Policy on Early Childhood Caries (ECC): Classifications, Consequences, and Preventive Strategies

Originating Group

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Purpose

The American Academy of Pediatric Dentistry (AAPD) recognizes early childhood caries (ECC; formerly termed baby bottle tooth decay) as a significant public health problem.[1] The AAPD encourages oral health care providers and caregivers to implement simple preventive practices that can decrease a child's risks of developing this devastating disease.

Methods

This policy is based on a review of the current pediatric dental, medical, and public health literature related to ECC, including the proceedings of the 1997 Conference on Early Childhood Caries, Bethesda, Md.[1] A MEDLINE search was conducted using the terms "early childhood caries", "nursing caries", and "baby bottle caries". The literature includes studies that used sound scientific methodology, were reported in refereed journals, and are accepted by the dental profession as state of the art in caries causes and prevention. The literature on the consequences of ECC is based on both prospective and retrospective clinical studies that followed accepted clinical protocols.

Background

Caries is biofilm-mediated acid demineralization of enamel or dentin. The disease of ECC is defined as "the presence of 1 or more decayed (noncavitated or cavitated lesions), missing (due to caries), or filled tooth surfaces" in any primary tooth in a child 71 months of age or younger. [2,3] In children younger than 3 years of age, any sign of smooth-surface caries is indicative of severe early childhood caries (S-ECC). From ages 3 through 5, 1 or more cavitated, missing (due to caries), or filled smooth surfaces in primary maxillary anterior teeth or a decayed, missing, or filled score of ≥4 (age 3), ≥5 (age 4), or ≥6 (age 5) surfaces constitutes S-ECC.[4]

Carious lesions are produced from the interaction of 3 variables: cariogenic microorganisms (mutans streptococci), fermentable carbohydrates (sucrose), and teeth (nonshedding tooth surfaces).[5] Given the proper time, these variables induce incipient carious lesions that continue to progress.[5] Frequent consumption of liquids containing fermentable carbohydrates (eg, juice, milk, formula, soda) increases the risk of caries due to prolonged contact between sugars in the consumed liquid and cariogenic bacteria on the susceptible teeth.[6] Frequent bottle feeding at night, breast-feeding on demand, and extended and repetitive use of a no-spill training cup are associated with, but not consistently implicated in, ECC.[7]

The major reservoir from which infants acquire mutans streptococci (MS) is their mother's saliva.[5,8] The success of the transmission and resultant colonization of maternal MS depends largely on the magnitude of the innoculum.[9] Infants and toddlers whose mothers have high levels of MS, a result of untreated caries, are at greater risk of acquiring the organism than children whose mothers have low levels. Consequently, it has been shown that suppressing maternal reservoirs of MS via dental rehabilitation and antimicrobial treatments can prevent or delay infant inoculation.[10,11]

Consequences of ECC include a higher risk of new carious lesions in both the primary and permanent dentitons,[12-17] hospitalizations and emergency room visits,[18-21] increased treatment costs and time,[22,23] insufficient physical development (especially in height/weight),[24,25] loss of school days and increased days with restricted activity,[26-28] diminished ability to learn,[26,29-32] and diminished oral health-related quality of life.[33-36]

Policy statement

The AAPD recognizes a distinctive pattern of caries, known as ECC, associated with frequent or prolonged consumption of liquids containing fermentable carbohydrates. To decrease the risks of this potentially devastating pattern of caries, the AAPD discourages inappropriate feeding practices of infants and toddlers and encourages appropriate preventive measures.

These include:

1. Infants should not be put to sleep with a bottle containing fermentable carbohydrates. Ad libitum nocturnal breast-feeding should be avoided after the first primary tooth begins to erupt. If the infant falls asleep while feeding, the teeth should be cleaned before placing the child in bed.
2. Parents should be encouraged to have infants drink from a cup as they approach their first birthday. Infants should be weaned from the bottle at 12 to 14 months of age.
3. Repetitive consumption of any liquid containing ferment able carbohydrates from a bottle or no-spill training cup should be avoided.
4. Oral hygiene measures should be implemented by the time of eruption of the first primary tooth.
5. A dental home should be established within 6 months of eruption of the first tooth and no later than 12 months of age to conduct a caries risk assessment, educate parents, and provide anticipatory guidance for prevention of dental disease.
6. An attempt should be made to assess and decrease the mother's/primary caregiver's MS levels to decrease the transmission of cariogenic bacteria and lessen the infant's or child's risk of developing ECC.

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