Perinatal and Infant Oral Health Care

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Abbreviations

AAPD: American Academy of Pediatric Dentistry.
ECC: Early childhood caries.
MS: Mutans streptococci.

Abstract

This best practice presents recommendations regarding perinatal and infant oral health care, including caries risk assessment, anticipatory guidance, preventive strategies, and therapeutic interventions. Oral health care professionals play an invaluable role in optimizing the oral health of infants, particularly through the establishment of a dental home, caries prevention, and management of common oral conditions. Relevant oral findings including developmental cysts, pathognomonic viral and fungal lesions, cleft lip and palate, natal and neonatal teeth, ankyloglossia, and tooth eruption are discussed. The document emphasizes the importance of dental visits during pregnancy and highlights feeding practices and caries risk factors during infancy. Strategies for prevention of early childhood caries, including dietary modifications and use of fluoride, are encouraged. Additional elements of anticipatory guidance addressed are oral hygiene instruction, frequency of dental examinations, consequences of nonnutritive sucking habits, and safety practices to avoid orofacial trauma. Providers may use this document to help frame discussions with expectant and new parents regarding essential aspects of perinatal and infant oral health.

This document was developed through a collaborative effort of the American Academy of Pediatric Dentistry Councils on Clinical Affairs and Scientific Affairs to offer updated information and recommendations regarding perinatal and infant oral health care.

KEYWORDS: ANTICIPATORY GUIDANCE; CARIES RISK FACTORS; DENTAL HOME; INFANT ORAL HEALTH; ORAL HYGIENE INSTRUCTION; PERINATAL ORAL HEALTH

Purpose

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

Methods

Recommendations on perinatal and infant oral health care were developed by the Infant Oral Health Subcommittee of the Clinical Affairs Committee and adopted in 1986.[1] The Guideline on Perinatal Oral Health Care was originally developed by the Infant Oral Health Subcommittee of the Council on Clinical Affairs and adopted in 2009.[2] Those documents were combined in 2016[3] and last revised in 2021.[4] A search of the PubMed®/MEDLINE database was completed with the terms: infant oral health, infant oral health care, dental caries, early childhood caries, perinatal care, perinatal oral health, and early childhood caries prevention; fields: all; limits: within the last 5 years, English, systematic reviews, randomized controlled trials, and child birth to 18 years. The search resulted in 626 papers that were reviewed by title and abstract. From those, papers were selected to update this document. When data did not appear sufficient or were inconclusive, recommendations were based upon expert and/or consensus opinion by experienced researchers and clinicians.

Background

Role of oral health professionals in perinatal and infant oral health care

The perinatal period is defined as the time before birth and ending 28 days after birth.[5] The infant period extends to the child's first birthday. Oral health professionals have a vital role in perinatal and infant oral health care, particularly regarding the establishment of a dental home,[6] education of new parents, and the timing of a child's first dental visit. Oral health care professionals need to be knowledgeable about the perinatal period and first year of a child's life with respect to common oral conditions, components of anticipatory guidance, and early childhood caries (**ECC**) preventive care including oral cleaning, dietary recommendations, and optimal fluoride exposure.

Pregnancy and the perinatal period

The perinatal period is crucial for the well-being of pregnant women and the health and well-being of their newborn children.[7] Mothers' poor oral health is associated with poor oral health of their offspring.[8] Despite the value of oral health care to prevent or delay vertical transmission of Mutans streptococci (**MS)** from mother to infant,[9.10] pregnant women may avoid the dentist or have difficulty finding a dentist willing to provide care.[9]

Newborns and infants often have nonnutritive habits, such as digit sucking or using a pacifier. Prolonged digit sucking can cause flaring of the maxillary incisor teeth, an open bite, and a posterior crossbite.[11] However, oral effects of these habits are of little concern during infancy. In fact, pacifier use during infancy has been associated with a decreased incidence of sudden infant death syndrome and decreased incidence of ear infections.[12]

Common oral conditions in newborns and infants

Development cysts of the newborn typically present as asymptomatic small papules.[13] Palatal cysts of the newborn include Bohn's nodules and Epstein pearls.[13] Bohn's nodules are remnants of salivary gland epithelium and are located at the junction of the hard and soft palates or on the buccal and lingual aspects ridge away from the midline.[13] Epstein pearls are keratin-filled cysts found in the mid-palatal raphe; they are the result of trapped epithelial remnants along the line of fusion of the palatal halves.[13] Gingival cysts of the newborn, or dental lamina cysts, may be found along the crest of the mandibular and maxillary ridges of neonates. These lesions arise from epithelial remnants of the dental lamina.[14] These 3 developmental remnants generally disappear shortly after birth, and no treatment is necessary.[13] Fordyce granules are common aberrant yellow-white sebaceous glands most often found on the buccal mucosa or lips. No management is needed as these lesions are inconsequential and resolve on their own.[14]

A restrictive oral frenum may hinder an infant's ability to feed or speak.[15,16] Infants with a restrictive frenum may experience poor weight gain, reflux, and prolonged feeding time.[17] Because breastfeeding difficulties may have multiple etiologies, a team approach is necessary to accurately determine the cause and recommended intervention for each mother-infant dyad.[16] Evidence to support the rationale and timing for surgical intervention is limited, but frenectomy may be indicated on an individual basis for functional improvement and symptomatic relief.[15]

The prevalence of cleft lip with cleft palate in the United States is 1 in 1600 live births.[18] The prevalence of cleft palate alone is 1 in 1700.[18] Cleft lip may vary from a small notch in the vermilion border to a complete separation involving skin, muscle, mucosa, dentition, and bone. Clefts may be unilateral or bilateral and may involve the alveolar ridge. Isolated cleft palate occurs in the midline and may involve only the uvula or may extend into or through the soft and hard palates to the incisive foramen. Rehabilitation for the child with a cleft lip or palate may require years of specialized treatment by a craniofacial team. Feeding challenges are prevalent but can be overcome. Typically, patients with cleft lip can breastfeed successfully, while those with cleft palate usually are unsuccessful.[19] Specialized bottle systems exist to improve feeding practices with cleft lip and palate patients.[19] Surgical closure of a cleft lip usually is performed around 3 months of age; closure of the palate usually occurs around 1 year.[14]

Due to their developing immune system,[20] infants are prone to fungal and viral infections. A common fungus is oropharyngeal candidiasis which appears as white plaques and erythematous mucosa in the oropharynx. Candidiasis usually is self-limiting in the healthy newborn infant, but topical application

of nystatin may be indicated.[14] Primary herpetic gingivostomatitis is a viral infection which can present erythematous gingiva, bleeding mucosa, and clusters of small vesicles throughout the mouth. Somatic signs may include fever, malaise, lymphadenopathy, and difficulty with eating and drinking. Usually, symptoms regress within 2 weeks, and lesions heal without scarring.[14] Less commonly, coxsackievirus infections, including herpangina and hand-foot-mouth disease, will present with oral signs and symptoms.[14]

Tooth eruption (teething)

The first teeth usually erupt around 6 months of age. However, some children may be born with teeth or have teeth erupt soon after birth. Natal teeth are evident at birth, whereas neonatal teeth present in the first month of life. Attachment of natal and neonatal teeth generally is limited to the gingival margin due to little root formation or bony support. Natal and neonatal teeth typically are part of the normal complement of primary teeth[14] and can be maintained if there is no concern for feeding disruption, aspiration risk, or interference with oral function. Neonatal teeth are more common in patients with cleft palate compared to the general population (10% versus 0.02%).[21]

Natal or neonatal teeth occasionally result in maternal nipple abrasion and pain during breastfeeding. Similarly, natal or neonatal teeth can cause ulceration, bleeding, and discomfort of the infant's tongue (ie, Riga-Fede disease) due to its repetitive rubbing across the tooth during swallowing and movement.[14] Treatment options for feeding problems due to a natal or neonatal tooth include extraction or smoothing of the incisal edge. Natal or neonatal teeth may also be so mobile as to cause concern for aspiration in the infant. If the tooth is mobile with a danger of detachment, extraction may be warranted.[22] Patients preparing for presurgical infant orthopedics (eg, nasoalveolar molding) may benefit from extraction of neonatal teeth that interfere with appliances.[21] Recommendations for intervention are made on an individual basis after discussion of the risks specific to the mother and infant.

Eruption of teeth (teething) can lead to intermittent localized discomfort, irritability, low-grade fever, and excessive salivation[23]; however, many children have no apparent difficulties. Treatment of symptoms includes oral analgesics and teething rings for the child to chew.[14] Use of topical medications containing lidocaine or benzocaine are not recommended, as they offer little to no benefit and are associated with serious risks when used for teething in children.[24] Because of the risk of methemoglobinemia, benzocaine use is contraindicated in children younger than two years of age.[25] Teething jewelry also is not recommended; serious injuries (eg, strangulation, choking) and death have been reported with amber teething necklaces.[24]

Diet for newborns and infants

Breastmilk is beneficial during infancy and beyond.[26-28] Exclusive breastfeeding is recommended until 6 months of age and then as long as mutually desired.[26,27] However, breastfeeding and bottle use beyond 12 months, especially if frequent and/or nocturnal, are associated with ECC.[29,30] Low serum levels of vitamin D, both prenatally and during childhood, are associated with increased caries experience.[31,32] Further, prenatal vitamin D supplementation may contribute to lower rates of ECC in the offspring.[33] Cohort studies provide evidence that two key characteristics of perinatal/infant dietary practices are critical to prevent dental caries: the age at which sugar is introduced to a child and the frequency of its consumption.[34,35] The American Heart Association recommends that added sugar in foods and drink be avoided by children under 2 years.[36] Additionally, no juice should be introduced before 12 months of age.[37,38]

Dental caries risk in newborns and infants

Traditional microbial risk markers for ECC include acidogenic-aciduric bacterial species, namely MS.[39] MS may be transmitted vertically from caregiver to child through salivary contact or horizontally from others in their immediate environment (eg, between other members of a family, children in daycare).[40,41] Dental caries in primary teeth may lead to chronic pain, infections, and other morbidities. ECC has a major impact on the quality of life of children and their families and is a significant health and financial burden to society.[42]

Gestational age is a factor in caries-risk assessment.[43-45] ECC is significantly more prevalent in children born preterm compared to those born at full gestational age.[44,45] Preterm birth is strongly associated

with enamel defects[43] and hypomineralization that increase caries susceptibility. Preterm birth also is associated with low birth weight,[46] requiring more frequent feedings that increase caries risk as well.[44,45] Additionally, a weakened immune system in preterm infants may promote early colonization of MS and increase caries risk.[44,45]

Implementing preventive measures during the prenatal period and continuing them throughout infancy can enhance the opportunity for a child to have a lifetime free from preventable oral disease. Physicians, nurses, and other health care workers may have more opportunities to educate the parent/caregiver than dental professionals because of the frequency of contact with the family during the prenatal and infancy periods.[47] Understanding the multitude of factors that contribute to caries allows medical providers to customize preventive messaging and help parents make appropriate decisions regarding timely and effective oral health interventions for their newborns.[48]

Anticipatory guidance

Anticipatory guidance in the perinatal and infant period includes assessment of any growth and development considerations that the parents should be aware of or that need referral to the child's medical provider.[49] It also entails oral hygiene instruction, dietary counselling regarding sugar consumption and feeding patterns, frequency of periodic oral examinations, and information regarding nonnutritive habits.[11,49] Counselling regarding safety and prevention of orofacial trauma would include discussions of play objects, pacifiers, car seats, electrical cords, and injuries due to falls when learning to walk. The benefits of systemic fluoride for prevention of caries are well established, and community water fluoridation has been championed by national health organizations for decades.[50.51] Potential risks of fluoridated community water recently have received increased attention. While some studies suggest prenatal exposure to systemic fluoride may be associated with lower intelligence quotient (IQ) scores in children,[52] flaws have been identified in the methodology of these studies that undermine a causative link.[53,54] Furthermore, there is no evidence to support that consuming water containing 0.7 ppm fluoride, the fluoridation level currently recommended by the U.S Environmental Protection Agency, is associated with a reduction in intelligence quotient.[55,56]

Recommendations

The AAPD recognizes that infants present with unique conditions, behaviors, and treatment needs that are best addressed through oral health education, preventive dental care, and partnership with other stakeholders (eg, pediatricians, obstetricians, lactation specialists). Medical-dental collaboration during the prenatal and postnatal periods is critical to reduce caries risk and improve preventive strategies and therapeutic interventions. To optimize the benefits of preventive strategies and interventions, oral health care professionals should incorporate the following into infant oral health visits:

- Advise expecting and new parents on the importance of their own oral health and how their caries experience can affect their child, both positively and negatively.
- Determine need for intervention for restrictive frena based on individualized assessment of function and symptoms related to feeding.
- Consider interference with feeding, the risk of exfoliation and aspiration, and any medical or contributing factors when managing a patient with a prematurely erupted primary tooth (ie, natal or neonatal tooth).
- Encourage establishment of a dental home that includes medical history, dental examination, risk assessment, and anticipatory guidance for infants by 12 months of age.
- Provide information to parents regarding common oral conditions in newborns and infants, nonnutritive oral habits (eg, digit sucking, use of a pacifier), teething (including use of analgesics and avoidance of topical anesthetics), growth and development, and orofacial trauma (including play objects, pacifiers, car seats, electric cords, and falls when learning to walk).
- Assess caries risk to facilitate the individualized preventive strategies as the primary dentition begins to erupt and provide caries prevention information regarding high frequency sugar

consumption, prolonged breastfeeding, oral hygiene practices, and safety and efficacy of optimally-fluoridated community water.

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