Purpose
The American Academy of Pediatric Dentistry (AAPD) recognizes the increasing prevalence of antibiotic-resistant microorganisms. This guideline is intended to provide guidance in the proper and judicious use of antibiotic therapy in the treatment of oral conditions.1

Methods
This guideline was originally developed by the Council on Clinical Affairs and adopted in 2001. This document is a revision of the previous version, last revised in 2009. The revision was based upon a new systematic literature search of the PubMed® electronic database using the terms: antibiotic therapy, antibacterial agents, antimicrobial agents, dental trauma, oral wound management, orofacial infections, periodontal disease, viral disease, and oral contraception; fields: all; limits: within the last 10 years, humans, English, clinical trials, birth through age 18. One hundred sixty-five articles matched these criteria. 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
Antibiotics are beneficial in patient care when prescribed and administered correctly for bacterial infections. However, the widespread use of antibiotics has permitted common bacteria to develop resistance to drugs that once controlled them.1-3 Drug resistance is prevalent throughout the world.3 Some microorganisms may develop resistance to a single antimicrobial agent, while others develop multidrug-resistant strains.2-3 To diminish the rate at which resistance is increasing, health care providers must be prudent in the use of antibiotics.1

Recommendations
Conservative use of antibiotics is indicated to minimize the risk of developing resistance to current antibiotic regimens.2-3 Practitioners should adhere to the following general principles when prescribing antibiotics for the pediatric population. Oral wound management
Factors related to host risk (e.g., age, systemic illness, malnutrition) and type of wound (e.g., 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.4 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.4 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. The minimal duration of drug therapy should be five days beyond the point of substantial improvement or resolution of signs and symptoms; this is usually a five- to seven-day course of treatment dependent upon the specific drug selected.5-7 In light of the growing problem of drug resistance, the clinician should consider altering or discontinuing antibiotics following determination of either ineffectiveness or cure prior to completion of a full course of therapy.8 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.

Special conditions
Pulpitis/apical periodontitis/draining sinus tract/localized intraoral 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 (i.e., 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 immediate surrounding tissue. In this case, the child will have no systemic signs of an infection (i.e., no fever and no facial swelling).3,10 Consideration for use of antibiotics should be given in cases of advanced non-odontogenic bacterial infections such...
as staphylococcal mucositis, tuberculosis, gonococcal stoma-
titis, and oral syphilis. If suspected, it is best to refer patients
culture, biopsy, or other laboratory tests for documentation
and definitive treatment.

Acute facial swelling of dental origin
A child presenting with a facial swelling or facial cellulitis sec-
ondary to an odontogenic infection should receive prompt
dental attention. In most situations, immediate surgical inter-
vention is appropriate and contributes to a more rapid cure.12
The clinician should consider age, the ability to obtain adequate
anesthesia (local vs. general), the severity of the infection, the
medical status, and any social issues of the child.11,12 Signs
of systemic involvement (i.e., fever, asymmetry, facial swelling)
warrant emergency treatment. Intravenous antibiotic therapy
and/or referral for medical management may be indicated.2,11
Penicillin remains the empirical choice for odontogenic infec-
tions; however, consideration of additional adjunctive
antimicrobial therapy (i.e., metronidazole) can be given where
there is anaerobic bacterial involvement.8

Dental trauma
Systemic antibiotics have been recommended as adjunct-
ive therapy for avulsed permanent incisors with an open or
closed apex.14-17 Tetracycline (doxycycline twice daily for seven
days) is the drug of choice, but consideration of the child’s
age must be exercised in the systemic use of tetracycline due
to the risk of discoloration in the developing permanent
dentine.13,14 Penicillin V or amoxicillin can be given as an
alternative.14,15,17 The use of topical antibiotics to induce pulpal
revascularization in immature non-vital traumatized teeth
has shown some potential.16,15,17,18 However, further random-
ized clinical trials are needed.19-21 For luxation injuries in
the primary dentition, antibiotics are generally not indicated.22,23
Antibiotics can be warranted in cases of concomitant soft
tissue injuries (see Oral wound management) and when
dictated by the patient’s medical status.

Pediatric periodontal diseases
Dental plaque-induced gingivitis does not require antibiotic
therapy. Pediatric patients with aggressive periodontal diseases
may require adjunctive antimicrobial therapy in conjunction
with localized treatment.24 In pediatric periodontal diseases
associated with systemic disease (e.g., severe congenital neutro-
penia, Papillon-Lefèvre syndrome, leukocyte adhesion defi-
ciency), the immune system is unable to control the growth
of periodontal pathogens and, in some cases, treatment may
involve antibiotic therapy.24,25 The use of systemic antibiotics
has been recommended as adjunctive treatment to mechanical
debridement in patients with aggressive periodontal disease.24,25
In severe and refractory cases, extraction is indicated.24,25
Culture and susceptibility testing of isolates from the involved
sites are helpful in guiding the drug selection.24,25

Viral diseases
Conditions of viral origin such as acute primary herpetic ging-
vostomatitis should not be treated with antibiotic therapy
unless there is strong evidence to indicate that a secondary
bacterial infection exists.26

Salivary gland infections
Many salivary gland infections, following confirmation of
bacterial etiology, will respond favorable to antibiotic therapy.
Acute bacterial parotitis has two forms: hospital acquired and
community acquired.27 Both can be treated with antibiotics.
Hospital acquired usually requires intravenous antibiotics; oral
antibiotics are appropriate for community acquired. Chronic
recurrent juvenile parotitis generally occurs prior to puberty.
Antibiotic therapy is recommended and has been successful.27
For both acute bacterial submandibular sialadenitis and chron-
ic recurrent submandibular sialadenitis, antibiotic therapy is
included as part of the treatment.27

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 one week beyond the
last dose, as the antibiotic may render the oral contraceptive
ineffective.28,29 Rifampicin has been documented to decrease
the effectiveness of oral contraceptives.28,29 Other antibiotics,
particularly tetracycline and penicillin derivatives, have been
shown to cause significant decrease in the plasma concentra-
tions of ethinyl estradiol, causing ovulation in some individuals
taking oral contraceptives.28,29 Caution is advised with the
concomitant use of antibiotics and oral contraceptives.28,29

References
fected endocarditis: Guidelines from the American Heart
Association—A Guideline From the American Heart
Association Rheumatic Fever, Endocarditis and Kawasaki
Disease Committee, Council on Cardiovascular Disease
in the Young, and the Council on Clinical Cardiology,
Council on Cardiovascular Surgery and Anesthesia Anes-
thesia, and the Quality of Care and Outcomes Research
2. CDC. Antibiotic/Antimicrobial Resistance. Available at:
“http://www.cdc.gov/drugresistance/”. Accessed August
5, 2014.
antibiotic prescribing in primary care on antimicrobial
resistance in individual patients: Systematic review and
4. Nakamura Y, Daya M. Use of appropriate antimicro-
bials in wound management. Emerg Med Clin North
Am 2007;25(1):159-76.