

Policy on Early Childhood Caries (ECC): Unique Challenges and Management Considerations

Latest Revision
2025

Abbreviations

AAPD: American Academy of Pediatric Dentistry.

ECC: Early childhood caries.

Majr: MeSH (Medical Subject Heading) major topic.

Tiab: Title and abstract.

Purpose

The American Academy of Pediatric Dentistry (AAPD), to promote appropriate, quality oral health care for infants and children with early childhood caries (ECC), addresses the unique challenges and management of this disease, including the need for advanced preventive, restorative, and behavioral guidance techniques.

Methods

This policy was developed by the Council on Clinical Affairs, adopted in 2000,¹ and last revised in 2021.² An electronic search of English written articles in the dental and medical literature within the last 10 years was conducted using the PubMed[®]/MEDLINE database with the following search terms: (*evidence based dentistry [Majr] OR pediatric dentistry [Majr] OR dental care for children [Majr]*) AND (*dental caries [Majr] OR dental caries susceptibility [Majr] OR early childhood caries [Tiab] OR infant oral health [Tiab] OR oral microbiome [Tiab] OR ECC prevention [Tiab] OR patient well-being [Tiab] OR nutrition [Tiab] OR quality of life [Majr] OR ECC [Tiab]*). Two hundred forty-seven articles met the defined criteria, and 36 articles were selected for review from this search and from references within the selected papers. When information from these articles did not appear sufficient or was inconclusive, expert and/or consensus opinions by experienced researchers and clinicians were considered.

Background

Epidemiologic data from a 2013-2018 national health survey clearly indicate that ECC remains highly prevalent in poor and near poor United States preschool children.³ For the overall population of preschool children, the prevalence of ECC, as measured by decayed and filled tooth surfaces (dfs), is unchanged from previous surveys.³ However, the proportion of children with severe ECC (S-ECC) increased significantly.³ The consequences of ECC include a higher risk of new caries lesions in both the primary and permanent dentitions,⁴⁻⁶ hospitalizations and emergency room visits,⁷ high treatment costs,^{8,9} loss of school days,¹⁰ diminished ability to learn,¹⁰ nutritional deficiencies,¹¹⁻¹⁴ and reduced oral health-related quality of life.¹⁵⁻¹⁷

Due to the added costs and potential health risks of sedation and general anesthesia,¹⁸⁻²⁰ which often is required to enable provision of restorative and surgical care for young children, as well as the high recurrence of lesions following these procedures,²¹ strategies to prevent and arrest the disease process have come into greater focus.²² This includes utilizing methods referred to as chronic disease management in combination with 1) active surveillance and 2) minimal intervention.

Chronic disease management involves actively engaging parents to facilitate and promote preventive measures, including the identification and reduction of individual risk factors to sustain oral health in the long term.^{23,24} Active surveillance refers to careful monitoring of caries progression and implementation of prevention programs (eg, more frequent recalls and fluoride varnish applications) in children with incipient lesions.^{25,26} Minimal intervention approaches includes caries arrest with silver

OFFICIAL BUT UNFORMATTED

diammine fluoride(SDF),^{27,28} sealants,²⁹ and interim therapeutic restorations (ITR)³⁰ that temporarily restore teeth in young children until a time when traditional cavity preparation and restoration is possible, and the use of Hall-technique³¹ for crown placement.

Children with known risk factors for ECC benefit from care provided by oral health professionals with the training and expertise to manage both the child and the disease process. The use of anticariogenic agents, especially twice daily brushing with fluoridated toothpaste³² and the frequent application of fluoride varnish, may reduce the risk of development and progression of caries. In some children for whom preventive programs fail to halt the caries disease process, areas of demineralization and hypoplasia can rapidly develop into cavitations. If left untreated, caries lesions can invade the dental pulp, leading to infection and possibly life-threatening complications involving fascial spaces. Such infections may result in a medical emergency requiring hospitalization, antibiotics, and extraction of the offending tooth.³³ The extent of the disease process as well as the patient's age, cognitive development, and level of comprehension affect the practitioner's management decisions. The establishment of a dental home³⁴ when the first tooth erupts is imperative to implement primary prevention and early intervention before advanced disease becomes established. For cases of severe ECC, the child may benefit from advanced behavior guidance techniques (ie, sedation, general anesthesia)³⁵ if unable to cooperate for extensive treatment. In such situations, stainless steel crowns often are indicated to restore teeth with large or interproximal caries lesions and extensive white spot lesions since stainless steel crowns are less likely than other restorations to require retreatment.³⁶

Policy statement

The AAPD recognizes the unique and often virulent nature of ECC and the value of preventive care and interventions to halt disease progression. The AAPD encourages nondental health care providers who identify a child as having ECC or risk factors for the disease to refer the patient to a dentist for treatment and establishment of a dental home. Timely intervention is indicated and includes nonsurgical interventions that may reduce or postpone the need for sedation or general anesthesia. Because children who experience ECC are at greater risk for subsequent caries development, the AAPD encourages preventive measures (eg, dietary counseling, reinforcement of toothbrushing with fluoridated toothpaste, sealants on primary molars), more frequent professional visits with applications of topical fluoride, and minimally invasive and restorative care (as necessary) for this vulnerable population.

References

1. American Academy of Pediatric Dentistry. Policy on early childhood caries: Unique challenges and treatment options. *Pediatr Dent* 2000;22(suppl):21.
2. American Academy of Pediatric Dentistry. Policy on early childhood caries: Unique challenges and treatment options. *The Reference Manual of Pediatric Dentistry*. Chicago, Ill.: American Academy of Pediatric Dentistry; 2021:85-6
3. Kotha A, Vemulapalli A, Mandapati SR, Aryal S. Prevalence, trends, and severity of early childhood caries in the United States: National health and nutritional examination survey data 2013 to 2018. *Pediatr Dent* 2022; 44(4):261-8.
4. Khan SY, Schroth RJ, Cruz de Jesus V, et al. A systematic review of caries risk in children <6 years of age. *Int J Paediatr Dent* 2024;34(4):410-31.
5. Lam PPY, Chua H, Ekamaram M, Lo ECM, You CKY. Does early childhood caries increase caries development among school children and adolescents? A systematic review and meta-analysis. *Int J Environ Res Public Health* 2022;19(20):7-12.
6. Schroth RJ, Rothney J, Sturym M, et al. A systematic review to inform the development of a Canadian caries risk assessment tool for use by primary healthcare providers. *Int J Paediatr Dent* 2021;31(6): 767-91.

OFFICIAL BUT UNFORMATTED

7. Musa AAR, Sethi S, Poirier BF, Oliver KJ, Jensen ED. Non-traumatic emergency department dental visits among patients 0-25 years of age: A systematic review and meta-analysis. *Int J Paediatr Dent* 2023; 33(5):457-67.
8. Agency for Healthcare Research and Quality. Total dental care expenditure, 2010, Medical Expenditure Panel Survey. Available at: "http://meps.ahrq.gov/mepsweb/data_files/publications/st415/stat415.pdf". Accessed August 20, 2024.
9. Owens PL, Manski RJ, Weiss AJ. Emergency department visits involving dental conditions, 2018. Healthcare cost and utilization project, statistical brief #280, 2021. Available at: "<https://hcup-us.ahrq.gov/reports/statbriefs/sb280-Dental-ED-Visits-2018.pdf>". Accessed September 9, 2024.
10. Ruff RR, Senthu S, Susser SR, Tsutsui A. Oral health, academic performance, and school absenteeism in children and adolescents. *J Am Dent Assoc* 2019;150(2):111-21.
11. Carvalho Silva C, Mendes R, Manso MDC, Gavinha S, Melo P. Prenatal or childhood serum levels of vitamin d and dental caries in paediatric patients: A systematic review. *Oral Health Prev Dent* 2020;18(4):653-67.
12. Easwaran HN, Annadurai A, Muthu MS, et al. Early childhood caries and iron deficiency anaemia: A systematic review and meta-analysis. *Caries Res* 2022;56(1):36-46.
13. Ji S, Zhao K, Ma L, Chen X, Zheng D, Lu Y. The association between vitamin d and early childhood caries: a systematic review and meta-analysis. *Oral Health Prev Dent* 2024;22:63-72.
14. Schroth RJ, Pierce A, Rodd C, et al. Improvement in serum vitamin D following dental rehabilitation to treat severe early childhood caries. *Pediatr Dent* 2022;44(4):278-83
15. Farsi DJ, Farsi NJ, El-Housseiny AA, Turkistani JM, Farsi NM. Impact of dental rehabilitation on oral health-related quality-of-life in healthy children and those with special health care needs. *J Contemp Dent Pract* 2018;19(4):367-74.
16. Grant CG, Daymont C, Rodd C. Oral health-related quality of life of Canadian preschoolers with severe caries after dental rehabilitation under general anesthesia. *Pediatr Dent* 2019;41(3):221-8.
17. Park JS, Anthonappa RP, Yawary R, King NM, Martens LC. Oral health-related quality of life changes in children following dental treatment under general anaesthesia: A meta-analysis. *Clin Oral Investig* 2018;22(8):2809-18.
18. Bruen BK, Steinmetz E, Bysshe T, Glassman P, Ku L. Potentially preventable dental care in operating rooms for children enrolled in Medicaid. *J Am Dent Assoc* 2016;147(9):702-8.
19. Schroth RJ, Quiñonez C, Shwart L, Wagar B. Treating early childhood caries under general anesthesia: A national review of Canadian data. *J Can Dent Assoc* 2016;82:g20.
20. Sinner B, Beck K, Engelhard K. General anesthetics and the developing brain: An overview. *Anesthesia* 2014;69(9):1009-22.
21. Lin YT, Lin YJ. Factors associated with the risk of caries development after comprehensive dental rehabilitation under general anesthesia. *J Dent Sci* 2016;11(2):164-9.
22. Tickle M, O'Neill C, Donaldson M, et al. A randomized controlled trial of caries prevention in dental practice. *J Dent Res* 2017;96(7):741-6.
23. Edelstein BL, Ng MW. Chronic disease management strategies of early childhood caries: Support from the medical and dental literature. *Pediatr Dent* 2015;37(7):281-7.
24. Featherstone JDB, Crystal YO, Alston P, et al. Evidence-based caries management for all ages – Practical guidelines. *Front Oral Health* 2021;2(657518):1-19. Available at: "<https://doi.org/10.3389/froh.2021.657518>". Accessed January 27, 2025.
25. 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; 2025:PENDING.

OFFICIAL BUT UNFORMATTED

26. Fontana M, Gonzalez-Cabezas C, Tenuta LMA. Evidence-based approaches and considerations for nonrestorative treatments within modern caries management: Integrating science into practice. *J Am Dent Assoc* 2024;155(12):1000-11.
27. Crystal YO, Marghalani AA, Ureles SD, et al. Use of silver diamine fluoride for dental caries management in children and adolescents, including those with special health care needs. *Pediatr Dent* 2017;39(5):E135-E145.
28. Crystal YO, Niederman R. Evidence-based dentistry update on silver diamine fluoride. *Dent Clin North Am* 2019;63(1):45-68.
29. Wright JT, Crall JJ, Fontana M, et al. Evidence-based clinical practice guideline for the use of pit-and-fissure sealants. American Academy of Pediatric Dentistry, American Dental Association. *Pediatr Dent* 2016;38(5):E120-E36.
30. American Academy of Pediatric Dentistry. Policy on interim therapeutic restorations (ITR). The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2025:PENDING.
31. Crystal YO, Janal M, Kim S, Nelson T. Teaching and utilization of SDF and Hall-style crowns in U.S. pediatric dental programs. *J Am Dent Assoc* 2020;151(10):755-63.
32. Kühnisch J, Ekstrand KR, Pretty I, et al. Best clinical practice guidance for management of early caries lesions in children and young adults: An EAPD policy document. *Eur Arch Paediatr Dent* 2016; 17(1):3-12.
33. Sheller B, Williams BJ, Lombardi SM. Diagnosis and treatment of dental caries-related emergencies in a children's hospital. *Pediatr Dent* 1997;19(8):470-5.
34. American Academy of Pediatric Dentistry. Policy on the dental home. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2025:PENDING.
35. American Academy of Pediatric Dentistry. Behavior guidance for the pediatric dental patient. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; PENDING.
36. Innes NP, Ricketts D, Chong LY, Keightley AJ, Lamont T, Santamaria RM. Preformed crowns for decayed primary molar teeth. *Cochrane Database Syst Rev* 2015;2015(12):CD005512.