

# Promoting Awareness, Preventing Pain: Facts on Early Childhood Caries (ECC)

**E**arly childhood caries (ECC) is an infectious disease that can start as soon as an infant's teeth erupt. ECC can progress rapidly and may have a lasting detrimental impact on a child's health and well-being. ECC is a serious public health problem.

In a child age 71 months or younger, the presence of one or more decayed teeth, missing teeth (resulting from caries), or filled tooth surfaces in any primary tooth is known as ECC.<sup>1</sup>

Caries is a multifactorial disease process initiated by bacteria (primarily *Streptococcus mutans*). When food is consumed, bacteria are able to break down carbohydrates, producing acids that cause mineral loss from teeth. This mineral loss results in cavities when the attack is prolonged and exceeds an individual's resistance and ability to heal. Resistance and healing ability are determined partly by physiology and partly by health behaviors.

Because poor feeding and eating practices alone do not cause caries, terms such as "baby bottle tooth decay," "bottle mouth," and "nursing decay" are misleading. ECC is a term that better reflects the many factors involved in the disease process.<sup>1</sup>

ECC should be prevented to the extent possible and should be treated if it occurs.<sup>2</sup>



*Early childhood caries.*

## Who Is at Risk for ECC?



Among children in the United States, the number of teeth with treated or untreated caries has declined substantially since the 1970s.<sup>2</sup> However, ECC remains a significant problem for some children.

Among children from families with incomes at or below the federal poverty level, the amount of caries in the primary teeth remained unchanged from the early 1970s to the early 1990s.<sup>2</sup>

For children ages 2 to 5, 75 percent of caries is found in 8 percent of the population.<sup>3</sup>

Children ages 2 to 5 who have not had a dental visit within the past 12 months are more likely to experience caries in primary teeth than children who have.<sup>4</sup>

Mexican-American children ages 2 to 5 are more likely than their non-Hispanic black and non-Hispanic white peers to experience caries in primary teeth.<sup>4</sup>

For children ages 2 to 5 from families with incomes above the federal poverty level, the likelihood of experiencing caries in primary teeth is significantly greater among those who do not eat breakfast daily or who eat fewer than five servings of fruit and vegetables per day than among those who do.<sup>4</sup>

## What Are the Costs of ECC?

Children diagnosed with ECC may be highly susceptible to future caries development.<sup>5</sup>

Manifestations of ECC may go beyond pain and infection. ECC has the potential to affect speech and communication, nutrition, productivity, and quality of life, even into adulthood.

ECC has significant financial consequences. Many children with ECC require restorative treatment in an operating room under general anesthesia. State Medicaid expenditures for restorative dental care delivered under general anesthesia range from \$1,500 to \$2,000 per child per year.<sup>6, 7</sup>

## How Can ECC Risk Be Reduced?



The knee-to-knee position, being used by an oral health professional and caregiver to perform an oral health screening.

## What Can Health Professionals Do?

The infectious nature of ECC, its early onset, and the potential of early interventions all point toward an emphasis on preventive oral health care.

Fluoride is safe and effective for preventing caries in children. Community water fluoridation is a major factor responsible for the decline in caries during the second half of the 20th century.<sup>8</sup> Fluoride toothpastes, varnishes, mouthrinses, gels, and dietary supplements can also help prevent caries.<sup>9</sup>

Preventing ECC requires good dietary and oral hygiene practices and access to preventive and restorative dental care.<sup>10</sup>

Programs directed toward families with young children, such as the Special Supplemental Nutrition Program for Women, Infants and Children (WIC), can contribute to the prevention of ECC.<sup>11</sup> Other programs such as Head Start can also help prevent ECC.

Nutrition education and counseling for the purpose of preventing ECC aims to teach parents the importance of reducing their infant's or child's high-frequency exposures to foods containing sugar.<sup>10</sup>

The Early and Periodic Screening, Diagnosis and Treatment (EPSDT) component of the Medicaid program could be a powerful tool for identifying and treating ECC early. However, *Healthy People 2010* baseline data indicate that only 20 percent of children eligible for dental services under Medicaid/EPSDT received a single preventive dental service.<sup>12</sup>

As part of any routine health supervision visit, primary care health professionals should perform an oral health screening that includes the lips, tongue, teeth, gums, interior surface of the cheeks, and roof of the mouth.

Health professionals can help ensure that infants and young children receive the care they need by referring infants to a dentist for an oral examination within 6 months of the eruption of the first primary tooth, and no later than age 12 months, and by establishing the child's dental home.<sup>1</sup>

Health professionals can provide parents with anticipatory guidance on oral development, caries transmission, gum/tooth cleaning, feeding and eating practices, and fluoride. Since caries is an infectious disease that may be transmitted from the parent, especially the mother, to an infant or child,<sup>13</sup> anticipatory guidance on oral health should also be provided to pregnant women, new mothers, and other caregivers.

### References

1. American Academy of Pediatric Dentistry, American Board of Pediatric Dentistry, College of Diplomates of the American Board of Pediatric Dentistry. 2003. Policy on early childhood caries (ECC): Unique challenges and treatment options. *Pediatric Dentistry* 24(7):27–28.
2. Brown LJ, Wall TP, Lazar V. 2000. Trends in total caries experience: Permanent and primary teeth. *Journal of the American Dental Association* 131(2): 223–231.
3. Macek MD, Heller KE, Selwitz RH, Manz MC. 2004. Is 75 percent of dental caries really found in 25 percent of the population? *Journal of Public Health Dentistry* 64(1):20–25.
4. Dye BA, Shenkin JD, Ogden CL, Marshall TA, Levy SM, Kanellis MJ. 2004. The relationship between healthful eating practices and dental caries in children ages 2–5 years in the United States, 1988–1994. *Journal of the American Dental Association* 135(1):55–66.
5. Almeida AG, Roseman MM, Sheff M, Huntington N, Hughes CV. 2004. Future caries susceptibility in children with early childhood caries following treatment under general anesthesia. *Pediatric Dentistry* 22(4):302–306.
6. Griffin SO, Gooch, BF, Beltran E, Sutherland JN, Barsley R. 2000. Dental services, costs, and factors associated with hospitalization for Medicaid-eligible children, Louisiana 1996–97. *Journal of Public Health Dentistry* 60(1):21–27.
7. Kanellis MJ, Damiano PC, Momany ET. 2000. Medicaid costs associated with the hospitalization of young children for restorative dental treatment under general anesthesia. *Journal of Public Health Dentistry* 60(1):28–32.
8. Centers for Disease Control and Prevention. 1999. Achievements in public health, 1990–1999: Fluoridation of drinking water to prevent dental caries. *Morbidity and Mortality Weekly Report* (48(41):933–940.
9. U.S. Preventive Services Task Force. 2004. *Prevention of dental caries in preschool children: Recommendations and rationale*. Rockville, MD: Agency for Healthcare Research and Quality.
10. Tinanoff N, Palmer CA. 2000. Dietary determinants of dental caries and dietary recommendations for preschool children. *Journal of Public Health Dentistry* 60(3):197–206.
11. Nurko C, Skur P, Brown JP. 2003. Caries prevalence of children in an infant oral health educational program at a WIC clinic. *Journal of Dentistry for Children* 70(3):231–234.
12. U.S. Department of Health and Human Services. 2000. *Healthy People 2010: Volume II* (2nd ed.). Washington, DC: U.S. Department of Health and Human Services.
13. Li Y, Dasanayake AP, Caufield PW, Elliott RR, Butts JT, 3rd. 2003. Characterization of maternal mutans streptococci transmission in an African American population. *Dental Clinics of North America* 47(1):87–101.

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