ 2022
www.ijcsrr.org

# Antibiotics: Boon or Bane in Dentistry?

**Dr. Riya Ann Joseph[1], Dr. Ibrahim Fazal[2]**
[1] Intern, Faculty of Dental Sciences- Ramaiah University of Applied Sciences. Bangalore 560054, Karnataka, India.
[2] Post graduate- Department of Periodontology, Ramaiah University of Applied Sciences- Faculty of Dental Sciences, Bangalore 560054, Karnataka, India.

**ABSTRACT:** Dentistry is a vast domain devoted to managing dental infections as well as bolstering and rehabilitating the dentition lost to bacterial invasion. Antibiotics are an essential part of dentistry and its relative specialties, and prescribing antibiotics is a privilege that should not be abused. Antibiotic prescriptions in dentistry are relatively small but nonetheless significant. With the emergence of antibiotic-resistant bacterial species, there is a need to become more vigilant about their prescription, as well as an urgent need for both professional and public understanding of the appropriate use of this life-saving component of treatment. This review discusses the various principles and rationales underlying antibiotic therapy in various fields of dentistry, with an emphasis on rational antibiotic use in dentistry.

**KEYWORDS:** Antibiotics, Dental medicine, Dental prescriptions, Dental drugs, Oral infections.

## INTRODUCTION

The oral cavity is a complicated biological ecosystem repleting with organisms that live in a biofilm. For most pulpal and periodontal diseases, the change from health to disease state is associated with a change in the balance of the ecosystem, usually from resident facultative anaerobes to obligate anaerobes. Even though only a few microorganisms cause odontogenic infections, many nonpathogenic bacterial species contribute by maintaining an ecosystem favorable for pathogenic species for survival and growth. Microorganisms in a biofilm are consistently 1000-1500 times more resistant to standard antibiotic dosage.[1]

Most dental pain is caused by an infection-induced inflammatory process in a closed compartment, such as the pulp and apical periodontal region, or in a sensitive and highly innervated soft tissue, such as the periosteum space, gingiva, and periodontium. The removal of infectious foci is the overarching principle of all infectious process management. Mechanical removal of infectious foci is used to control dental infections. When the soft tissue spaces are involved, it can be accomplished by removing the infected pulp, scaling and root planning and drainage of the pus. For maximum benefit, a combination of one or more of these techniques is usually used. When combined with the appropriate use of anti-inflammatory agents, this can result in immediate pain and infection relief.[2]

Antibiotics do not help with pain relief because they have no effect on the inflammatory process that causes pain. In most cases, antibiotics are not required if appropriate measures to remove infectious foci are taken.

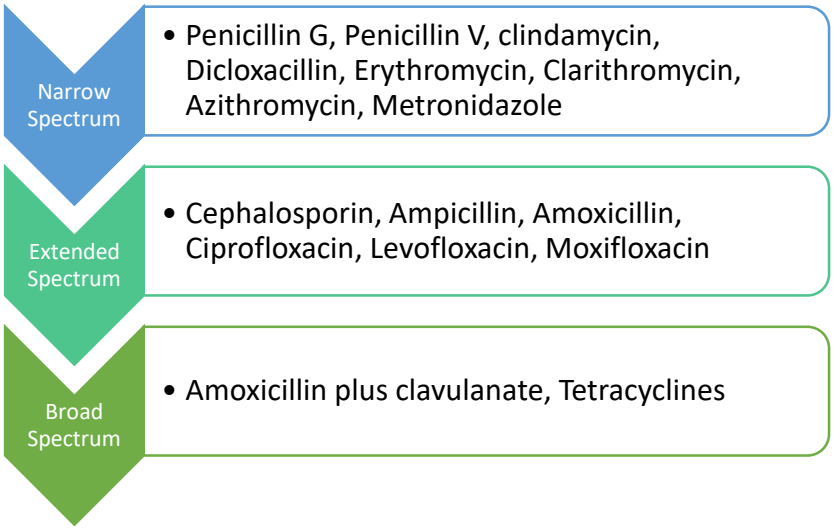
The use of antibiotics in conjunction with dental procedures is frequently a source of conundrum among dental practitioners. The use of antibiotics in dental practice has been highlighted in this review article.

## DEFINITION*:*

According to *Waksman and Woodruff* Antibiotics can be defined as a chemical substance produced by microorganisms, which at a high dilution can inhibit the growth and/or multiplication or kill another microorganism.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 05 Issue 09 September 2022
DOI: 10.47191/ijcsrr/V5-i9-24, Impact Factor: 5.995
IJCSRR @ 2022
www.ijcsrr.org

**Classification:** Classification Based on spectrum of activity:




Classification Based on chemical Structure:

- Carbohydrate containing Antibiotics:
- Pure saccharides antibiotics: e.g. Streptozotocin
- Aminoglycosides: e.g. Streptomycin
- N/O glycosides: e.g. Chromomycin
- Other: e.g. Lincomycin
- Macrocyclic lactone antibiotics: e.g. Erythromycin
- Quinolones antibiotics; e.g. Fluroquinolone
- N-containing heterocyclic antibiotics: e.g. Beta-lactam
- O-containing heterocyclic antibiotics: e.g. Cycloserine
- Alicyclic antibiotics: e.g. Cycloheximide
- Aromatic antibiotics (Nitrobenzene): e.g. Chloramphenicol
- Aliphatic amine antibiotics: e.g. Spermidine
- Peptide antibiotics: e.g. Polymyxin, Bacitracin, Gramicidin

**Principles of Antibiotic Therapy:**

Joseph and Rodvold summarized the 4 D's of antimicrobial therapy[3] which is given in **Table 1**. When beginning antimicrobial therapy, it is critical to determine whether the infection is localized and whether the patient has an adequate immune response to control the bacteria if surgical support is provided. **Table 2** summarizes these considerations.

**Table 1:** 4D's of Antimicrobial Therapy.

| |
|---|
| Right **D**rug |
| Right **D**ose |
| **D**e-escalation to pathogen-directed therapy. |
| Right **D**uration of the therapy |

In a healthy patient, the lesion/ infection responds to local debridement measures in the presence of purulence, signs of inflammation, abscess, or draining sinus tracts. In an otherwise healthy patient, infections that have not spread beyond the dentoalveolar regions can be treated without antibiotics.[4] Infections that are about to breach the dentoalveolar regions and threaten to spread into deeper

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 05 Issue 09 September 2022
DOI: 10.47191/ijcsrr/V5-i9-24, Impact Factor: 5.995
IJCSRR @ 2022
www.ijcsrr.org

hard tissues or soft tissue fascial spaces in the head and neck region will necessitate the use of appropriate antibiotics in conjunction with surgical therapy.[5]

**Indications:**

The unintended consequences of antibiotic treatment represent a drawback to their obvious benefits.[30] On one hand, there are side effects that have consequences for the patient such as gastrointestinal, hematological, neurological, and dermatological, allergic and other conditions. On the other hand, the emergence of bacterial resistance is crucial for both patients and public health.[29] Antibiotics are generally prescribed in dental practice for the treatment of acute and chronic infections of odontogenic and non-odontogenic origins. But it is not necessary to prescribe antibiotics in all odontogenic infections. Rather than prescribing antibiotics for all infections the foci of infections can be removed which can in turn help in subsiding the infection.

**Table 2:** Considerations for antimicrobial therapy[4]

| Indicated clinical conditions for antimicrobial therapy | Non-indicated clinical conditions for antimicrobial therapy |
|---|---|
| 1. Pyrexia within last 24 hours – indicates a systemic response to the infection | 1. Pain – (Analgesics/ Anti-inflammatory drugs are indicated) |
| 2. Systemic symptoms like malaise, fatigue, weakness, dizziness, rapid respiration and local tender lymphadenopathy – indicate an impending sepsis | 2. Oedema – (Anti-inflammatory drugs indicated) |
| 3. Trismus – indicates spread to peri mandibular spaces and can extend to secondary spaces that can be potentially dangerous. Also, trismus makes intraoral procedures difficult, which must wait until the trismus is relieved. | 3. Redness/heat (Anti-inflammatory drugs indicated) |
| 4. As a prophylaxis in patients with systemic conditions like rheumatic heart disease, endocarditis, heart / orthopaedic prosthesis. | 4. Purulence – (Resolved by drainage of pus / debridement) |
| 5. In patients with any kind of immunocompromise – AIDS, cancer, autoimmune diseases, corticosteroid therapy, patients with immune compromised diseases like cyclic neutropenia, pancytopenia, uncontrolled diabetes to name a few common ones. | 5. Abscess – localized (e.g., alveolar abscesses, periodontal abscesses) – (Resolves by incision and drainage) |
| 6. After solid Organ transplant/grafts (cardiac/renal/bone marrow/liver/osseous implants) | 6. Draining sinus tract. (Removal of foci of infection resolves drainage and sinus tract may heal on its own or may have to be surgically excised.) |

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 05 Issue 09 September 2022
DOI: 10.47191/ijcsrr/V5-i9-24, Impact Factor: 5.995
IJCSRR @ 2022
www.ijcsrr.org

**Antibiotic Regimen: Dosage, Duration, Frequency.**

The detailed pharmacology of these drugs is beyond the scope of this article, but a brief discussion of an important antibiotic pharmacological profile may be beneficial.

Antibiotics can kill in two ways: concentration-dependent or time-dependent. When the concentration-dependent drugs are present above a certain level, they kill the bacteria. Increasing concentration leads to faster killing. As a result, a single high dose may be sufficient to produce the desired effect.

In recent years, higher antibiotic doses given for a shorter period of time have been advocated. This regimen would avoid the selection of antibiotic resistant species, and the risk of allergy or adverse events is not significantly increased for most dental specific antibiotics[6]. Antibiotic resistance is common after using lower doses of antibiotics for longer periods of time. But first, determine whether an antibiotic is indicated in that specific clinical setting and in that specific patient[7].

Table 3 contains a brief summary of the management of the most common conditions treated by a dentist, along with their management principles[2].

**Table 3:** Management of the most common conditions

| Condition | Treatment Approach | Antibiotics |
|---|---|---|
| **Uncomplicated endodontic lesion** | Debridement of root canal | No |
| **Soft tissue swelling of endodontic origin (apical abscess / alveolar abscess)** | Debridement of root canal<br>Incision and drainage. | No |
| **Endodontic lesion confined to the bone (apical periodontitis)** | Trephination of bone to relieve pressure and speed healing | No |
| **Periodontal Abscess** | Scaling<br>Draining of pus | No |
| **Chronic gingivitis/Periodontitis** | Scaling and Root planing | No |
| **NUG without systemic complications in healthy patients.** | Debridement<br>Irrigation<br>Scaling and root planing | No |
| **NUG with systemic complications or in immune compromised patients / ANUP / HIV associated NUG/NUP** | Debridement<br>Irrigation<br>Scaling and root planing<br>Systemic Antibiotics | Yes. Metronidazole is first choice. Penicillin group of drugs may be additional adjuvants.[8] |
| **Localized abscess** | Incision and Drainage<br>Removal of foci of infection | No |
| **Aggressive periodontal diseases / Refractory periodontal conditions** | Scaling and Root Planing<br>Debridement | May be considered early in generalized aggressive periodontitis.[9] |
| **Complicated endodontic / periodontic lesions with signs of systemic spread of infection /involvement of fascial spaces** | Incision and drainage<br>Removal of foci of infection | Yes |
| **Prior to periodontal surgeries / endodontic surgeries** | - | No |
| **Prior to Regenerative periodontal therapy with membranes / grafting** | - | Maybe (not supported by strong high-quality evidence) |
| **Prior to implant surgery** | - | Not necessary in case of single implant placement. |
| **Systemically compromised patients with immune defects** | Removal of foci of infection by any appropriate means | Yes (Bactericidal) |

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 05 Issue 09 September 2022
DOI: 10.47191/ijcsrr/V5-i9-24, Impact Factor: 5.995
IJCSRR @ 2022
www.ijcsrr.org

| | | |
|---|---|---|
| **Prior to uncomplicated / complicated extractions** | - | No |
| **Fascial space infections** | Incision and drainage<br>Removal of foci of infection | Yes |

**Antibiotic Utilization in Different Specialties:**

**1. In Conservative Dentistry and Endodontics:**

The majority of endodontic practice is concerned with acute and chronic pulpal and periapical pathologies. Antibiotics have been shown in studies to have no effect on pain[10]. Antibiotics are ineffective in most endodontic infections because systemic antibiotics are unlikely to achieve an adequate therapeutic concentration within necrotic pulp[11]. Endodontic technique that is meticulous and avoids over-instrumentation will prevent periapical infections and flare-ups during endodontic treatments. Endodontic treatment can be painless if instruments are used carefully.

Endodontic treatment can be painless by careful instrumentation. Nonsteroidal anti-inflammatory drugs (NSAIDs) can help relieve pain. Extraction of the tooth will resolve the infectious process where endodontic treatment is not possible or in patients with non-restorable teeth[12]. Endodontic surgeries usually do not require the use of antibiotics in healthy patients, but they may be used if the clinician deems it necessary. Postoperative anti-inflammatory medications will suffice to control pain. Endodontic surgery does not usually result in postsurgical infection[13].

A common endodontic infection is acute peri-radicular abscess. According to a recent review, there is insufficient evidence to recommend the use of antibiotics in cases of apical periodontitis or acute peri-radicular abscesses. In the treatment of acute peri-radicular abscesses, the abscess should be drained first by performing a pulpectomy or incision and drainage, and then any traumatic occlusion should be relieved[14]. Antibiotics are generally not required if adequate drainage is achieved through incision and drainage, debridement, and canal system medication[15]. Antibiotics may be prescribed in addition to infection drainage in the event of systemic complications such as fever, lymphadenopathy, or cellulitis, or in an immunocompromised patient.

**2. In Periodontology and Implantology.**

Periodontitis is a bacterial infection, which has been used to justify the routine use of antibiotics in periodontology. However, the clinical significance of bacteria being present in tissues is still unclear in periodontal infections, and it is inappropriate to base clinical treatment decisions, such as the use of adjunctive systemic antibiotics, on this premise alone. Montiero et al., conducted a survey on dentists' use of systemic antibiotics for periodontal diseases and concluded that many dentists continue to use systemic antibiotics incorrectly, without regard for evidence in published literature, for inappropriate indications, and with ineffective protocols in periodontal therapy[16].

a. GINGIVITIS AND PERIODONTITIS.

Gingivitis is a local infectious process that responds well to local mechanotherapy and is contraindicated by antibiotic therapy. In normal healthy patients, the routine use of systemic antibiotics in the treatment of chronic periodontitis is not justified. Systemic antibiotics have more risks than benefits when used to treat periodontal diseases[8]. Local irrigation of antiseptic / antibiotic solutions can be used to treat periodontal pockets. Scaling and root planing with irrigation removes the calculus and infected tissue, removing the infectious foci and resolving the inflammation. The primary goal would be to mechanically disrupt the biofilm.

b. AGGRESSIVE PERIODONTITIS.

In patients with aggressive periodontitis, systemic therapy in conjunction with local therapy is recommended to eliminate bacteria that invade the gingival tissues and can repopulate the pocket after scaling and root planing[2]. Antibiotics are only beneficial after the biofilm has been disrupted by appropriate mechanotherapy, and antibiotics should be used only after proper mechanotherapy has been tried and failed. Although the use of amoxicillin and metronidazole in aggressive periodontal diseases is well supported, well-designed controlled clinical trials are limited, according to a recent review[17].

c. ACUTE LESIONS OF GINGIVA[2].

Necrotizing ulcerative gingivitis (NUG) and herpetic gingivostomatitis are the two most common acute gingival infections. Herpetic gingivostomatitis is a viral infection that can be complicated by bacterial superinfection. These diseases are most common in healthy patients, but patients with weakened immune systems are more likely to develop them. Both may appear

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 05 Issue 09 September 2022
DOI: 10.47191/ijcsrr/V5-i9-24, Impact Factor: 5.995
IJCSRR @ 2022
www.ijcsrr.org

similar, and while debridement is effective for NUG, it may aggravate herpetic gingivostomatitis[8]. Antiviral therapy, on the other hand, is effective for herpetic gingival lesions but not for NUG.

Necrotizing lesions are characterized by extensive tissue destruction and necrosis. The treatment consists primarily of removing necrotic tissue while controlling pain. Antibiotics are not advised in NUG patients without systemic complications[8]. However, systemic antibiotics are indicated in patients with immunologic deficiencies or with evidence of spread beyond the gingival tissues, such as in necrotizing ulcerative periodontitis (NUP), especially when local root planing and curettage is not immediately possible. This lesion must be managed with daily follow-up and debridement with irrigation[18].

Necrotizing lesions of the gingiva and periodontium can progress rapidly in HIV-positive patients, so thorough local therapy combined with local use of antimicrobial mouthwashes such as chlorhexidine and meticulous oral hygiene by the patient is required. Systemic antibiotics may be used, especially if systemic complications are expected or occur.

Antibiotics should be avoided in severely immunocompromised individuals whenever possible to reduce the risk of opportunistic infections (e.g., candidiasis), superinfection, and micro-organism drug resistance. [8,18,19]

d. PERIODONTAL ABSCESS

Periodontal abscesses are frequently treated by curing the pocket under local anesthesia in order to remove plaque or other aetiologic material. When patients have systemic disease/immunocompromised condition and have elevated temperatures or signs of cellulitis, systemic antibiotics may be indicated. Antibiotic therapy alone is contraindicated in the absence of subsequent drainage and subgingival scaling.[2,8,19]

e. PERIODONTAL SURGERIES

Systemic antibiotics are commonly used following reconstructive periodontal therapy, though definitive data on the efficacy of this measure is still lacking.[2,20]

In the postoperative period, simple routine periodontal surgeries do not require antibiotics. Antibiotics are sometimes used in regenerative therapies that use bone grafts, allografts, and periodontal membranes to prevent infection of the bone graft or foreign material (membranes).

Despite the fact that studies appear to show no additional benefit, current practice recommends the use of antibiotics in this scenario. A high dose for a short period of time, not to exceed 5 days, would be beneficial in most cases.

***FOR PERI IMPLANT MUCOSITIS/ PERI IMPLANTITIS:***

*Protocol A: Mechanical Debridement and polishing.*

*Protocol B: Antiseptic cleaning (*chlorhexidine 0.1–0.2%, irrigation of Peri implant pocket with anti-septic agents/antibiotic slurry and application of local antiseptic agent like chlorhexidine gel)

*Protocol C: Systemic Antibiotics*

*Protocol D: Resective or regenerative surgical access.*

**Table 4:** Peri Implant Lesions (Acc to Ranvert et al.,)[21]

| DISEASE | CRITERIA | PROTOCOL |
|---|---|---|
| **Peri Implant Mucositis** | Inflammation Bleeding on probing Peri-implantitis pocket depth < 4 mm No bone loss | **Protocol A + B** |
| **Peri-implantitis Grade 1 (mild)** | BOP +/- Suppuration Peri implant pocket depth < 4 mm Bone loss < 2 mm Foreign Body in implant sulcus | **Protocol A + B** |
| **Peri-implantitis Grade 2** | BOP +/- Suppuration PPD 4-6 mm Bone loss < 2 mm | **Protocol A + B + C** |
| **Peri-implantitis Grade 3** | BOP +/- Suppuration PPD > 6 mm Bone loss > 2 mm | **Protocol A + B + C + D** |

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 05 Issue 09 September 2022
DOI: 10.47191/ijcsrr/V5-i9-24, Impact Factor: 5.995
IJCSRR @ 2022
www.ijcsrr.org

3. **In Maxillofacial Surgery.**

**A.** IN ODONTOGENIC INFECTIONS.

Odontogenic infections begin with the invasion of a mixed bacterial flora, and in the early stages, facultative anaerobes such as streptococci predominate, establishing the cellulitis stage. Because of the change in the environment within the infected regions, the microflora changes from facultative to obligate anaerobes, and abscesses form.

Cellulitis is a rapidly spreading progressive infection caused by facultative anaerobes, whereas an abscess is an obligate anaerobic infection with well-defined margins that fluctuates and is filled with pus.[2]

The penicillin drug class continues to be the first-line treatment for odontogenic infections. Following the formation of an abscess, drugs with anaerobic spectrum, such as metronidazole or clindamycin, are recommended. In general, if an infection has been present for more than 2-3 days, it is likely to have progressed to obligate anaerobic infection, and the addition of metronidazole to amoxicillin is beneficial[22]. A short course of high-dose antibiotics, combined with surgical drainage and daily debridement/irrigation as indicated, results in faster infection resolution. In general, antibiotic therapy should be continued for at least 2-3 days after symptoms have resolved.

B. MINOR SUGERIES.

In general, dental practice and clinical practice, most oral surgical procedures involve simple or complicated tooth extractions, preprosthetic hard tissue and soft tissue procedures, periapical surgeries, implant placements, and soft tissue biopsy procedures. These surgical procedures are classified as clean contaminated procedures. Clean procedures are less likely to result in postprocedural infections. Excellent aseptic precautions can reduce the risk of infection by 3% to 5%. Antibiotics cannot reduce the risk of infection to less than 1% and may therefore be unnecessary. Despite the fact that antibiotics are routinely used as surgical prophylaxis and in the postprocedural period, there is insufficient evidence that such uses result in a better outcome in oral surgery. In general, antibiotic prophylaxis is overused in minor oral surgery[23].

**Table 5:** Standard regime for Antibiotic Prophylaxis to minimize the risk of bacterial Endocarditis for oral procedure

| Condition | Drug | Adult | Children |
|---|---|---|---|
| **Oral medication** | Amoxicillin | 2g,1hr before procedure | 50mg\kg 1hr before procedure |
| **Oral route cannot be used** | Ampicillin | 2g IM\IV, 1\2 hr before procedure | 50mg IM\IV,1\2 hr before procedure |
| | Cefazolin or Ceftriaxone | 1g IM\IV ,1\2 hr before procedure | 50mg IM\IV, 1\2 hr before procedure |
| **Allergic to penicillin-Oral medication** | Clindamycin | 600mg,1hr before procedure | 20mg\kg ,1hr before the procedure |
| | Cephalexin or Cefadroxil | 2g, 1hr before procedure | 50mg\kg,1hr before the procedure |
| | Azithromycin or Clarithromycin | 500mg, 1 hr before procedure | 15mg\kg,1hr before the procedure |
| Allergic to penicillin and cannot take oral medication | Cefazolin or Ceftriaxone | 1g IM\IV,1\2 hr before procedure | 50mg\kg IM\IV, 1\2 hr before procedure |
| | Clindamycin | 600mg IM\IV, 1\2 hr before procedure | 20mg\kg IM\IV, 1\2 hr before procedure |

According to a recent review, about 12 patients must be treated with antibiotics to prevent one infection, and the risks of antibiotic use far outweigh the benefits. The use of prophylactic antibiotics before implant placement is debatable[24]. A systematic review supports the use of 2 g amoxicillin as presurgical prophylaxis, while a few other studies find no additional benefit. There is no evidence that antibiotic use prevents implant failure[25].

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 05 Issue 09 September 2022
DOI: 10.47191/ijcsrr/V5-i9-24, Impact Factor: 5.995
IJCSRR @ 2022
www.ijcsrr.org

C. MAXILLOFACIAL TRUAMA[2]

In general, wound closure of clean and clean contaminated wounds, such as intraoral mucosal lacerations, or that can be rendered clean, do not necessitate the routine use of antibiotics. Dirty or infected wounds would require debridement prior to closure, or they could be treated with delayed primary closure or left to heal by secondary intention. Antibiotics do not replace surgical debridement. The routine use of surgical prophylaxis does not appear to provide any additional benefit in terms of infection reduction[26]. Surgeries performed with due care for surgical asepsis do not require an antibiotic prophylactic dose after the first 24 hours.

Infected wounds and fractures/hardware should be treated the same as any other maxillofacial infection, with the same considerations, including surgical removal of the infectious foci with adjunctive antibiotic use[27].

**4. Antibiotic use in Compromised patients**

Antibiotics are used in medically compromised patients with immune deficiencies because they are at a higher risk of infection and infections are more difficult to manage in this group of patients. Antibiotic-free studies in this population are neither feasible nor ethical[8]. Antibiotics may be beneficial in this group of patients when used rationally. Some recommend antibiotic prophylaxis in neutropenic patients, particularly when the absolute neutrophil count (ANC) falls below 1000-1500/microlitre, while others do not. In general, there is no clear guideline or recommendation in this regard[28].

As a result, the decision must be made on an individual basis in consultation with the treating physician/medical expert. Bactericidal drugs benefit these patients because their immune systems may not be able to clear the infection effectively with bacteriostatic drugs.

**ANTIBIOTIC RESISTANCE IN DENTISTRY:**

The World Health Organization has identified antimicrobial resistance as one of the most serious threats to global health, with ten million deaths predicted by 2050. It occurs when antimicrobial medications prescribed to treat infections caused by bacteria, viruses, fungi, and parasites become ineffective as a result of overuse and misuse.

If coordinated global measures are not implemented quickly, the world will soon be plunged into a post-antibiotic era in which common infections will become life-threatening. Dentists are responsible for 10% of all antibiotic prescriptions for humans.

Antibiotic resistance is of particular concern to dental teams because antibiotics are the most commonly prescribed class of drugs by dentists. Depending on the country, about 10% of antibiotic prescriptions are issued by dentists. Furthermore, research has shown that many of these prescriptions were unnecessary.

Clear and relevant guidance is required to encourage dental teams to optimize their antibiotic prescriptions, prescribing antibiotics only when necessary.

**CONCLUSION**

Antibiotics in dentistry can only be used in specific situations, for specific patients, and with appropriate techniques, usually with brief preoperative plans. Postoperative plans can be used for long-term surgeries with osteotomies or for antibiotic treatments in complicated abscesses.

The main factors influencing intervention success rates, rather than antibiotic administration, are correct management of oral bacterial load/contamination with elimination of infective foci, dental biofilms, and good periodontal health, as well as atraumatic surgical techniques. Antibiotics have no effect on clinical symptoms like pain and swelling. In healthy patients, routine tooth extractions can be performed without the use of antibiotics, with the same risk of complications. Implant insertion can be managed with short preoperative antibiotic prophylaxis to reduce the risk of failure, whereas postoperative regimen schemes have no beneficial effects.

It is clear that, apart from invasive dental procedures in high-risk patients, not all dental procedures necessitate antibiotic prophylaxis. Antibiotic prescribing guidelines are essential for preventing antibiotic overuse. Antibiotic prescriptions should be construed as adjunct to dental treatment.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 05 Issue 09 September 2022
DOI: 10.47191/ijcsrr/V5-i9-24, Impact Factor: 5.995
IJCSRR @ 2022
www.ijcsrr.org

**REFERENCES**

1. Ruby J, Barbeau J. The buccale puzzle: The symbiotic nature of endogenous infections of the oral cavity. Can J Infect Dis 2002; 13:34–41.
2. Ramasamy A. A review of use of antibiotics in dentistry and recommendations for rational antibiotic usage by dentists. The International Arabic Journal of Antimicrobial Agents. 2014 Sep 20;4(2).
3. Joseph J, Rodvold KA. The role of carbapenems in the treatment of severe nosocomial respiratory tract infections. Expert Opin. Pharmacother. 2008; 9:561–75.
4. Newman MG, Winkelhoff AJ van. Antibiotic and antimicrobial use in dental practice. Quintessence Pub Co.; 2001.
5. M.D JRH, Tucker MR. Contemporary Oral and Maxillofacial Surgery. Elsevier Science Health Science Division; 2013.
6. Dar-Odeh NS, Abu-Hammad OA, Al-Omiri MK, Khraisat AS, Shehabi AA. Antibiotic prescribing practices by dentists: a review. Ther Clin Risk Manag 2010;6:301–6.
7. Morrow S. Use and Abuse of antibiotics. Am. Assoc. Endodontists - Colleagues Excell. Newsl. [Internet]. Winter. 2012 [cited 2022 Aug 20]; Available from: http://www.aae.org/uploadedfiles/publications_and_research/endodontics_colleagues_for_excellence_newsletter/ecfewinter12final.pdf
8. Newman MG, Takei H, Klokkevold PR, Carranza FA. Carranza's Clinical Periodontology. Elsevier Health Sciences; 2011.
9. Beliveau D, Magnusson I, Bidwell JA, Zapert EF, Aukhil I, Wallet SM, et al. Benefits of Early Systemic Antibiotics in Localized Aggressive Periodontitis. A Retrospective Study. J Clin Periodontol 2012; 39:1075–81.
10. Fouad AF. Are antibiotics effective for endodontic pain? Endod. Top. 2002;3:52–66.
11. Rosenberg PA. Clinical strategies for managing endodontic pain. Endod. Top. 2002;3:78–92.
12. Ingle JI, Bakland LK, Baumgartner JC. Ingle's Endodontics 6. PMPH-USA; 2008.
13. Pedlar J, Frame JW. Oral and Maxillofacial Surgery: An ObjectiveBased Textbook. Elsevier Health Sciences; 2007.
14. Mitchell L, Mitchell DA. Oxford Handbook of Clinical Dentistry. Oxford University Press; 2009.
15. Rosenberg PA. Endodontic Pain: Diagnosis, Causes, Prevention and Treatment. Springer; 2014.
16. Monteiro AV, Ribeiro FV, Casarin RCV, Cirano FR, Pimentel SP, Casati MZ. Evaluation of the use of systemic antimicrobial agents by professionals for the treatment of periodontal diseases. Braz J Oral Sci 2013; 12:285–91.
17. Aimetti M, Romano F, Guzzi N, Carnevale G. Full-mouth disinfection and systemic antimicrobial therapy in generalized aggressive periodontitis: a randomized, placebo-controlled trial. J Clin Periodontol 2012; 39:284–94.
18. Burket LW. Burket's Oral Medicine: Diagnosis and Treatment. PMPH-USA; 2003.
19. Lang NP, Lindhe J, editors. Clinical periodontology and implant dentistry, 2 Volume Set. John Wiley & Sons; 2015 Mar 25.
20. Heitz-Mayfield L. Systemic antibiotics in periodontal therapy. Aust. Dent. J. 2009;54:S96–S101
21. Renvert S, Roos-Jansåker A-M, Claffey N. Non-surgical treatment of peri-implant mucositis and peri-implantitis: a literature review. J Clin Periodontol 2008;35:305–15.
22. Miloro M, Larsen P. Peterson's Principles of Oral and Maxillofacial Surgery. PMPH-USA; 2004.
23. Sancho-Puchades M, Herráez-Vilas JM, Berini-Aytés L, GayEscoda C. Antibiotic prophylaxis to prevent local infection in Oral Surgery: use or abuse? Med. Oral Patol. Oral Cir Bucal 2009;14:E28–33.
24. Lodi G, Figini L, Sardella A, Carrassi A, Del Fabbro M, Furness S. Antibiotics to prevent complications following tooth extractions. Cochrane Database Syst. Rev. [Internet]. John Wiley & Sons, Ltd; 1996 [cited 2022 Aug 20]. Available from: http://onlinelibrary. wiley.com/doi/10.1002/14651858.CD003811.pub2/abstract
25. Tan WC, Ong M, Han J, Mattheos N, Pjetursson BE, Tsai AY-M, et al. Effect of systemic antibiotics on clinical and patient-reported outcomes of implant therapy - a multicenter randomized controlled clinical trial. Clin Oral Implants Res 2014;25:185–93.
26. Lauder A, Jalisi S, Spiegel J, Stram J, Devaiah A. Antibiotic prophylaxis in the management of complex midface and frontal sinus trauma. The Laryngoscope 2010;120:1940–5.
27. Lovato C, Wagner JD. Infection rates following perioperative prophylactic antibiotics versus postoperative extended regimen prophylactic antibiotics in surgical management of mandibular fractures. J Oral Maxillofac Surg , Off J Am. Assoc Oral Maxillofac Surg 2009;67:827–32.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 05 Issue 09 September 2022
DOI: 10.47191/ijcsrr/V5-i9-24, Impact Factor: 5.995
IJCSRR @ 2022
www.ijcsrr.org

28. Centers for Disease Control and Prevention, Infectious Disease Society of America, American Society of Blood and Marrow Transplantation. Guidelines for preventing opportunistic infections among hematopoietic stem cell transplant recipients. MMWR Recommendation . Wkly Rep Recomm. Rep Cent Dis Control 2000;49:1–125, CE1–7.
29. Poveda Roda R, Bagán JV, Sanchis Bielsa JM, Carbonell Pastor E. Antibiotic use in dental practice: A review. Medicina Oral, Patología Oral y Cirugía Bucal (Internet). 2007 May;12(3):186-92.
30. Ahmadi H, Ebrahimi A, Ahmadi F. Antibiotic therapy in dentistry. International Journal of Dentistry. 2021 Jan 28;2021.

*Cite this Article: Dr. Riya Ann Joseph, Dr. Ibrahim Fazal (2022). Antibiotics: Boon or Bane in Dentistry?. International Journal of Current Science Research and Review, 5(9), 3448-3457*