

Clinical Guideline on Infant Oral Health Care

Originating Committee

Clinical Affairs Committee–Infant Oral Health Subcommittee

Review Council

Council on Clinical Affairs

Adopted

1986

Revised

1989, 1994, 2001, 2004

Purpose

The American Academy of Pediatric Dentistry (AAPD) recognizes that infant oral health is the foundation upon which preventive education and dental care must be built to enhance the opportunity for a lifetime free from preventable oral disease. Recognizing that allied health professionals and community organizations must be involved as partners to achieve this goal, the AAPD proposes recommendations for caries-risk assessment, anticipatory guidance, preventive strategies, and appropriate therapeutic interventions to be followed by the stakeholders in pediatric oral health.

Methods

This guideline is based on a review of the current dental, medical, and public health literature related to infant oral health care. A MEDLINE search was conducted using the terms “infant oral health”, “infant oral health care”, and “early childhood caries”.

Background

Introduction

The Centers for Disease Control and Prevention reports that caries is perhaps the most prevalent of infectious diseases in our nation’s children.¹ More than 40% of children have caries by the time they reach kindergarten.² Early childhood caries (ECC) can be a particularly virulent form of caries, beginning soon after tooth eruption, developing on smooth surfaces, progressing rapidly, and having a lasting detrimental impact on the dentition.³⁻⁸ This disease affects the general population but is 32 times more likely to occur in infants who are of low socioeconomic status, whose mothers have a low education level, and who consume sugary foods.⁹ Caries in primary teeth can affect children’s growth, result in significant pain and potentially life-threatening infection, and diminish overall quality of life.¹⁰⁻¹⁷ Since physicians, nurses, and other health care professionals are far more likely to see new mothers and infants than are dentists, it is essential that they be aware of the infectious pathophysiology and associated risk factors of ECC and make appropriate decisions regarding timely and effective intervention.^{3,18-20} The American Academy of Pediatrics (AAP) issued a policy

statement entitled “Oral Health Risk Assessment Timing and Establishment of the Dental Home”.¹⁸ This statement acknowledges the AAP’s new emphasis on the infectious nature of ECC and its desire to become more involved in the management of infant oral health.

Caries

Caries results from an overgrowth of specific organisms that are part of normally occurring human oral flora.² *Streptococcus mutans* and *Lactobacillus* species are considered to be principal indicator organisms of those bacteria responsible for caries. Human oral flora is site specific, and an infant is not colonized with normal oral flora until the eruption of the primary dentition at approximately 6 to 30 months of age.^{22,23} The vertical colonization of *S mutans* from mother to infant is well documented.^{24,25} In fact, genotypes of *S mutans* in infants appear identical to those present in mothers in approximately 71% of mother-infant pairs.²⁶ Furthermore, evidence suggests that specific organisms exhibit discrete windows of inoculation; the acquisition of *S mutans* occurs at an average age of approximately 2 years.²⁷

The significance of this information becomes focused when considering 3 points. First, high caries rates occur in families²⁸ and usually are passed from generation to generation. The children of mothers with high caries rates are at a higher risk of caries.²⁹ Second, approximately 70% of carious lesions are found in 20% of our nation’s children.³⁰ Third, modification of the mother’s oral flora at the time of the infant’s colonization can impact significantly the child’s caries rate.³¹⁻³³ Therefore, an oral health risk assessment before 1 year of age affords the opportunity to identify high-risk patients and provide timely referral and intervention for the child, thus allowing an invaluable opportunity to decrease colonization of the infant.

Preventive strategies

Caries is a disease that is, by and large, preventable. Due to the causality and timing of inoculation, steps to prevent caries ideally begin prenatally and continue with the mother and young child, beginning when the infant is approximately 6 months of age with the eruption of the first tooth.^{34,35} The primary thrust of early risk assessment is to screen for parent-infant

groups who are at risk of ECC and who would benefit from early aggressive intervention. The ultimate goal of early assessment is the timely delivery of educational information to populations at high risk for developing caries to prevent the need for later surgical intervention.

Oral health risk assessment

An oral health risk assessment by a qualified health professional for infants by 6 months of age would allow institution of appropriate preventive strategies as the primary dentition begins to erupt. The Caries-risk Assessment Tool³⁶ (CAT) can be used to determine the patient's relative risk for caries. Even the most judiciously designed and implemented caries-risk assessment tool, however, can fail to identify all infants at risk for developing ECC. In these cases, the mother may not be the colonization source of the child's oral flora, the dietary intake of simple carbohydrates may be extremely high, or other uncontrollable factors may combine to place the patient at risk for developing caries. Therefore, screening for risk of caries in the parent and patient coupled with oral health counseling, although a feasible and equitable approach to ECC control, is not a substitute for the early establishment of the dental home.³⁷ Whenever possible, the ideal approach to infant oral health care, including ECC prevention and management, is the early establishment of a dental home.

Anticipatory guidance³⁸ and parent/patient education

ECC is an infectious and preventable disease that is transmitted vertically from mothers or other intimate caregivers to infants.²⁴⁻²⁶ Modification of the mother's oral hygiene, diet, and the use of topical fluoride can have a significant impact on the child's caries rate.³¹⁻³³

General anticipatory guidance for the mother (or other intimate caregiver), before and during the colonization process, includes the following:

- **Oral hygiene:** Tooth-brushing and flossing on a daily basis are important for the parent to dislodge and reduce bacterial plaque levels.
- **Diet:** Important components of dietary education for the parents include the caries potential of their diet, cariogenicity of certain foods and beverages, role of frequency of consumption of these substances, and demineralization and remineralization process.
- **Fluoride:** Using a fluoridated toothpaste approved by the American Dental Association and rinsing every night with an alcohol-free, over-the-counter mouth rinse containing 0.05% sodium fluoride have been suggested to help reduce plaque levels and help enamel remineralization.
- **Caries removal:** Routine professional dental care for the parents can help keep their oral health in optimal condition. Removal of active caries and subsequent restoration are important to minimize infecting the infant with the parents' oral flora.

- **Delay of colonization:** Education of the parents, especially mothers, on sharing utensils (eg, shared spoons, cleaning a dropped pacifier with their saliva), foods, and cups can help prevent early colonization of oral flora in their infants.
- **Xylitol chewing gums:** Recent evidence suggests that the use of Xylitol chewing gum (4 pieces per day by the mother) had a significant impact on decreasing the child's caries rate.³⁴

General anticipatory guidance for the young patient (0 to 3 years of age) includes the following:

- **Oral hygiene:** Cleansing the infant's teeth as soon as they erupt with either a washcloth or soft brush will help reduce bacterial colonization. The use of dental floss when adjacent teeth are touching is important to help reduce interproximal caries.
- **Diet:** After the eruption of the first primary teeth, ECC prevention is possible by restricting bottle/breast-feeding to normal meal times and not allowing the infant to feed ad libitum or while sleeping. The parents' understanding of the cariogenicity of certain foods can help the infant and child eliminate or reduce their caries levels.
- **Fluoride:** Optimal exposure to fluoride is important to all dentate infants and children. Caution is indicated in the use of all fluoride-containing products. Decisions concerning the administration of additional fluoride are based on the unique needs of each patient.³⁹⁻⁴¹

Recommendations

1. All primary health care professionals who serve mothers and infants should provide parent/caregiver education on the etiology and prevention of ECC. Oral health counseling during pregnancy is especially important for the mother.
2. The infectious and transmissible nature of bacteria that cause ECC and methods of oral health risk assessment (CAT), anticipatory guidance, and early intervention should be included in the curriculum of all medical, nursing, and allied health professional programs.
3. Every infant should receive an oral health risk assessment from his/her primary health care provider or qualified health care professional by 6 months of age. This initial visit should consist of the following:
 - assessing the patient's risk of developing oral disease using CAT;
 - providing education on infant oral health; and
 - evaluating and optimizing fluoride exposure.
4. Parents or caregivers should establish a dental home for infants by 12 months of age. The following should be accomplished at that visit:
 - recording thorough medical (infant) and dental (mother or primary caregiver and infant) histories;
 - completing a thorough oral examination;
 - assessing the infant's risk of developing dental disease using CAT and determining an appropriate

prevention plan and interval for periodic reevaluation based upon that assessment;

- providing anticipatory guidance regarding dental and oral development, fluoride status, non-nutritive sucking habits, teething, injury prevention, oral hygiene instruction, and the effects of diet on the dentition;
 - planning for comprehensive care in accordance with accepted guidelines and periodicity schedules for pediatric oral health⁴²; and
 - referring patients to the appropriate health professional if intervention is necessary.
5. Health care professionals and all stakeholders in children's health should support the identification of a dental home for all infants at 12 months of age.

References

1. DHHS. *Oral health in America: A report of the Surgeon General*. Rockville, Md: US DHHS, National Institute of Dental and Craniofacial Research, National Institutes of Health; 2000.
2. Pierce KM, Rozier RG, Vann WF Jr. Accuracy of pediatric primary care providers' screening and referral for early childhood caries. *Pediatrics*. 2002;109(5):E82-2.
3. Nowak AJ, Warren JJ. Infant oral health and oral habits. *Pediatr Clin North Am*. 2000;47:1043-1066.
4. Gray MM, Marchment MD, Anderson RJ. The relationship between caries experience in deciduous molars at 5 years and in first permanent molars of the same child at 7 years. *Comm Dent Health*. 1991;8:3-7.
5. Grindefjord M, Dahllöf G, Modeer T. Caries development in children from 2.5 to 3.5 years of age: A longitudinal study. *Caries Res*. 1995;29:449-454.
6. O'Sullivan DM, Tinanoff N. The association of early dental caries patterns with caries incidence in preschool children. *J Public Health Dent*. 1996;56:81-83.
7. Johnsen DC, Gerstenmaier JH, DiSantis TA, Berkowitz RJ. Susceptibility of nursing-carries children to future approximal molar decay. *Pediatr Dent*. 1997;19:37-41.
8. Heller KE, Eklund SA, Pittman J, Ismail AL. Associations between dental treatment in the primary and permanent dentitions using insurance claims data. *Pediatr Dent*. 2000;22:469-474.
9. Drury TF, Horowitz AM, Ismail AL, et al. Diagnosing and reporting early childhood caries for research purposes. *J Public Health Dent*. 1999;59:198-200.
10. Acs G, Lodolini G, Kaminsky S, Cisneros GJ. Effect of nursing caries on body weight in a pediatric population. *Pediatr Dent*. 1992;14:302-305.
11. Ayhan H, Suskan E, Yildirim S. The effect of nursing or rampant caries on height, body weight, and head circumference. *J Clin Pediatr Dent*. 1996;20:209-212.
12. Fleming P, Gregg TA, Saunders ID. Analysis of an emergency dental service provided at a children's hospital. *Int J Paediatr Dent*. 1991;1:25-30.
13. Schwartz S. A one-year statistical analysis of dental emergencies in a pediatric hospital. *J Can Dent Assoc*. 1994;60:959-969.
14. Sheller B, Williams BJ, Lombardi SM. Diagnosis and treatment of dental caries-related emergencies in a children's hospital. *Pediatr Dent*. 1997;19:470-475.
15. Low W, Tan S, Schwartz S. The effect of severe caries on the quality of life in young children. *Pediatr Dent*. 1999;21:325-326.
16. Acs G, Pretzer S, Foley M, Ng MW. Perceived outcomes and parental satisfaction following dental rehabilitation under general anesthesia. *Pediatr Dent*. 2002;23:419-423.
17. Thomas C, Primosch R. Changes in incremental weight and well-being of children with rampant caries following complete dental rehabilitation. *Pediatr Dent*. 2002;24:109-113.
18. American Academy of Pediatrics. Policy on oral health risk assessment timing and establishment of the dental home. *Pediatrics*. 2003;111:5.
19. Lewis CW, Grossman DC, Domoto PK, et al. The role of the pediatrician in the oral health of children: A national survey. *Pediatrics*. 2000;106:6.
20. Harrison R. Oral health promotion for high-risk children: Case studies from British Columbia. *J Can Dent Assoc*. 2003;69:5:292-296.
21. Loesch W. Clinical and microbiological aspects of chemotherapeutic agents used according to the specific plaque hypothesis. *J Dent Res*. 1979;58:2404-2412.
22. Berkowitz RJ, Jordan HV, White G. The early establishment of *Streptococcus mutans* in the mouths of infants. *Arch Oral Biol*. 1975;20:171-174.
23. Stiles HM, Meyers R, Brunnelle JA, Wittig AB. Occurrence of *Streptococcus mutans* and *Streptococcus sanguis* in the oral cavity and feces of young children. In: Stiles M, Loesch WJ, O'Brien T, eds. *Microbial Aspects of Dental Caries*. Washington, DC: Information Retrieval;1976:187.
24. Davey AL, Rogers AH. Multiple types of the bacterium *Streptococcus mutans* in the human mouth and their intra-family transmission. *Arch Oral Biol*. 1984;29:453-460.
25. Berkowitz R, Jones P. Mouth-to-mouth transmission of the bacterium *Streptococcus mutans* between mother and child. *Arch Oral Biol*. 1985;30:377-379.
26. Li Y, Caufield PW. The fidelity of initial acquisition of *mutans streptococci* by infants from their mothers. *J Dent Res*. 1995;74:681-685.
27. Caufield PW, Cutter GR, Dasanayake AP. Initial acquisition of *Mutans streptococci* by infants: Evidence for a discrete window of infectivity. *J Dent Res*. 1993;72:37-45.
28. Klein H, Palmer CE. Studies on dental caries V. Familial resemblance in caries experience of siblings. *Public Health Rep*. 1938;53:1353.
29. Klein H. The family and dental disease IV. Dental disease (DMF) experience in parents and offspring. *J Am Dent Assoc*. 1946;33:735.

30. Kaste LM, Selwitz RH, Oldakowski RJ, Brunelle JA, Winn DM, Brown U. Coronal caries in the primary and permanent dentition of children and adolescents 1-17 years of age: United States, 1988-1991. *J Dent Res.* 1996;75:631-641.
31. Kohler B, Andreen I, Jonsson B. The effects of caries-preventive measures in mothers on dental caries and the oral presence of the bacteria *Streptococcus mutans* and *Lactobacilli* in their children. *Arch Oral Biol.* 1984;29:879-883.
32. Brambilla E, Felloni A, Gagliani M, Malerba A, García-Godoy F, Strohmer L. Caries prevention during pregnancy: Results of a 30-month study. *J Am Dent Assoc.* 1998;129:871-877.
33. Isokangas P, Soderling E, Pienihakkinen K, Alanen P. Occurrence of dental decay in children after maternal consumption of xylitol chewing gum: A follow-up from 0 to 5 years of age. *J Dent Res.* 2000;79:1885-1889.
34. Gomez SS, Weber AA. Effectiveness of a caries preventive program in pregnant women and new mothers on their offspring. *Int J Paediatr Dent.* 2001;11:117-122.
35. Gomez SS, Weber AA, Emilson C. A prospective study of a caries prevention program in pregnant women and their children five and six years of age. *J Dent Child.* 2001;68:191-195.
36. American Academy of Pediatric Dentistry. Policy on the use of a caries-risk assessment tool (CAT) for infants, children, and adolescents. *Pediatr Dent.* 2004;26(7):25-27.
37. American Academy of Pediatric Dentistry. Policy on the dental home. *Pediatr Dent.* 2004;26(7):18-19.
38. Nowak AJ, Casamassimo PS. Using anticipatory guidance to provide early dental intervention. *J Am Dent Assoc.* 1995;126:1156-1163.
39. Hale K, Heller K. Fluorides: Getting the benefits, avoiding the risks. *Contemp Pediatr.* 2000;2:121.
40. American Academy of Pediatric Dentistry. Policy statement on the use of fluoride. *Pediatr Dent.* 2004;26(7):28-29.
41. American Dental Association. Caries diagnosis and risk assessment: A review of preventive strategies and management. *J Am Dent Assoc.* 1995;126(suppl):1S-24S.
42. American Academy of Pediatric Dentistry. Clinical guideline on periodicity of examination, preventive dental services, anticipatory guidance, and oral treatment for children. *Pediatr Dent.* 2004;26(7):81-83.