Guideline on Adolescent Oral Health Care

Originating Committee
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Review Council
Council on Clinical Affairs, Committee on the Adolescent

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1999, 2003, 2005, 2010

Purpose
The American Academy of Pediatric Dentistry (**AAPD**) recognizes that the adolescent patient has unique needs. This guideline addresses these unique needs and proposes general recommendations for their management.

Methods
This guideline is an update of the previous document, revised in 2005. The update includes an electronic search using the following parameters: Terms: "adolescent" combined with "dental", "gingivitis", "oral piercing", "sealants", "oral health", "caries", "tobacco use", "dental trauma", "orofacial trauma", periodontal", "dental esthetics", "smokeless tobacco", "nutrition", and "diet"; Fields: all fields; Limits: within the last 10 years; humans; English; clinical trials. The reviewers agreed upon the inclusion of 83 electronic and hand searched articles that met the defined criteria. When data did not appear sufficient or were inconclusive, recommendations were based upon expert and/or consensus opinion by experienced researchers and clinicians.

Background
There is no standard definition of "adolescent".[1] Adolescents are defined very broadly as youths between the ages of 10 to 18. Using this definition, there were approximately 41.5 million adolescents in the United States in 2008, according to the US Census Bureau.[2] The adolescent patient is recognized as having distinctive needs[3,4] due to: (1) a potentially high caries rate; (2) increased risk for traumatic injury and periodontal disease; (3) a tendency for poor nutritional habits; (4) an increased esthetic desire and awareness; (5) complexity of combined orthodontic and restorative care (eg, congenitally missing teeth); (6) dental phobia; (7) potential use of tobacco, alcohol, and other drugs; (8) pregnancy; (9) eating disorders; and (10) unique social and psychological needs.[5-8]

Treatment of the adolescent patient can be multifaceted and complex. An accurate, comprehensive, and up-to-date medical history is necessary for correct diagnosis and effective treatment planning. Familiarity with the patient's medical history is essential to decreasing the risk of aggravating a medical condition while rendering dental care. If the parent is unable to provide adequate details regarding a patient's medical history, consultation with the medical health care provider may be indicated. The practitioner also may need to obtain additional information confidentially from an adolescent patient.

Recommendations
This guideline addresses some of the special needs within the adolescent population and proposes general recommendations for their management.

Caries
Adolescence marks a period of significant caries activity for many individuals. Current research suggests that the overall caries rate is declining, yet remains highest during adolescence.[9] Immature permanent tooth enamel,[10] a total increase in susceptible tooth surfaces, and environmental factors such as diet, independence to seek care or avoid it, a low priority for oral hygiene, and additional social factors also may contribute to the upward slope of caries in adolescence.[1,11-13] It is important for the dental provider to emphasize the positive effects that fluoridation, routine professional care, patient education, and personal hygiene can have in counteracting the changing pattern of caries in the adolescent population.[5,6,14,15]

Management of Caries
Primary prevention

Fluoride: Fluoridation has proven to be the most economical and effective caries prevention measure. The adolescent can benefit from fluoride throughout the teenage years and into early adulthood. Although the systemic benefit of fluoride incorporation into developing enamel is not considered necessary past 16 years of age, topical benefits can be obtained through optimally-fluoridated water, professionally-applied and prescribed compounds, and fluoridated dentifrices.[16]

Recommendations: The adolescent should receive maximum fluoride benefit dependent on risk assessment[17]:

1. Brushing teeth twice a day with a fluoridated dentifrice is recommended to provide continuing topical benefits.[14,18]
2. Professionally-applied fluoride treatments should be based on the individual patient's caries-risk assessment, as determined by the patient's dental provider.[18]
3. Home-applied prescription strength topical fluoride products [eg, 0.4% stannous fluoride gel, 0.5% fluoride gel or paste, 0.2% sodium fluoride (NaF) rinse] may be used when indicated by an individual's caries pattern or caries risk status.[18]
4. Systemic fluoride intake via optimal fluoridation of drinking water or professionally-prescribed supplements is recommended to 16 years of age. Supplements should be given only after all other sources of fluoride have been evaluated.[18]
5. The criteria for determination of need and the methods of delivery should be those currently recommended by the American Dental Association and the AAPD.[18]

Oral hygiene: Adolescence can be a time of heightened caries activity and periodontal disease due to an increased intake of cariogenic substances and inattention to oral hygiene procedures.[1,19] Tooth brushing with a fluoridated dentifrice and flossing can provide benefit through the topical effect of the fluoride and plaque removal from tooth surfaces.[20]

Recommendations:

1. Adolescents should be educated and motivated to maintain personal oral hygiene through daily plaque removal, including flossing, with the frequency and pattern based on the individual's disease pattern and oral hygiene needs.[19,20]
2. Professional removal of plaque and calculus is recommended highly for the adolescent, with the frequency of such intervention based on the individual's assessed risk for caries/periodontal disease, as determined by the patient's dental provider.[20,21]

Diet management: The role of carbohydrates in caries initiation is unequivocal. Adolescents are exposed to and consume high quantities of refined carbohydrates and acid-containing beverages.[11,12,22] The adolescent can benefit from diet analysis and modification.

Recommendations: Diet analysis, along with professionally-determined recommendations for maximal general and dental health, should be part of an adolescent's dental health management.[23]

A diet analysis and management should consider:

1. dental disease patterns;
2. overall nutrient and energy needs;
3. psychosocial aspects of adolescent nutrition;
4. dietary carbohydrate intake and frequency;
5. intake and frequency of acid-containing beverages;
6. wellness considerations.

Sealants: Sealant placement is an effective caries-preventive technique that should be considered on an individual basis. Sealants have been recommended for any tooth, primary or permanent, that is judged to be at risk for pit and fissure caries.[6,12,24-27] Caries risk may increase due to changes in patient habits, oral microflora, or physical condition, and unsealed teeth subsequently might benefit from sealant applications.[27]

Recommendations: Adolescents at risk for caries should have sealants placed. An individual's caries risk may change over time; periodic reassessment for sealant need is indicated throughout adolescence.[27]

Secondary prevention

Professional preventive care: Professional preventive dental care, on a routine basis, may prevent oral disease or disclose existing disease in its early stages. The adolescent patient whose oral health has not been monitored routinely by a dentist may have advanced caries, periodontal disease, or other oral involvement urgently in need of professional evaluation and extensive treatment.

Recommendations:

1. Timing of periodic oral examinations should take into consideration the individual's needs and risk indicators to determine the most cost-effective, disease-preventive benefit to the adolescent.[17]
2. Initial and periodic radiographic evaluation should be a part of a clinical evaluation. The type, number, and frequency of radiographs should be determined only after an oral examination and history taking. Previously exposed radiographs should be available, whenever possible, for comparison. Currently accepted guidelines for radiographic exposures (ie, appropriate films based upon medical history, caries risk, history of periodontal disease, and growth and development assessments) should be followed.[28]

Restorative dentistry: In cases where remineralization of noncavitated, demineralized tooth surfaces is not successful, as demonstrated by progression of carious lesions, dental restorations are necessary. Preservation of tooth structure, esthetics, and each individual patient's needs must be considered when selecting a restorative material.[29] Molars with extensive caries or malformed, hypoplastic enamel—for which traditional amalgam or composite resin restorations are not feasible—may require full coverage restorations.[27,30]

Recommendations: Each adolescent patient and restoration must be evaluated on an individual basis. Preservation of noncarious tooth structure is desirable. Referral should be made when treatment needs are beyond the treating dentist's scope of practice.[27]

Periodontal diseases

Adolescence can be a critical period in the human being's periodontal status. Epidemiologic and immunologic data suggest

that irreversible tissue damage from periodontal disease begins in late adolescence and early adulthood.[8] Adolescents have a higher prevalence of gingivitis than prepubertal children or adults. The rise of sex hormones during adolescence is suspected to be a cause of the increased prevalence. Studies suggest that the increase in sex hormones during puberty affects the composition of the subgingival microflora.[31] Other studies suggest circulating sex hormones may alter capillary permeability and increase fluid accumulation in the gingival tissues. This inflammatory gingivitis is believed to be transient as the body accommodates to the ongoing presence of the sex hormones.[32]

Acute conditions: The adolescent may be subjected to acute conditions such as acute necrotizing ulcerative gingivitis and periodontitis, which can require immediate and occasional long-term management. In most cases, early diagnosis, treatment, and appropriate management can prevent irreversible damage. [33-35]

Recommendations: Acute intraoral infection involving the periodontium and oral mucosa requires immediate treatment. Therapeutic management should be based on currently accepted techniques of periodontal therapy.[36,37] Referral should be made when the treatment needs are beyond the treating dentist's scope of practice.

Chronic conditions: Chronic conditions affecting the adolescent include, but are not limited to, gingivitis, puberty gingivitis, hyperplastic gingivitis related to orthodontic therapy, gingival recession that may or may not be related to orthodontic therapy, drug-related gingivitis, pregnancy gingivitis, localized juvenile periodontitis, and periodontitis.[24,31-33] Personal oral hygiene and regular professional intervention can minimize occurrence of these conditions and prevent irreversible damage.

Recommendations: The adolescent will benefit from an individualized preventive dental health program, which includes the following items aimed specifically at periodontal health:

1. Patient education emphasizing the etiology, characteristics, and prevention of periodontal diseases, as well as self-hygiene skills.[32-34]
2. A personal, age-appropriate oral hygiene program including plaque removal, oral health self-assessment, and diet. Sulcular brushing and flossing should be included in plaque removal, and frequent follow-up to determine adequacy of plaque removal and improvement of gingival health should be considered.[32-36]
3. Regular professional intervention, the frequency of which should be based on individual needs and should include evaluation of personal oral hygiene success, periodontal status, and potential complicating factors such as medical conditions, malocclusion, or handicapping conditions. Periodontal probing, periodontal charting, and radiographic periodontal diagnosis should be a consideration when caring for the adolescent. The extent and nature of the periodontal evaluation should be determined professionally on an individual basis. Those patients with progressive periodontal disease should be referred when the treatment needs are beyond the treating dentist's scope of practice.[32-34,36]
4. Appropriate evaluation for procedures to facilitate orthodontic treatment including, but not limited to, tooth exposure, frenectomy, fiberotomy, gingival augmentation, and implant placement.[37]

Occlusal considerations

Malocclusion can be a significant treatment need in the adolescent population as both environmental and genetic factors come into play. Although the genetic basis of much malocclusion makes it unpreventable, numerous methods exist to treat the occlusal disharmonies, temporomandibular joint dysfunction, periodontal disease, and disfiguration which may be associated with malocclusion. Within the area of occlusal problems are several tooth/jaw-related discrepancies that can affect the adolescent. Third molar malposition and temporomandibular disorders require special attention to avoid long-term problems. Congenitally missing teeth present complex problems for the adolescent and often require combined orthodontic and restorative care for satisfactory resolution.

Malocclusion: Any tooth/jaw positional problems that present significant esthetic, functional, physiologic, or emotional dysfunction are potential difficulties for the adolescent. These can include single or multiple tooth malpositions, tooth/jaw size discrepancies, and craniofacial disfigurements.

Recommendations: Malposition of teeth, malrelationship of teeth to jaws, tooth/jaw size discrepancy, skeletal malrelationship, or craniofacial malformations or disfigurement that presents functional, esthetic, physiologic, or emotional problems to the adolescent should be referred for evaluation when the treatment needs are beyond the treating dentist's scope of practice. Treatment of malocclusion by a dentist should be based on professional diagnosis, available treatment options, patient motivation and readiness, and other factors to maximize progress.[38]

Third molars: Third molars can present acute and chronic problems for the adolescent. Impaction or malposition leading to such problems as pericoronitis, caries, cysts, or periodontal problems merits evaluation for removal.[36,39] The role of the third molar as a functional tooth also should be considered. Although prophylactic removal of all impacted or unerupted disease-free third molars is not indicated, consideration should be given to removal by the third decade 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.

Recommendations: Evaluation of third molars, including radiographic diagnostic aids, should be an integral part of the dental examination of the adolescent.[28] For diagnostic and

extraction criteria, refer to AAPD's Guideline on Pediatric Oral Surgery.[40] Referral should be made if treatment is beyond the treating dentist's scope of practice.

Temporomandibular joint (TMJ) problems: Disorders of the TMJ can occur at any age, but appears to be more prevalent in adolescence .[40-42]

Recommendations: Evaluation of the TMJ and related structures should be a part of the examination of the adolescent. Referral should be made when the diagnostic and/or treatment needs are beyond the treating dentist's scope of practice.[43,44]

Congenitally missing teeth: The impact of a congenitally missing permanent tooth on the developing dentition can be significant.[3] When treating adolescent patients with congenitally missing teeth, many factors must be taken into consideration including, but not limited to, esthetics, patient age, and growth potential, as well as periodontal and oral surgical needs.[38,45,46]

Recommendations: Evaluation of congenitally missing permanent teeth should include both immediate and long-term management. Referral should be made when the treatment needs are beyond the treating dentist's scope of practice. A team approach may be indicated.[47]

Ectopic eruption: Abnormal eruption patterns of the adolescent's permanent teeth can contribute to root resorption, bone loss, gingival defects, space loss, and esthetic concerns. Early diagnosis and treatment of ectopically erupting teeth can result in a healthier and more esthetic dentition. Prevention and treatment may include extraction of deciduous teeth, surgical intervention, and/or endodontic, orthodontic, periodontal, and/or restorative care.[48-50]

Recommendations: The dentist should be proactive in diagnosing and treating ectopic eruption and impacted teeth in the young adolescent. Early diagnosis, including appropriate radiographic examination,[28] is important. Referral should be made when the treatment needs are beyond the treating dentist's scope of practice.[47]

Traumatic injuries

The most common injuries to permanent teeth occur secondary to falls, followed by traffic accidents, violence, and sports.[51-54] All sporting activities have an associated risk of orofacial injuries due to falls, collisions, and contact with hard surfaces.[55] The administrators of youth, high school, and college organized sports have demonstrated that dental and facial injuries can be reduced significantly by introducing mandatory protective equipment such as face guards and mouthguards. Additionally, youths participating in leisure activities such as skateboarding, rollerskating, and bicycling also benefit from appropriate protective equipment.[56,57]

Recommendations: Dentists should introduce a comprehensive trauma prevention program to help reduce the incidence of traumatic injury to the adolescent dentition. This prevention plan should consider assessment of the patient's sport or activity, including level and frequency of activity.[58] Once this information is acquired, recommendation and fabrication of an age-appropriate, sport-specific, and properly-fitted mouthguard/faceguard can be initiated.[58] Players must be warned about altering the protective equipment that will disrupt the fit of the appliance. In addition, players and parents must be informed that injury may occur, even with properly-fitted protective equipment.[58]

Additional considerations in oral/dental management of the adolescent

The adolescent can present particular psychosocial characteristics that impact the health status of the oral cavity, care seeking, and compliance. The self-concept development process, emergence of independence, and the influence of peers are just a few of the psychodynamic factors impacting dental health during this period.[1,5,7,16]

Discolored or stained teeth: Desire to improve esthetics of the dentition by tooth whitening and removal of stained areas or defects can be a concern of the adolescent. Indications for the appropriate use of tooth-whitening methods and products are dependent upon correct diagnosis.[59] The dentist must determine the appropriate mode of treatment. Use of bleaching agents, microabrasion, placement of an esthetic restoration, or a combination of treatments all can be considered.[60]

Recommendations: For the adolescent patient, judicious use of bleaching can be considered part of a comprehensive, sequenced treatment plan that takes into consideration the patient's dental developmental stage, oral hygiene, and caries status. A dentist should monitor the bleaching process, ensuring the least invasive, most effective treatment method. Dental professionals also should consider possible side effects when contemplating dental bleaching for adolescent patients.[61,62]

Tobacco use: Significant oral, dental, and systemic health consequences and death are associated with all forms of tobacco use. Smoking and other tobacco use almost always are initiated and established in adolescence.[63-68]

Recommendations: Education of the adolescent patient on the oral and systemic consequences of tobacco use should be part of each patient's oral health education. For those adolescent patients who use tobacco products, the practitioner should provide or refer the patient to appropriate educational and counseling services.[69-71] When associated pathology is present, referral should be made when the treatment needs are beyond the treating dentist's scope of practice.

Positive youth development: Treatment and management of adolescent oral health that takes into account the adolescent's psychological and social needs can be approached through the

framework of positive youth development (**PYD**).[72] The approach goes beyond traditional prevention, intervention, and treatment of risky behaviors and problems and suggests that a strong interpersonal relationship between the adolescent patient and the pediatric dentist can be influential in improving adolescent oral health and transitioning patients to adult care. In the office, dental professionals have a unique opportunity to serve as positive role models.

Recommendations: Integrating PYD into clinical practice can be attained through continuing education on adolescent development issues, as well as partnerships with community-based organizations and schools. The dentist can be a part of the myriad of adolescent support and services.[72]

Psychosocial and other considerations: Behavioral considerations when treating an adolescent may include anxiety, phobia, or intellectual dysfunction.[1] Referral should be made when the treatment needs are beyond the treating dentist's scope of practice and nondental professionals or a team approach may be indicated.

Additional examples of oral problems associated with adolescent behaviors include, but are not limited to:

1. oral manifestations of venereal diseases;
2. effects of oral contraceptives or antibiotics on periodontal structures;
3. perimyolysis (severe enamel erosion) in bulimia[73];
4. traumatic injury to teeth and oral structures in athletic or other activities (short- and long-term management)[56,74-76;]
5. intraoral and perioral piercing with possible local and systemic effects.[77,78]

The impact of psychosocial factors relating to oral health must include consideration of the following:

1. changes in dietary habits (eg, fads, freedom to snack, increased energy needs, access to carbohydrates);
2. use of tobacco, alcohol, and drugs;
3. motivation for maintenance of good oral hygiene;
4. potential for traumatic injury;
5. adolescent as responsible for care;
6. lack of knowledge about periodontal disease.

Physiologic changes also can contribute to significant oral concerns in the adolescent. These changes include:

1. loss of remaining primary teeth;
2. eruption of remaining permanent teeth;
3. gingival maturity;
4. facial growth;
5. hormonal changes.

Recommendations:

1. An adolescent's oral health care should be provided by a dentist who has appropriate training in managing the patient's specific needs. Referral should be made when the treatment needs are beyond the treating dentist's scope of practice. This may include both dental and nondental problems.[72]
2. Attention should be given to the particular psychosocial aspects of adolescent dental care. Other issues such as consent, confidentiality, and compliance should be addressed in the care of these patients.[79,80]
3. A complete oral health care program for the adolescent requires an educational component that addresses the particular concerns and needs of the adolescent patient and focuses on:
   a. specific behaviorally-and physiologically-induced oral manifestations in this age group;[20]
   b. shared responsibility for care and health by the adolescent and provider;[20]
   c. consequences of adolescent behavior on oral health.[81,82]

Transitioning to adult 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. The adult's oral health needs may go beyond the scope of the pediatric dentist's training. The transitioning adolescent should continue professional oral health care in an environment sensitive to his/her individual needs. Many adolescent patients independently will choose the time to seek care from a general dentist and may elect to seek treatment from a parent's primary care provider. In some instances, however, the treating pediatric dentist will be required to suggest transfer to adult care.

Pediatric dentists are concerned about decreased access to oral health care for persons with special health care needs (**SHCN**)[83] as they transition beyond the age of majority. Pediatric hospitals, by imposing age restrictions, can create a barrier to care for these patients. Transitioning to a dentist who is knowledgeable and comfortable with adult oral health care needs often is difficult due to a lack of trained providers willing to accept the responsibility of caring for SHCN patients.

Recommendations: At a time agreed upon by the patient, parent, and pediatric dentist, the patient should be transitioned to a dentist knowledgeable and comfortable with managing that patient's specific oral care needs. For the SHCN patient, 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.[83]

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