Policy on the Role of Dental Prophylaxis in Pediatric Dentistry

Latest Revision

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Purpose

The American Academy of Pediatric Dentistry recognizes the dental prophylaxis as an integral component of periodic oral health assessment, education, and preventive care.

Methods

This policy was developed by the Clinical Affairs Committee, adopted in 1986[1], and last revised in 2017[2]. This revision included a new literature search of PubMed®/MEDLINE using the terms: dental prophylaxis, tooth-brushing, professional tooth cleaning, fluoride uptake, and professional dental prophylaxis, limited to children (birth to 18 years), the last 10 years, and English language, resulting in 1,390 articles. The resultant list was filtered to utilize randomized control studies and systematic reviews only, resulting in 109 papers for review. When necessary, hand searching for articles and Google Scholar searches were utilized. Expert and/or consensus opinion by experienced researchers and clinicians also was considered.

Background

The aim of oral prophylaxis is to remove supragingival plaque, stain, and calculus from patients' teeth.[3] This may be accomplished utilizing hand instruments, ultrasonic scalers, rubber rotary cup, toothbrush, interdental cleaners (e.g., floss), and air polishing. Persistent gingival inflammation in young patients with reasonable supragingival home plaque control often is related to calculus deposits previously not detected or only partially removed.[4] Attachment loss due to chronic subgingival calculus in young children has been reported.[5] Thus, a dental prophylaxis is an important component of initial and recall dental appointments.[3] The instrumentation (e.g., toothbrush prophylaxis, hand-scaling) needed for each patient is determined on an individual basis. In example, in the young or pre-cooperative patient, patients with special health care needs, or patients with no calculus, a toothbrush prophylaxis may be utilized by the dental professional.

Limited evidence suggests that, although prophylaxis may lead to short-term reductions in plaque levels and gingival bleeding, it may not lead to the prevention of gingivitis.[6,7] Nevertheless, prophylaxis is an important component of pediatric oral health care and, among other benefits detailed below, facilitates the conduct of a high-quality comprehensive oral examination. The coronal polish procedure typically entails the application of a dental polishing paste to tooth surfaces with a rotary rubber cup or bristle brush to remove plaque and stains from teeth. A toothbrush coronal polish (i.e., toothbrush and toothpaste) is a procedure that is used to remove plaque from tooth surfaces and demonstrate brushing techniques to caregivers for young children and for patients with special needs who cannot tolerate the use of a rotary rubber cup.[8] Air polishing uses a mix of pressurized air, abrasive powder, and water to remove supragingival stains, plaque, and deposits from teeth.[9] Dental scaling is a procedure in which hand or ultrasonic instruments are used to remove calculus and stain. Full mouth debridement may be necessary as a preliminary treatment for those whose medical, psychological, physical, or periodontal condition results in calculus accumulation beyond the scope of routine prophylaxis.

These procedures facilitate the clinical examination and introduce dental procedures to the patient. Additionally, the accompanying preventive visit demonstrates proper oral hygiene methods to the patient and/or caregiver. Professional oral hygiene instruction and reinforcement can lead to behaviors that reduce both plaque and gingivitis[10] but, in the absence of patient oral hygiene instruction, professional supragingival and submarginal plaque and calculus removal has little value in gingivitis prevention.[3,11]

The frequent disruption or removal of bacterial dental plaque, known as biofilm, from various areas of the oral cavity is crucial to oral disease prevention and is achieved through regular personal oral hygiene and professional prophylaxis.[12] Accurate detection of biofilm is critical to effective removal, and special dyes of iodine, gentian violet, erythrosine, basic fuchsin, fast green, food dyes, fluorescein, and two-tone disclosing agents are available in the forms of tablets, solutions, wafers, lozenges, or mouthrinses.[13] Biofilm staining allows for effective personalized oral health guidance from healthcare providers. Severe dental caries is most strongly associated with biofilm in the upper posterior palatal, lower posterior buccal, and lower posterior lingual spaces, as well as on the tongue.[14] Disclosing agents for both professional and personal use can supplement a personal oral hygiene protocol.

Flossing is an important part of the prophylaxis that removes interproximal and subgingival plaque, aids in educating the patient, and facilitates the oral examination. Since interdental

Table. BENEFITS OF PROPHYLAXIS OPTIONS

	Plaque removal	Stain removal	Calculus removal	Education of patient/ caregiver	Facilitate examination
Toothbrush	Yes	No	No	Yes	Yes
Rubber cup	Yes	Yes	No	Yes	Yes
Hand instruments	Yes	Yes	Yes	Yes	Yes
Ultrasonic scalers	Yes	Yes	Yes	Yes	Yes
Air polishing	Yes	Yes	Yes	Yes	Yes
Flossing	Yes	No	No	Yes	Yes

plaque biofilm is not completely removed with brushing[10,15], interdental cleaning is indicated when interdental spaces are filled with gingiva or contacts are closed[16,17]. Different devices (e.g., dental floss, interdental brushes, oral irrigations) are used to remove plaque interdentally.[10,15] The benefits of various prophylaxis options are shown in the Table above.

Numerous reports have shown plaque and pellicle are not a barrier to fluoride uptake in enamel and, consequently, patients who receive rubber cup dental prophylaxis or a toothbrush prophylaxis before fluoride treatment exhibit no difference in caries rates.[6,7,18] Rubber cup prophylaxis is not required prior to the topical application of fluoride.

A patient's risks for caries[3] and periodontal disease[19], as determined by the patient's dental provider, can help establish the interval of the prophylaxis or periodontal maintenance. An individualized preventive plan increases the probability of good oral health through proper oral hygiene methods and techniques as demonstrated by oral health professionals. In addition, removing plaque, stain, calculus, and the factors that influence their buildup increases the probability of good oral health. Patients who exhibit higher risk for developing caries or periodontal disease can benefit from recall visits at more frequent intervals.[3,19-21]

Policy statement

The American Academy of Pediatric Dentistry supports a professional prophylaxis during new patient comprehensive and periodic examinations to:

- instruct the caregiver and child or adolescent in proper oral hygiene techniques.
- remove dental plaque, extrinsic stain, and calculus deposits from the teeth.
- facilitate the examination of hard and soft tissues.
- introduce dental procedures to the young child and apprehensive patient.

Determination of interval for periodic examinations takes into consideration a patient's assessed risk for caries[3] and periodontal disease[19].

References

1. American Academy of Pediatric Dentistry. The role of prophylaxis in pediatric dentistry. Colorado Springs, Colo.: American Academy of Pediatric Dentistry; May, 1986.
2. American Academy of Pediatric Dentistry. Policy on role of dental prophylaxis in pediatric dentistry. Pediatr Dent 2017;39(6):47-8.
3. American Academy of Pediatric Dentistry. Risk assessment and management of periodontal diseases and pathologies in pediatric dental patients. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2022:466-84.
4. Clerehugh V, Tugnait A. Diagnosis and management of periodontal diseases in children and adolescents. Periodontol 2000 2001;26:146-68.
5. Roberts-Harry EA, Clerehugh V. Subgingival calculus: Where are we now? A comparative review. J Dent 2000;28 (2):93-102.
6. Horowitz AM. Rubber cup dental prophylaxis is not needed prior to the topical application of fluorides and rubber cup dental prophylaxis at recall is not effective in the prevention of gingivitis. J Evid Base Dent Pract 2012;12(2):77-8.
7. Azarpazhooh A, Main PA. Efficacy of dental prophylaxis (rubber cup) for the prevention of caries and gingivitis: A systematic review of literature. Br Dent J 2009;207(7): E14; discussion 328-9.
8. Ramos-Gomez F, Crystal YO, Ng MW, Tinanoff N, Featherstone JD. Caries risk assessment, prevention, and management in pediatric dental care. Gen Dent 2010;58 (6):505-17; quiz 518-9.
9. Graumann SJ, Sensat ML, Stoltenberg JL. Air polishing: A review of current literature. J Dent Hyg 2013;87(4): 173-80.
10. Chapple IL, Van der Weijden F, Doerfer C, et al. Primary prevention of periodontitis: Managing gingivitis. J Clin Periodontol 2015;42(Suppl 16):S71-6.
11. Tonetti MS, Eickholz P, Loos BG, et al. Principles in prevention of periodontal diseases: Consensus report of group 1 of the 11th European Workshop on Periodontology on effective prevention of periodontal and peri-implant diseases. J Clin Periodontol 2015;42(Suppl 16): S5-11.
12. Larsen T, Fiehn NE. Dental biofilm infections – An update. APMIS 2017;125(4):376-84.
13. Dipayan D, Kumar SGR, Narayanan MBA, Selvamary AL, Sujatha A. Disclosing solutions used in dentistry. World J Pharmaceut Res 2017;6(6):1648-56.
14. Fasoulas A, Pavlidou E, Petridis D, Mantzorou M, Seroglou K, Giaginis C. Detection of dental plaque with disclosing agents in the context of preventive oral hygiene training programs. Heliyon 2019;10;5(7):e02064.

References continued on the next page.

15. Perry DA, Takei HH, Do JH. Plaque biofilm control for the periodontal patient. In: Newman MG, Takei HH, Klokkevold PR, Carranza FA, eds. Newman and Carranza's Clinical Periodontology. 13th ed. Philadelphia, Pa.: Elsevier; 2019:511-20.
16. Drummond BK, Brosnan MG, Leichter JW. Management of periodontal health in children: Pediatric dentistry and periodontology interface. Periodontol 2000 2017;74(1): 158-67.
17. Silva DR, Law CS, Duperon DF, Carranza FA. Gingival disease in childhood. In: Newman MG, Takei HH, Klokkevold PR, Carranza FA, eds. Newman and Carranza's Clinical Periodontology. 13th ed. Philadelphia, Pa.: Elsevier; 2019:277-86.
18. Weyant RJ, Tracy SL, Anselmo TT, et al. Topical fluoride or caries prevention: Executive summary of the updated clinical recommendations and supporting systematic review. J Am Dent Assoc 2013;144(11):1279-91.
19. American Academy of Pediatric Dentistry. Caries-risk assessment and management for infants, children, and adolescents. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2022:266-72.
20. Patel S, Bay RC, Glick M. A systematic review of dental recall intervals and incidence of dental caries. J Am Dent Assoc 2010;141(5):527-39.
21. American Academy of Pediatric Dentistry. Periodicity of examination, preventive dental services, anticipatory guidance/counseling, and oral treatment for infants, children, and adolescents. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2022:253-65.