Infant Oral Health

An Emerging Dental Public Health Measure

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KEYWORDS

• Infant oral health • Well-child care • Pediatric dentistry • Dental public health • Prevention

KEY POINTS

- A child's first oral health visit should occur by 1 year of age to maximize preventive potential of fluorides, health literacy, and dietary modification. Caries increases with age so early intervention can reduce caries incidence, as evidenced by several studies.
- Interprofessional care optimizes the likelihood that a child will receive preventive intervention and also referral to a dental home. Oral health when integrated into primary medical care can result in improved outcomes for children. A simple message of fluoride adequacy, dietary control of bottle use and sweet intake, oral hygiene, and regular dental visits crosses professional barriers.
- Primary preventive oral care is preferable to treatment if at all possible. Recent concerns about the risks of general anesthesia and sedation and the continuing problem of pain from early childhood caries make prevention of caries preferable to a larger provider workforce.

INTRODUCTION

Infant oral health (IOH) is a well-child practice advocated for many years, but remains slow to gain universal acceptance among medical and dental professionals.[1] Simply defined, IOH is a child's first visit to a dentist between 6 and 12 months of age for examination and a dental caries risk assessment. Parents also receive preventive instruction, establish a dentist-family relationship (the dental home), and in most cases, have the health professional apply fluoride varnish to the child's primary teeth. IOH is advocated by the American Academy of Pediatric Dentistry (AAPD), the American Dental Association, and the American Academy of Pediatrics, among major

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health organizations.[1–3] IOH may be the purview of the primary care medical provider (PCP) when referral to a dentist is not possible. When viewed from a public health perspective, IOH serves a purpose of primary prevention parallel to the generally accepted practice of well-child visits by a PCP for developmental screening, immunizations, and anticipatory guidance. IOH is intended to prevent the initiation of dental caries, establish oral health literacy and good oral health behaviors in the family, and create the dental home relationship with a dentist for both recurring and urgent needs during the child's early life.[4]

The public health benefit of IOH in preventing early childhood caries (ECC) has yet to be realized but has immense potential to reduce the epidemic of ECC, a largely preventable childhood infectious disease with high human and societal costs. IOH will take a long time in public health practice to manifest benefits and must become part of the fabric of health supervision for that to happen. For several of the programs mentioned in this article, available data are limited to percentages of children receiving fluoride varnish, without accounting of caries reduction as an outcome. Ironically, the initial effect of large-scale IOH projects, rather than prevention, is to identify very young children already with disease and refer them to dental treatment. In a recent report by Bruen and colleagues[5] on the cost of general anesthesia, 2 states with a large penetration of IOH also had some of the highest costs for general anesthesia services to treat ECC. In the long term, with rigorous application of IOH in both medical and dental practice, a reduction in disease and its negative system and individual effects should soon be expected to be seen, although data are lacking because of its novelty and low penetration in practice to date.

SCIENCE AND RATIONALE FOR INFANT ORAL HEALTH

A major goal of IOH is to identify children at risk for ECC, so actions can be taken to prevent this disease. Initiation of ECC with establishment of infection can begin a lifelong propensity to new caries. The AAPD, among others, publishes a guideline on caries-risk assessment that considers biological factors, protective factors, and clinical findings to determine caries risk for each child.[6] Primary factors are the oral microbiome and the child's diet. ECC results when dietary sugars are metabolized by oral bacteria to acids that demineralize tooth structure. Bacterial communities associated with oral health are complex and, although they contain acid-producing species, can respond to sugar exposures and remain stable. However, when sugars are consumed more frequently, the increasingly acidic environment selects more acidogenic and aciduric species and the community shifts to become dominated by these species.[7] *Streptococcus mutans* (SM) is well established as a common acid producer in caries,[8] but other acid-producing species have also been associated with the disease.[9] SM is acquired by both vertical transmission (usually from the mother) and horizontal transmission and has been found in predentate infants.[10] Although oral bacteria and their acids are frequently listed among the causes of caries, a recent publication stressed that "sugars start the process" and criticized the common designation of caries as a multifactorial disease.[11] This review emphasized that without sugar, caries would not occur. IOH intervenes in this process in 2 ways: with dietary modification and institution of tooth cleaning, ideally for both child and primary caregiver. Going to bed with a bottle and frequently having sugary drinks or snacks between meals are risk factors for caries.[12] Maternal transmission and reinfection are possible and make maternal oral health important and a part of IOH in a public health setting.

During IOH visits, practitioners identify these factors and other behaviors that put the child at risk and develop individualized strategies that the family can use to prevent