Periodicity of Examination, Preventive Dental Services, Anticipatory Guidance/Counseling, and Oral Treatment for Infants, Children, and Adolescents

Purpose
The American Academy of Pediatric Dentistry (AAPD) intends these recommendations to help practitioners make clinical decisions concerning preventive oral health interventions, including anticipatory guidance and preventive counseling, for infants, children, and adolescents.

Methods
This document was developed by the Clinical Affairs Committee and adopted in 1991. This document is a revision of the previous version, last revised in 2013. The update used electronic database and hand searches of articles in the medical and dental literature using the terms: periodicity of dental examinations, dental recall intervals, preventive dental services, anticipatory guidance and dentistry, carries risk assessment, early childhood caries, dental caries prediction, dental care cost effectiveness and children, periodontal disease and children and adolescents U.S., pit and fissure sealants, dental sealants, fluoride supplementation and topical fluoride, dental trauma, dental fracture and tooth, non-nutritive oral habits, treatment of developing malocclusion, removal of wisdom teeth, removal of third molars; fields: all; limits: within the last 10 years, humans, English, and clinical trials; birth through age 18. From this search, 1,884 articles matched these criteria and were evaluated by title and/or abstract. Information from 49 articles was chosen for review to update this document. When data did not appear sufficient or were inconclusive, recommendations were based upon expert and/or consensus opinion by experienced researchers and clinicians.

Background
Professional dental care is necessary to maintain oral health.1 The AAPD emphasizes the importance of initiating professional oral health intervention in infancy and continuing through adolescence and beyond.2 The periodicity of professional oral health intervention and services is based on a patient’s individual needs and risk indicators.3-8 Each age group, as well as each individual child, has distinct developmental needs to be addressed at specific intervals as part of a comprehensive evaluation.2,9-11 Continuity of care is based on the assessed needs of the individual patient and assures appropriate management of all oral conditions, dental disease, and injuries.12-18 The early dental visit to establish a dental home provides a foundation upon which a lifetime of preventive education and oral health care can be built. The early establishment of a dental home has the potential to provide more effective and less costly dental care when compared to dental care provided in emergency care facilities or hospitals.19-23 Anticipatory guidance and counseling are essential components of the dental visit.2,9,10,19,20,22,24-37 Collaborative efforts and effective communication between medical and dental homes are essential to prevent oral disease and promote oral and overall health among children. Medical professionals can play an important role in children’s oral health by providing primary prevention and coordinated care. Equally, dentists can improve the overall health of children not only by treating dental disease, but also by proactively recognizing child abuse, preventing traumatic injuries through anticipatory guidance, preventing obesity by longitudinal dietary counseling, and monitoring of weight status.28 In addition, dentists can have an important role in assessing immunization status and developmental milestones for potential delays, as well as making appropriate referral for further neurodevelopmental evaluations and therapeutic services.29 The unique opportunity that dentists have to help address overall health issues strengthens as children get older since frequency of well child medical visits decreases at the same time the frequency of dental recall visits increases. Research shows that children aged six- to 12-years are, on average, four times more likely to visit a dentist than a pediatrician.30,31

Recommendations
This document addresses periodicity and general principles of examination, preventive dental services, anticipatory guidance/counseling, and oral treatment for children who

ABBREVIATIONS
have no contributory medical conditions and are developing normally. Accurate, comprehensive, and up-to-date medical, dental, and social histories are necessary for correct diagnosis and effective treatment planning. Recommendations may be modified to meet the unique requirements of patients with special health care needs (SHCN).32

Clinical oral examination
The first examination is recommended at the time of the eruption of the first tooth and no later than 12 months of age.2,19,20,22 The developing dentition and occlusion should be monitored throughout eruption at regular clinical examinations.27 Evidence-based prevention and early detection and management of caries/oral conditions can improve a child's oral and general health, well-being, and school readiness.5,24,33-36 It has been reported that the number and cost of dental procedures among high-risk children is less for those seen at an earlier age versus later, confirming the fact that the sooner a child is seen by a dentist, the less treatment needs they are likely to have in the future.37 On the other hand, delayed diagnosis of dental disease can result in exacerbated problems which lead to more extensive and costly care.38,39 Early diagnosis of developing malocclusions may allow for timely therapeutic intervention.4,27

Components of a comprehensive oral examination include assessment of:

- general health/growth.
- pain.
- extraoral soft tissues.
- temporomandibular joints.
- intraoral soft tissues.
- oral hygiene and periodontal health.
- intraoral hard tissues.
- developing occlusion.
- caries risk.
- behavior of child.

Based upon the visual examination, the dentist may employ additional diagnostic aids (e.g., radiographs, photographs, pulp vitality testing, laboratory tests, study casts).8,13,42-44

The interval of examination should be based on the child's individual needs or risk status/susceptibility to disease; some patients may require examination and preventive services at more or less frequent intervals, based upon historical, clinical, and radiographic findings.4,7,8,16,18,25,45-48 Caries and its sequelae are among the most prevalent health problems facing infants, children, and adolescents in America.49 Caries lesions are cumulative and progressive and, in the primary dentition, are highly predictive of caries occurring in the permanent dentition.5,50 Reevaluation and reinforcement of preventive activities contribute to improved instruction for the caregiver of the child or adolescent, continuity of evaluation of the patient's health status, and repetitive exposure to dental procedures, potentially allaying anxiety and fear for the apprehensive child or adolescent.51 Individuals with SHCN may require individualized preventive and treatment strategies that take into consideration the unique needs and disabilities of the patient.32

Caries-risk assessment
Risk assessment is a key element of contemporary preventive care for infants, children, adolescents, and persons with SHCN. It should be carried out as soon as the first primary teeth erupt and be reassessed periodically by dental and medical providers.25,52,53 Given that the etiology of dental caries is multifactorial and complex, current caries-risk assessment models entail a combination of factors including diet, fluoride exposure, host susceptibility, and microflora analysis and consideration of how these factors interact with social, cultural, and behavioral factors. More comprehensive models that include social, political, psychological, and environmental determinants of health also are available.34-37 Caries risk assessment forms and caries management protocols are available and aim to simplify and clarify the process.25,58,59

Sufficient evidence demonstrates certain groups of children at greater risk for development of early childhood caries (ECC) would benefit from infant oral health care.24,33,60-64 Infants and young children have unique caries-risk factors such as ongoing establishment of oral flora and host defense systems, susceptibility of newly erupted teeth, and development of dietary habits. Because the etiology of ECC is multifactorial and significantly influenced by health behaviors,65 preventive messages for expectant parents and parents of very young children should target factors known to place children at a higher risk for developing caries (e.g., early Mutans streptococci transmission, poor oral hygiene habits, nighttime feeding, high sugar consumption frequency).24,33,57,66 Motivational problems may develop when parents/patients are not interested in changing behaviors or feel that the changes require excessive effort. Therefore, it is important that health care professionals utilize preventive approaches based on psychological and behavioral strategies. Moreover, they should be sensitive to how they can effectively communicate their recommendations so that parents/patients can perceive their recommendations as behaviors worth pursuing. Two examples of effective motivational approaches used for caries prevention that share similar psychological philosophies are motivational interviewing and self-determination theory.67-73

Studies consistently have reported caries experience in the primary dentition as a predictor of future caries.74 Early school-aged children are at a transitional phase from primary to mixed dentition. These children face challenges such as unsupervised toothbrushing and increased consumption of cariogenic foods and beverages while at school, placing them at a higher risk for developing caries.75-77 Therefore, special attention should be given to school-aged children regarding their oral hygiene and dietary practices.

Adolescence can be a time of heightened caries activity due to an increased number of tooth surfaces in the permanent dentition and intake of cariogenic substances, as well as low priority for oral hygiene procedures.35,36 Risk assessment
can assure preventive care (e.g., water fluoridation, professional and home-use fluoride and antimicrobial agents, frequency of dental visits) is tailored to each individual’s needs and direct resources to those for whom preventive interventions provide the greatest benefit. Because a child’s risk for developing dental disease can change over time due to changes in habits (e.g., diet, home care), oral microflora, or physical condition, risk assessment must be documented and repeated regularly and frequently to maximize effectiveness.11,25

**Prophylaxis and professional topical fluoride treatment**

The interval for frequency of professional preventive services is based upon assessed risk for caries and periodontal disease.3,4,7,8,10,11,25,58,59,60 Prophylaxis aids in plaque, stain, and calculus removal, as well as in educating the patient on oral hygiene techniques and facilitating the clinical examination.10 Gingivitis, which is nearly universal in children and adolescents, usually responds to thorough removal of bacterial deposits and improved oral hygiene.47,79,80 Hormonal fluctuations, including those occurring during the onset of puberty, can modify the gingival inflammatory response to dental plaque.47,48,81 Children can develop any of the several forms of periodontitis, with aggressive periodontitis occurring more commonly in children and adolescents than adults.47,48,81

Children who exhibit higher risk of developing caries and/or periodontal disease would benefit from recall appointments at greater frequency than every six months (e.g., every three months).3,4,8,10,11,25,59 This allows increased professional fluoride therapy application and improvement of oral health by demonstrating proper oral hygiene techniques, in addition to microbial monitoring, antimicrobial therapy reapplication, and reevaluating behavioral changes for effectiveness.3,10,48,59,82-84 An individualized preventive plan increases the probability of good oral health by demonstrating proper oral hygiene methods/techniques and removing plaque, stain, and calculus.47,48,84

Fluoride contributes to the prevention, inhibition, and reversal of caries.85-87 Professional topical fluoride treatments should be based on caries risk assessment.19,25,86,89 Plaque and pellicle are not a barrier to fluoride uptake in enamel.19 Consequently, there is no evidence of a difference in caries rates or fluoride uptake in patients who receive rubber cup prophylaxis or a tooth-brush prophylaxis before fluoride treatment.88,89 Precautionary measures should be taken to prevent swallowing of any professionally-applied topical fluoride. Children at high caries risk should receive greater frequency of professional fluoride applications (e.g., every three months).93,89,92 Ideally, this would occur as part of a comprehensive preventive program in a dental home.19

**Fluoride supplementation**

The AAPD encourages optimal fluoride exposure for every child, recognizing fluoride in the community water supplies as the most beneficial and cost-effective preventive intervention.85 Fluoride supplementation should be considered for children at moderate to high caries risk when fluoride exposure is not optimal.85 Determination of dietary fluoride sources (e.g., drinking water, toothpaste, foods, beverages) before prescribing supplements is required and can help reduce intake of excess fluoride.85 In addition, supplementation should be in accordance with the guidelines recommended by the AAPD85 and the American Dental Association93,94.

**Radiographic assessment**

Radiographs are a valuable adjunct in the oral health care of infants, children, and adolescents to diagnose and monitor oral diseases and evaluate dentoalveolar trauma, as well as monitor dentofacial development and the progress of therapy.45 Timing of initial radiographic examination should not be based on the patient’s age, but upon each child’s individual circumstances.45,46 The need for dental radiographs can be determined only after consideration of the patient’s medical and dental histories, completion of a thorough clinical examination, and assessment of the patient’s vulnerability to environmental factors that affect oral health.45 Every effort must be made to minimize the patient’s radiation exposure by applying good radiological practices (e.g., use of protective aprons and thyroid collars, when appropriate) and by following the as low as reasonably achievable (ALARA) principle.45

**Anticipatory guidance/counseling**

Anticipatory guidance is the process of providing practical and developmentally-appropriate information about children’s health to prepare parents for significant physical, emotional, and psychological milestones.2,9,19,20,95,96 Individualized discussion and counseling should be an integral part of each visit. Topics to be included are oral/dental development and growth, speech/language development, nonnutritive habits, diet and nutrition, injury prevention, tobacco product use, substance use/abuse, intraoral/perioral piercing, and oral jewelry/accessories.2,9,15,19,27,95-102,213,214

Anticipatory guidance regarding the characteristics of a normal healthy oral cavity should occur during infant oral health visits and throughout follow-up dental visits. This allows parents to measure against any changes such as, but not limited to, growth delays, traumatic injuries, and poor oral hygiene or presence of caries lesions. Tooth development and chronology of eruption can help parents better understand the implications of delayed or accelerated tooth emergence and the role of fluorides in newly erupted teeth that may be at higher risk of developing caries, especially during the post-eruption maturation process.35 Assessment of developmental milestones (e.g., fine/gross motor skills, language, social interactions) is crucial for early recognition of potential delays and appropriate referral to therapeutic services.29 Speech and language are integral components of a child’s early development.101 Abnormal delays in speech and language production can be recognized early with referral made to address these concerns. Communication and coordination of appliance therapy with a speech and language professional can assist in the timely treatment of speech disorders.101
Oral habits (e.g., nonnutritive sucking: digital and pacifier habits; bruxism; tongue thrust swallow and abnormal tongue position; self-injurious/self-mutilating behavior) may apply forces to teeth and dentoalveolar structures. Although early use of pacifiers and digit sucking are considered normal, habits of sufficient frequency, intensity, and duration can contribute to deleterious changes in occlusion and facial development. If indicated, dental practitioners should provide brief interventions for encouragement, behavior modification techniques, appliance therapy, or referral to other providers including, but not limited to, orthodontists, psychologists, or otolaryngologists.

Oral hygiene counseling involves the parent and patient. Initially, oral hygiene is the responsibility of the parent. As the child develops, home care is performed jointly by parent and child. When a child demonstrates the understanding and ability to perform personal hygiene techniques, the health care professional should counsel the child. The effectiveness of home care should be monitored at every visit and includes a discussion on the consistency of daily oral hygiene preventive activities, including adequate fluoride exposure.

The development of dietary habits and childhood food preferences appears to be established early and may affect the oral health as well as general health and well-being of a child. The establishment of a dental home no later than 12 months of age allows dietary and nutrition counseling to occur early. This helps parents to develop proper oral health habits early in their child’s life, rather than trying to change established unhealthy habits later. During infancy, counseling should focus on breastfeeding, bottle or no-spill cup usage, concerns with nighttime feedings, frequency of in-between meal consumption of sugar-sweetened beverages (e.g., sweetened milk, 100 percent juice, soft drinks, fruit drinks, sports drinks) and snacks, as well as special diets. Excess consumption of carbohydrates, fats, and sodium contribute to poor systemic health. Dietary analysis and the role of dietary choices on oral health, malnutrition, and obesity should be addressed through nutritional and preventive oral health counseling at periodic visits. The U.S. Departments of Health and Human Services and Agriculture provide dietary guidelines every five years to help Americans two years of age and older make healthy choices to help prevent chronic diseases and guidance for parents and their children and promote a healthy diet.

Traumatic dental injuries that occur in preschool, school-age children, and young adults comprise five percent of all injuries for which treatment is sought. Facial trauma that results in fractured, displaced, or lost teeth can have significant negative functional, esthetic, and psychological effects on children. Practitioners should provide age-appropriate injury prevention counseling for orofacial trauma. Initially, discussions would include advice regarding play objects, pacifiers, car seats, and electrical cords. As motor coordination develops and the child grows older, the parent/patient should be counseled on additional safety and preventive measures, including use of athletic mouthguards for sporting activities. Dental injuries could have improved outcomes not only if the public were aware of first-aid measures and the need to seek immediate treatment, but also if the injured child had access to emergency care at all times. Caregivers report that, even though their children had a dental home, they have experienced barriers to care when referred outside of the dental home for emergency services. Barriers faced by caregivers include availability of providers and clinics for delivery of emergency care and the distance one must travel for treatment. Therefore, it is important that all primary care providers inform parents about ways to access emergency care for dental injuries and provide telephone numbers to access a dentist, including for after-hours emergency care.

Smoking and smokeless tobacco use almost always are initiated and established in adolescence. In 2016, 7.2 percent of middle school students and 20.2 percent of high school students reported current tobacco product use. The most common tobacco products used by middle school and high school students were reported to be e-cigarettes, cigarettes, cigars, smokeless tobacco, hookahs, pipe tobacco, and bidis (unfiltered cigarettes from India). E-cigarette use rose from 1.5 percent to 16.0 percent among high school students and from 0.6 percent to 5.3 percent among middle school students from 2011 to 2015. During this time period, children may be exposed to opportunities to experiment with other substances that negatively impact their health and well-being. Practitioners should provide education regarding the serious health consequences of tobacco use and exposure to second hand smoke. The practitioner may need to obtain information regarding tobacco use and alcohol/drug abuse confidentially from an adolescent patient. When tobacco or substance abuse has been identified, practitioners should provide brief interventions for encouragement, support, and positive reinforcement for avoiding substance use. If indicated, dental practitioners should provide referral to primary care providers or behavioral-health/addiction specialists for assessment and/or treatment of substance use disorders.

Complications from intraoral/perioral piercings can range from pain, infection, and tooth fracture to life-threatening conditions of bleeding, edema, and airway obstruction. Education regarding pathologic conditions and sequelae associated with piercings should be initiated for the preteen child/parent and reinforced during subsequent periodic visits. The AAPD strongly opposes the practice of piercing.
intraoral and perioral tissues and use of jewelry on intraoral and perioral tissues due to the potential for pathological conditions and sequelae associated with these practices.\(^9\)

**Treatment of dental disease/injury**

Health care providers who diagnose oral disease or trauma should either provide therapy or refer the patient to an appropriately-trained individual for treatment.\(^{118}\) Immediate intervention is necessary to prevent further dental destruction, as well as more widespread health problems. Postponed treatment can result in exacerbated problems that may lead to the need for more extensive care.\(^{22,34,35,40}\) Early intervention could result in savings of health care dollars for individuals, community health care programs, and third-party payors.\(^{21,29,30,34}\)

**Treatment of developing malocclusion**

Guidance of eruption and development of the primary, mixed, and permanent dentitions is an integral component of comprehensive oral health care for all pediatric dental patients.\(^{27}\) Dentists have the responsibility to recognize, diagnose, and manage or refer abnormalities in the developing dentition as dictated by the complexity of the problem and the individual clinician’s training, knowledge, and experience.\(^{118}\) Early diagnosis and successful treatment of developing malocclusions can have both short-term and long-term benefits, while achieving the goals of occlusal harmony and function and dentofacial esthetics.\(^{104-108}\) Early treatment is beneficial for many patients, but is not indicated for every patient. When there is a reasonable indication that an oral habit will result in unfavorable sequelae in the developing permanent dentition, any treatment must be appropriate for the child’s development, comprehension, and ability to cooperate. Use of an appliance is indicated only when the child wants to stop the habit and would benefit from a reminder.\(^{27}\) At each stage of occlusal development, the objectives of intervention/treatment include: (1) reversing adverse growth, (2) preventing dental and skeletal disharmonies, (3) improving esthetics of the smile, (4) improving self-image, and (5) improving the occlusion.\(^{27}\)

**Sealants**

A 2016 systematic review concluded sealants are effective in preventing and arresting pit-and-fissure occlusal caries lesions of primary and permanent molars in children and adolescents and can minimize the progression of noncavitated occlusal caries lesions.\(^{109}\) They are indicated for primary and permanent teeth with pits and fissures that are predisposed to plaque retention.\(^{121}\) At-risk pits and fissures should be sealed as soon as possible. Because caries risk may increase at any time during a patient’s life due to changes in habits (e.g., dietary, home care), oral microflora, or physical condition, unsealed teeth subsequently might benefit from sealant application.\(^{122}\) The need for sealant placement should be reassessed at periodic preventive care appointments. Sealants should be monitored and repaired or replaced as needed.\(^{121-123}\)

**Third molars**

Panoramic or periapical radiographic assessment is indicated during late adolescence to assess the presence, position, and development of third molars.\(^{45,46}\) A decision to remove or retain third molars should be made before the middle of the third decade.\(^{124,125}\) Impacted third molars are potentially pathologic. Pathologic conditions generally are more common with an increase in age. Evaluation and treatment may require removal, exposure, and/or repositioning. In selected cases, long-term clinical and radiographic monitoring may be needed. Treatment should be provided before pathologic conditions adversely affect the patient’s oral and/or systemic health.\(^{119,124,125}\) Consideration should be given to removal when there is a high probability of disease or pathology and/or the risks associated with early removal are less than the risks of later removal.\(^{14,119,125}\) Postoperative complications for removal of impacted third molars are low when performed at an early age.\(^{126}\) A Cochrane review in 2012 reported there was no difference in late lower incisor crowding with removal or retention of asymptomatic impacted third molars.\(^{127}\)

**Referral for regular and periodic dental care**

As adolescent patients approach the age of majority, it is important to educate the patient and parent on the value of transitioning to a dentist who is knowledgeable in adult oral health care. At the time agreed upon by the patient, parent, and pediatric dentist, the patient should be referred to a specific practitioner in an environment sensitive to the adolescent's individual needs.\(^{5,128}\) Until the new dental home is established, the patient should maintain a relationship with the current care provider and have access to emergency services. For the patient with SHCN, in cases where it is not possible or desired to transition to another practitioner, the dental home can remain with the pediatric dentist and appropriate referrals for specialized dental care should be recommended when needed.\(^{128}\) Proper communication and records transfer allow for consistent and continuous care for the patient.\(^{22}\)

**Recommendations by age**

**Six to 12 months**

1. Complete the clinical oral examination with adjunctive diagnostic tools (e.g., radiographs as determined by child’s history, clinical findings, and susceptibility to oral disease) to assess oral growth and development, pathology, and/or injuries; provide diagnosis.
2. Complete a caries risk assessment.
3. Provide oral hygiene counseling for parents, including the implications of the oral health of the caregiver.
4. Clean teeth and remove supra- and sub-gingival stains or deposits as indicated.
5. Assess the child’s systemic and topical fluoride status (including type of infant formula used, if any, and exposure to fluoridated toothpaste) and provide counseling regarding fluoride.
1. Repeat the procedures for ages two to six years every six months or as indicated by the child's individual needs or risk status/susceptibility to disease.

2. During late adolescence, assess the presence, position, and development of third molars, giving consideration to removal when there is a high probability of disease or pathology and/or the risks associated with early removal are less than the risks of later removal.

3. At an age determined by patient, parent, and pediatric dentist, refer the patient to a general dentist for continuing oral care.

References
43. Dean JA. Examination of the mouth and other relevant structures. In: McDonald and Avery’s Dentistry for the Child and Adolescent. 10th ed. St. Louis, Mo.: Elsevier; 2016:1-16.


