

Policy on the Use of Dental Bleaching for Child and Adolescent Patients

Review Council

Council on Clinical Affairs

Latest Revision

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Purpose

The American Academy of Pediatric Dentistry (AAPD) recognizes that the desire for dental whitening in pediatric and adolescent patients has increased. This policy is intended to help professionals and patients make informed decisions about the indications, efficacy, and safety of internal and external bleaching of primary and young permanent teeth and incorporate such care into a comprehensive treatment plan.

Methods

This policy was developed by the Council on Clinical Affairs and adopted in 2004. This document is an update from the last revision in 2014. This revision included a new literature search of the PubMed®/MEDLINE database using the terms: dental bleaching, dental whitening, and tooth bleaching; fields: all; limits: within the last 10 years, humans, English, clinical trials, and birth through age 18. Over 352 articles were selected and reviewed. Additional information was obtained from reviewing references within selected articles.

Background

The desire for improved dental esthetics has fueled innovations in dental materials. Patients, parents, and the news media request information on dental whitening for children and adolescents with increasing frequency. In addition, increased demand for bleaching materials and services has affected both the variety and availability of dental bleaching products on the market.

Discoloration of teeth is classified by etiology.¹ Clinical indications for internal or external dental whitening for individual teeth may include discoloration resulting from a traumatic injury (i.e., calcific metamorphosis, darkening with devitalization), irregularities in enamel coloration of a permanent tooth due to trauma or infection of the related primary tooth, or intrinsic discoloration/staining (e.g., fluorosis, tetracycline staining).²⁻⁷ Teeth staining from metals (e.g., iron supplements) or consumption of tea, coffee, soft drinks, alcohol, and certain foods is extrinsic and easier to treat compared to intrinsic factors whether congenital or acquired. Severe discolorations may be best treated with microabrasion and subsequent bleaching to achieve desirable results.⁸

Due to the difference in the thickness of enamel of primary and permanent teeth, tooth coloration within a dental arch may vary significantly during the mixed dentition. Full arch cosmetic bleaching during this developmental stage, however, would result in mismatched dental appearance once the child is in the permanent dentition. Adolescents present with unique dental needs, and the impact of tooth discoloration on an adolescent's self-image could be considered an indication for bleaching.⁸ Tooth whitening has been successful in adolescent patients using typical bleaching agents,⁸ but research is lacking on the effects of bleaching on the primary dentition.

Dental whitening may be accomplished by using either professional or at-home bleaching modalities. Advantages of in-office whitening or whitening products dispensed and monitored by a dental professional include:

- an initial professional examination to help identify causes of discoloration and clinical concerns with treatment (e.g., existing restorations, side effects).
- professional control and soft-tissue protection.
- patient compliance.
- rapid results.
- immediate attention to teeth sensitivity and other adverse effects.

The pretreatment professional assessment helps identify pulp pathology that may be associated with a single discolored tooth. This examination also identifies restorations that are faulty or could be affected by the bleaching process, and the associated costs for replacing such restorations to maximize esthetic results.⁸⁻¹² By using photographs and/or a shade guide, the dentist can document the effectiveness of treatment. In addition to providing in-office bleaching procedures, a dentist may fabricate custom trays for at-home use of a bleaching product. Custom trays ensure intimate fit and fewer adverse gingival effects.¹³ Over-the-counter products for at-home use include bleaching gels, whitening strips, brush-on agents, toothpaste, mints, chewing gum, and mouth rinse. Their main advantages include patient convenience and lower associated costs.

Peroxide-containing whiteners or bleaching agents improve the appearance by changing the tooth's intrinsic color. The professional-use products usually range from 10 percent carbamide peroxide (equivalent to about three percent hydrogen peroxide) to 38 percent carbamide peroxide (equivalent to approximately 13 percent hydrogen peroxide). In-office bleaching products require

isolation with a rubber dam or a protective gel to shield the gingival soft tissues. Home-use bleaching products contain lower concentrations of hydrogen peroxide or carbamide peroxide.^{2-4,14} Efficacy and long-term outcomes of home whitening products will vary according to the concentration of peroxide used and the severity of the initial tooth discoloration.¹⁵⁻¹⁸ Many whitening toothpastes contain polishing or chemical agents to improve tooth appearance by removing extrinsic stains through gentle polishing, chemically chelating, or other nonbleaching action.^{10,19} Carbamide peroxide is the most commonly used active ingredient in dentist-dispensed tooth-bleaching products for home-use.^{10,20}

Side effects from bleaching vital and nonvital teeth have been documented. It should be noted that most of the research on bleaching has been performed on adult patients, with only a small amount of published bleaching research using child or adolescent patients.^{2,4,8,14,17,21-24} The more common side effects associated with bleaching vital teeth are tooth sensitivity and tissue irritation. Tooth sensitivity associated with vital bleaching may be due to permeation of enamel and dentin by hydrogen peroxide and a subsequent mild, transient inflammatory response.²⁵⁻²⁷ Hydrogen peroxide is a highly reactive substance which can cause damage to oral hard and soft tissues when used at high concentrations and an extended period of time.^{28,29}

Between eight and 66 percent of patients experience post-bleaching sensitivity, most often during the early stages of treatment.^{7,10,14,17,21,24} Overtreatment has been shown to harm tooth structure, which is of particular concern when bleaching products are used excessively by overzealous teens and young adults.²⁹⁻³¹ Tissue irritation, in most cases, results from an ill-fitting tray rather than the bleaching agents and resolves once a more accurately fitted tray is used.³² Both sensitivity and tissue irritation usually are temporary and cease with the discontinuance of treatment.^{6,7,14,17,19,21,24,33,34} Additional risks may include erosion, mineral degradation, pulpal damage, and increased marginal leakage of existing restorations.^{14,35} When used correctly, however, teeth bleaching has been proven to be safe and causes no irreversible tooth structure damage.²⁹

Internal bleaching for non-vital endodontically treated teeth in young patients can be performed in the same way as for adults.²⁹ The more common side effect from internal bleaching of nonvital teeth is external root resorption.³⁶⁻³⁹ With external bleaching of nonvital teeth, the most common side effect is increased marginal leakage of an existing restoration.^{3,40-44} One of the degradation byproducts of hydrogen peroxide or carbamide peroxide results in a hydroxyl-free radical. This byproduct has been associated with periodontal tissue damage and root resorption. Due to the concern of the hydroxyl free radical damage⁴⁵⁻⁴⁷ and the potential side effects of dental bleaching, minimizing exposure at the lowest effective concentration of hydrogen peroxide or carbamide peroxide is recommended. Providers should use caution when bleaching primary anterior teeth, as the underlying permanent teeth are in jeopardy of developmental disturbance from intramedullary inflammatory changes.^{29,48}

Of growing concern is the preponderance of non-dental professionals offering teeth whitening services to the public.⁴⁹ Tooth whitening is defined as any process to whiten, lighten, or bleach teeth.⁴⁹ Teeth whitening kiosks, retail, and beauty salons are providing whitening services and dispensing teeth whitening agents.^{19,50} Dental organizations have supported state regulations that restrict the practice of providing bleaching services to only dentists or other qualified dental staff under the direct supervision of a dentist.⁴⁹⁻⁵¹ The use of over-the-counter whitening products remains exempt from such regulation. Legislation defining the scope of practice by non-dentists offering whitening treatment vary from state to state and should be examined when these services are being provided.⁵⁰⁻⁵²

Policy statement

Teeth whitening procedures that have been shown to be safe may be beneficial for children and adolescents. Although the use of whitening agents can successfully improve dental esthetics and enhance a person's self-esteem, proper treatment planning with objectives should be conducted prior to engaging in any bleaching protocol. Use of whitening agents should follow the safety and efficacy standards as defined by clinical research and best practice. Bleaching by young patients should be supervised by an adult and under the guidance of a dentist.

The AAPD encourages:

- The judicious use of bleaching for vital and nonvital teeth.
- Patients to consult their dentists to determine appropriate methods for and the timing of dental whitening within the context of an individualized, comprehensive, and sequenced treatment plan.
- Dental professionals and consumers to consider side effects when contemplating dental bleaching for child and adolescent patients.
- Further research of dental whitening agents in children.

The AAPD discourages full-arch cosmetic bleaching for patients in the mixed and primary dentitions.

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