

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

## Originating Group

A collaborative effort of the American Academy of Pedodontics and the American Academy of Pediatrics

## Review Council

Council on Clinical Affairs

## Adopted

1978

## Revised

1993, 1996, 2001, 2003, 2007, 2008, 2011

## Purpose

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

## Methods

This document is a revision of the previous policy, last revised in 2008. The update used electronic and hand searches of English written articles in the dental and medical literature within the last 10 years, using the search terms “infant oral health”, “infant oral health care”, and “early childhood caries”. When data did not appear sufficient or were inconclusive, recommendations were based upon expert and/or consensus opinion by experienced researchers and clinicians.

## Background

In 1978, the American Academy of Pedodontics released “Nursing Bottle Caries”, a joint statement with the American Academy of Pediatrics, to address a severe form of caries associated with bottle usage.<sup>2</sup> Initial policy recommendations were limited to feeding habits, concluding that nursing bottle caries could be avoided if bottle feedings were discontinued soon after the first birthday. An early policy revision added ad libitum breastfeeding as a causative factor. Over the next two decades, however, recognizing that this distinctive clinical presentation was not consistently associated with poor feeding practices and that caries was an infectious disease, AAPD adopted the term ECC to reflect better its multifactorial etiology.

Dental caries is a common chronic infectious transmissible disease resulting from tooth-adherent specific bacteria, primarily mutans streptococci (MS), that metabolize sugars to produce acid which, over time, demineralizes tooth structure.<sup>3</sup> The disease of ECC is the presence of one or more decayed (noncavitated or cavitated lesions), missing (due to caries), or

filled tooth surfaces in any primary tooth in a child under the age of six. In children younger than three years of age, any sign of smooth-surface caries is indicative of severe early childhood caries (S-ECC). From ages three through five, one or more cavitated, missing (due to caries), or filled smooth surfaces in primary maxillary anterior teeth or a decayed, missing, or filled score of greater than or equal to four (age 3), greater than or equal to five (age 4), or greater than or equal to six (age 5) surfaces also constitutes S-ECC.<sup>4</sup>

Epidemiologic data from national surveys clearly indicate that ECC is highly prevalent and increasing in poor and near poor US preschool children and is largely untreated in children under age three.<sup>5</sup> Those children with caries experience have been shown to have high numbers of teeth affected. Consequences of ECC include a higher risk of new carious lesions in both the primary and permanent dentitions,<sup>6,7</sup> hospitalizations and emergency room visits,<sup>8,9</sup> increased treatment costs,<sup>10</sup> risk for delayed physical growth and development,<sup>11,12</sup> loss of school days and increased days with restricted activity,<sup>13,14</sup> diminished ability to learn,<sup>15</sup> and diminished oral health-related quality of life.<sup>16</sup>

Dental caries is a transmissible infectious disease and understanding the acquisition of cariogenic microbes improves preventive strategies. Microbial risk markers for ECC include MS and Lactobacillus species.<sup>17</sup> MS maybe transmitted vertically from caregiver to child through salivary contact, affected by the frequency and amount of exposure. Infants whose mothers have high levels of MS, a result of untreated caries, are at greater risk of acquiring the organism earlier than children whose mothers have low levels.<sup>18</sup> Horizontal transmission (eg, between other members of a family or children in daycare) also occurs.<sup>18</sup> Eliminating saliva-sharing activities (eg, sharing utensils, orally cleansing a pacifier) may help decrease an infant’s or toddler’s acquisition of cariogenic microbes.<sup>18</sup>

Newly-erupted teeth, because of immature enamel, and teeth with enamel hypoplasia may be at higher risk of developing caries. Current best practice includes twice-daily brushing

with fluoridated toothpaste for children at caries risk residing in optimally fluoridated and fluoride-deficient communities. When determining the risk-benefit of fluoride, the key issue is mild fluorosis versus preventing devastating dental disease. A ‘smear’ of fluoridated toothpaste (approximately 0.1 mg fluoride; see Figure 1) should be considered for children less than two years of age at moderate or high caries risk. A ‘pea-size’ amount of toothpaste (approximately 0.2 mg fluoride) is appropriate for children aged two through five years.<sup>19,20</sup> Parents should dispense the toothpaste onto a soft, age-appropriate sized toothbrush and perform or assist with toothbrushing of preschool-aged children. To maximize the beneficial effect of fluoride in the toothpaste, rinsing after brushing should be kept to a minimum or eliminated altogether.<sup>21</sup>

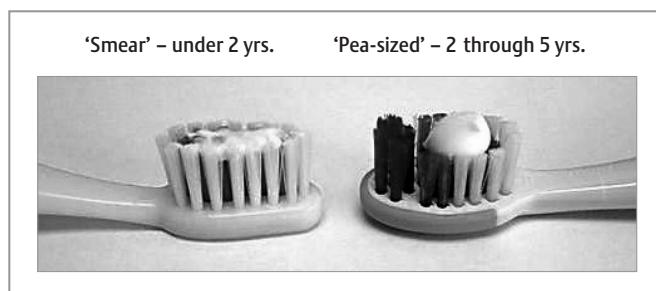


Figure 1. Comparison of a ‘smear’ (left) with a ‘pea-sized’ (right) amount of toothpaste.

An associated risk factor to microbial etiology is high frequency consumption of sugars. Caries-conducive dietary practices appear to be established by 12 months of age and are maintained throughout early childhood.<sup>22,23</sup> Frequent night time bottle feeding with milk and ad libitum breast-feeding are associated with, but not consistently implicated in, ECC.<sup>24</sup> Night time bottle feeding with juice, repeated use of a sippy or no-spill cup, and frequent in between meal consumption of sugar-containing snacks or drinks (eg, juice, formula, soda) increase the risk of caries.<sup>25</sup> While ECC may not arise from breast milk alone, breast feeding in combination with other carbohydrates has been found in vitro to be highly cariogenic.<sup>26</sup> Frequent consumption of between-meal snacks and beverages containing sugars increases the risk of caries due to prolonged contact between sugars in the consumed food or liquid and cariogenic bacteria on the susceptible teeth.<sup>27</sup> The American Academy of Pediatrics has recommended children one through six years of age consume no more than four to six ounces of fruit juice per day, from a cup (ie, not a bottle or covered cup) and as part of a meal or snack.<sup>28</sup>

Evidence increasingly suggests that preventive interventions within the first year of life are critical.<sup>29</sup> This may be best implemented with the help of medical providers who, in many cases, are being trained to provide oral screenings, apply preventive measures, counsel caregivers, and refer infants and toddlers for dental care.<sup>30</sup>

## Policy statement

The AAPD recognizes caries as a common chronic disease resulting from an imbalance of multiple risk factors and protective factors over time. To decrease the risk of developing ECC, the AAPD encourages professional and at-home preventive measures that include:

1. Reducing the parent’s/sibling’s MS levels to decrease transmission of cariogenic bacteria.
2. Minimizing saliva-sharing activities (eg, sharing utensils) to decrease the transmission of cariogenic bacteria.
3. Implementing oral hygiene measures no later than the time of eruption of the first primary tooth. Toothbrushing should be performed for children by a parent twice daily, using a soft toothbrush of age-appropriate size. In children considered at moderate or high caries risk under the age of two, a ‘smear’ of fluoridated toothpaste should be used. In all children ages two to five, a ‘pea-size’ amount should be used.
4. Establishing a dental home within six months of eruption of the first tooth and no later than 12 months of age to conduct a caries risk assessment and provide parental education including anticipatory guidance for prevention of oral diseases.
5. Avoiding high frequency consumption of liquids and/or solid foods containing sugar. In particular:
  - sugar-containing beverages (eg, juices, soft drinks, sweetened tea, milk with sugar added) in a baby bottle or no-spill training cup should be avoided.
  - infants should not be put to sleep with a bottle filled with milk or liquids containing sugars.
  - ad libitum breast-feeding should be avoided after the first primary tooth begins to erupt and other dietary carbohydrates are introduced.
  - parents should be encouraged to have infants drink from a cup as they approach their first birthday. Infants should be weaned from the bottle between 12 to 18 months of age.<sup>31</sup>
6. Working with medical providers to ensure all infants and toddlers have access to dental screenings, counseling, and preventive procedures.

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