

# Guideline on Use of Antibiotic Therapy for Pediatric Dental Patients

## Originating Council

Council on Clinical Affairs

## Review Council

Council on Clinical Affairs

## Adopted

2001

## Revised

2005, 2009

## Purpose

The American Academy of Pediatric Dentistry recognizes the increasing prevalence of antibiotic-resistant micro-organisms. This guideline is intended to provide guidance in the proper and judicious use of antibiotic therapy in the treatment of oral conditions.<sup>1</sup>

## Methods

This revision was based upon a new systematic literature search of the MEDLINE/Pubmed electronic database using the following parameters: Terms: antibiotic therapy, antibacterial agents in children, antimicrobial agents in children, dental trauma, oral wound management, orofacial infections, periodontal disease, viral disease, and oral contraception; Field: All fields; Limits: within the last 10 years, humans, English, clinical trials, birth through age 18. Papers for review were chosen from this search and from hand searching. When data did not appear sufficient or were inconclusive, recommendations were based upon expert and/or consensus opinion by experienced researchers and clinicians.

## Background

The widespread use of antibiotics has permitted common bacteria to develop resistance to drugs that once controlled them.<sup>2-4</sup> At present, there are no antibiotics to which resistance has not appeared.<sup>2,5</sup> To diminish the rate at which resistance is increasing, health care providers must be prudent in the use of antibiotics.<sup>1</sup>

## Recommendations

Conservative use of antibiotics is indicated to minimize the risk of developing resistance to current antibiotic regimens.<sup>2-11</sup> The following general principles should be adhered to when prescribing antibiotics for the pediatric population.

## Oral wound management

Factors related to host risk (eg, age, systemic illness, malnutrition) and type of wound (eg, laceration, puncture) must be evaluated when determining the risk for infection and subsequent need for antibiotics. Wounds can be classified as clean, potentially contaminated, or contaminated/dirty. Facial lacerations may require topical antibiotic agents.<sup>12</sup> Intraoral lacerations that appear to have been contaminated by extrinsic bacteria, open fractures, and joint injury have an increased risk of infection and should be covered with antibiotics.<sup>12</sup> If it is determined that antibiotics would be beneficial to the healing process, the timing of the administration of antibiotics is critical to supplement the natural host resistance in bacterial killing. The drug should be administered as soon as possible for the best result. The most effective route of drug administration (intravenous vs intramuscular vs oral) must be considered. The clinical effectiveness of the drug must be monitored. If the infection is not responsive to the initial drug selection, a culture and susceptibility testing of isolates from the infective site may be indicated. The minimal duration of drug therapy should be limited to 5 days beyond the point of substantial improvement or resolution of signs and symptoms; this is usually a 5- to 7-day course of treatment dependent upon the specific drug selected.<sup>13-18</sup> The importance of completing a full course of antibiotic must be emphasized. If the patient discontinues the antibiotic prematurely, the surviving bacteria can restart an infection that may be resistant to the original antibiotic.

## Special conditions

*Pulpitis/apical periodontitis/draining sinus tract/localized intra-oral swelling*

Bacteria can gain access to the pulpal tissue through caries, exposed pulp or dentinal tubules, cracks into the dentin, and defective restorations. If a child presents with acute symptoms of pulpitis, treatment (ie, pulpotomy, pulpectomy, or extraction) should be rendered. Antibiotic therapy usually is not indicated if the dental infection is contained within the pulpal tissue or

the immediately surrounding tissue. In this case, the child will have no systemic signs of an infection (ie, no fever and no facial swelling).<sup>14,16-18</sup>

#### *Acute facial swelling of dental origin*

A child presenting with a facial swelling secondary to a dental infection should receive immediate dental attention. Depending on clinical findings, treatment may consist of treating or extracting the tooth/teeth in question with antibiotic coverage or prescribing antibiotics for several days to contain the spread of infection and then treating the involved tooth/teeth. The clinician should consider the ability to obtain adequate anesthesia, the severity of the infection, and the medical status of the child. Intravenous antibiotic therapy and/or referral for medical management may be indicated.<sup>16,17</sup>

#### *Dental trauma*

Local application of an antibiotic to the root surface of an avulsed tooth with an open apex and less than 60 minutes extraoral dry time has been recommended, if available, to inhibit external resorption and aid in pulpal revascularization.<sup>20-26</sup> Systemic antibiotics have been recommended as adjunctive therapy for avulsed permanent incisors with an open or closed apex.<sup>20, 22-25,27</sup> Tetracycline is the drug of choice, but consideration must be exercised in the systemic use of tetracycline due to the risk of discoloration in the developing permanent dentition.<sup>20</sup> Penicillin V can be given as an alternative.<sup>24,25,27</sup> The use of topical antibiotics to induce pulpal revascularization in immature non-vital traumatized teeth has been suggested.<sup>28-31</sup> However, further randomized clinical trials are needed.

#### *Pediatric periodontal diseases*

In pediatric periodontal diseases (eg, neutropenias, Papillon-LeFevre syndrome, leukocyte adhesion deficiency), the immune system is unable to control the growth of periodontal pathogens and, in some cases, treatment may involve antibiotic therapy. Culture and susceptibility testing of isolates from the involved sites are helpful in guiding the drug selection.<sup>32</sup>

#### *Viral diseases*

Conditions such as acute primary herpetic gingivostomatitis should not be treated with antibiotic therapy unless there is strong evidence to indicate that a secondary bacterial infection exists.<sup>33</sup>

#### *Oral contraceptive use*

Whenever an antibiotic is prescribed to a female patient taking oral contraceptives to prevent pregnancy, the patient must be advised to use additional techniques of birth control during antibiotic therapy and for at least 1 week beyond the last dose, as the antibiotic may render the oral contraceptive ineffective.<sup>34,35</sup> Rifampicin has been documented to decrease the effectiveness of oral contraceptives.<sup>36</sup> Other antibiotics, particularly tetracycline and penicillin derivatives, have been shown to cause significant decrease in the plasma concentrations of ethinyl estradiol,

causing ovulation in some individuals taking oral contraceptives.<sup>36</sup> Caution is advised with the concomitant use of antibiotics and oral contraceptives.<sup>36</sup>

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