Dental Care for Infants

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Continuing Education Units: 1 hour


Disclaimer: Participants must always be aware of the hazards of using limited knowledge in integrating new techniques or procedures into their practice. Only sound evidence-based dentistry should be used in patient therapy.

The Centers for Disease Control and Prevention report that caries is perhaps the most prevalent infectious disease in U.S children. By the time they reach kindergarten, more than 40% of children have caries. To prevent oral disease, preventive interventions must begin at infancy. This course will present to providers the importance of educating their adult patients on when they should begin bringing their children to the dental office for an oral exam and to begin a thorough prevention program that will establish measures to prevent diseases such as Early Childhood Caries (ECC).

Conflict of Interest Disclosure Statement
• The author reports no conflicts of interest associated with this course.

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Overview
The Centers for Disease Control and Prevention report that caries is perhaps the most prevalent infectious disease in U.S. children. By the time they reach kindergarten, more than 40% of children have caries. To prevent oral disease, preventive interventions must begin at infancy. It is important that providers are aware on how to educate their adult patients on when they should begin bringing their children to the dental office for an oral exam. The most important reason for this visit is to begin a thorough prevention program that will establish measures to prevent diseases such as Early Childhood Caries (ECC).

Learning Objectives
Upon completion of this course, the dental professional should be able to:
• Understand the different disease processes that can affect infants.
• Educate the mother on perinatal oral care.
• Know how to perform an initial oral exam.
• Perform a caries risk assessment and teach preventive services to the mother or caregiver.
• Understand the high risk dietary practices.

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Introduction
The American Academy of Pediatric Dentistry (AAPD) recognizes infant oral care, along with perinatal oral health is one of the foundations upon which preventive education and dental care must be built to enhance the opportunity for a lifetime free from preventable disease. The goals of infant oral care is to decrease the possibility for the child to experience Early Childhood Caries (ECC), decrease the possibility of harmful bacteria that can cause periodontal disease and caries, manage the risk of habits the child acquires, and most importantly, identify a dental home where a child can be seen to focus their care in the preventive treatment and referral service to optimize their oral health.

Dentists are somewhat reluctant to treat children under the age of 3. Most of the concerns rely on the lack of ability to manage the behavioral aspect of the child, knowledge of preventive opportunities and the concern whether the treatment rendered will be reimbursed.

Understanding an Infant is the First Step
In the first year of life a child is completely dependant on their parents. A major social behavior besides crying is non-reflexive smiling that starts when the child is 2-3 months of age. The child forms strong attachments with the adults (parents) through their nurture and care.
In the second year of life the child starts to develop language skills that assist them in relating with their family members. The child starts to feel independent and know they can set forth their will. Parenting and role model observation is very important at this stage. If the child sees aggression, the child will behave aggressively and vice versa. Discipline should be educational and not through punishment. Physical punishment will trigger more misbehavior rather than showing the child that something that they did was wrong. Children in the ages of 1-2 often have temper tantrums and are better if they are left unnoticed.

In the third year of life the child starts to eat by themselves and potty training starts. The child will be ready at the appropriate time, and this should not be started to soon if the child is not ready. Children at this age use the word “no” very often and ask “how” and why” questions. The child’s identity is surfacing. By the third year, the child is socially interactive.

**Dental Home**
The AAPD supports the concept of a dental home for all infants. Children that belong to a dental home are more likely to receive appropriate preventive services and routine oral health care. It is recommended a dental home be established by the age of 12 months since it will institute appropriate caries preventive strategies, dietary recommendations and oral hygiene instruction as the primary teeth begin to erupt.

Previously, many thought a dental visit by the age of 36 months was appropriate, but it has changed because by that time it was already too late and caries were already present in many children. A dental home also provides the child with comprehensive oral care, acute care and preventive services. It should include and be able to provide a comprehensive assessment for oral diseases and conditions and specially assess the risk for developing caries.

Individualized preventive dental programs based upon caries risk are extremely important to tailor a correct prevention plan and periodic reevaluation intervals for the child. The dental home will provide a structured referral system if necessary.

An oral health risk assessment for infants by 6 months of age allows instituting appropriate preventive strategies as the primary dentition begins to erupt.

**Anticipatory Guidance**
It is defined as a proactive counseling of parents and patients about developmental changes that will occur in the interval between health supervision visits that includes information about daily caretaking specific to that upcoming interval. The infant compared to a school aged child, lives in a broader, more complex world and treatment and prevention needs to be tailored to that specific child.

The counseling should include:
- Address protective factors to prevent oral health problems
- Oral hygiene
- Dietary counseling
- Fluoride
- Oral growth and development issues
- Oral/non-nutritive habits (pacifier use)
- Acute dental trauma/injury prevention

**Caries Risk Assessment**
Caries risk assessment is defined as the identification of factors associated with a condition or disease for purposes of further diagnosis, prevention or treatment. If those risk factors are eliminated before the diseases occur, the disease process can be prevented.

Risk factors that can be evaluated include:
- Presence of caries
- Presence of plaque
- Gingival condition
- Caries history
- Fluoride exposure
- Carbohydrate exposure – frequency, amount
- Socioeconomic status
- Dental care exposure
- Caregiver dental literacy

The American Dental Association (ADA) developed a caries risk assessment form for children 0-6 that evaluates three areas and includes:
1. Contributing Conditions
2. General Health Conditions
3. Clinical Conditions
All of them are evaluated in the following three categories: High, Moderate or Low risk.

**Diet**

Dietary choices affect the oral health as well as the general health and well being. It is recommended to establish good dietary practices by 12 months of age and maintain it throughout early childhood. Breast milk is superior in providing the best nutrition in infants.

Epidemiological research shows that human milk and breast-feeding of infants provide general health, nutritional, developmental, psychological,

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**Figure 1. Caries Risk Assessment Form (Ages 0-6)**

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*Patients with developmental, physical, medical or mental disabilities that prevent or limit performance of adequate oral health care by themselves or caregivers.*

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ADA American Dental Association®
social, economic, and environmental advantages while significantly decreasing risk for a large number of acute and chronic diseases.

ECC may not arise from breast-feeding alone, breast milk is superior in providing the best possible nutrition to infants and, by itself, it is non-cariogenic.

Breast-feeding in combination with other high content carbohydrate foods is cariogenic.

Teaching the parents/caregiver the following preventive measures can help reduce the incidence of disease.
- Replace juice/sweet liquids with water
- Limit snacking (less than 3x per day)
- Replace high carbohydrate snacks with cheese and protein snacks

Perinatal Oral Care
The perinatal period is defined as the period around the time of birth, beginning with the completion of the 20-28th week of gestation and ending 1-4 weeks after birth. Infant oral care starts in this period.

Many expectant mothers are unaware of the implications of poor oral health for themselves, their pregnancy and/or their unborn child. There is a crucial role in the overall health and well being of pregnant women. It is also essential for the health and well being of their newborn children. Many women do not seek dental care during their pregnancy, and those that do often confront unwillingness by dentists to provide care. Periodontal disease has been linked to preterm labor. The results of initial trails suggest the periodontal therapy can decrease the risk of prematurity.

Elective dental care should be timed to occur during the second trimester and first half of the third trimester. The first trimester is the period of organogenesis when the fetus is highly susceptible to environmental influences.

Dental emergencies should be dealt with as they arise throughout the entire pregnancy. The management of pain and elimination of infection that otherwise could result in increased stress for the mother and endangerment of the fetus are hallmarks of emergent dental care.

Once the child is born, mothers with poor oral health and high levels of cariogenic oral bacteria have a higher risk of infecting their children at an early age through vertical transmission (kissing, using same utensils for food).

The goal is to decrease the number of cariogenic bacteria in the expectant mother so the colonization of Mutans Streptococci (MS) in the infant is delayed. Chewing gum containing 1gm of xylitol (6-10 sticks a day, 5 minutes per stick) is proven to decrease the levels of MS in mothers and decreasing the levels in their children. It has even showed a decrease in the level of bacteria in infants since it decreases the bacterial transmission from the mother (vertical transmission).

Initial Exam
An initial exam should happen as early as six months of age, or six months after the first tooth erupts and no later that 12 months of age. Thorough medical histories of the infant and dental histories both of the mother/caregiver and infant should be recorded. It is important to educate the caregivers in infant oral care, provide a caries risk assessment and determine an appropriate prevention plan. Referral to specialists should be evaluated if needed.

The initial visit should consist of the following:
- Thorough medical (infant) and dental (mother or primary caregiver and infant) histories.
- Thorough oral examination.
- Assess the child's risk of developing oral disease using a caries risk assessment.
- Providing education on infant oral health.
- Providing anticipatory guidance regarding dental and oral development, fluoride status, non-nutritive sucking habits, teething, injury prevention, oral hygiene instruction, and the effects of diet on the dentition.
- Determining an appropriate prevention plan and interval for periodic reevaluation based upon that assessment.
- Planning for comprehensive care in accordance with accepted guidelines and periodicity schedules for pediatric oral health.
- Referring patients to the appropriate health professional if intervention is necessary.

There are several techniques used for this initial exam. The one recommended is the lap-to-lap
knee-to-knee where you will demonstrate oral hygiene and ask the parent to participate. Usually the child will cry and this will help in keeping the mouth open. Make sure the parent understands what you will be doing as they can be surprised.

**Natal/Neonatal Teeth:**

**Natal** – present at birth.

**Neonatal** – within the first 30 days and erupts prior to three months of age.
- 1:2,000-3,500 frequency
- Natal 3:1 neonatal
- 90% are true primary teeth
- Most are poorly formed
- Etiology: unknown or a it can be a superficially positioned toothbud

**Tx:** monitor; removal/smoothening of tooth

Associated finding - Riga-Fede disease which often shows a sublingual traumatic ulceration

**Normal Clinical Findings in the Initial Exam:**
- No teeth
- Rugae in palate
- Toothbud bulges
- Tissue pink and healthy

**Figure 2.** Lap-to-lap knee-to-knee technique.

**Figure 3.** Brushing infant’s teeth.

**Figure 4.** Normal clinical findings.

**Figure 5.** Riga-Fede disease with sublingual traumatic ulceration.

**Figure 6.** Riga-Fede disease with sublingual traumatic ulceration.
Premature Teeth Diagnosis:

- Buccal, Lingual aspects of the maxillary alveolar ridge (away from midline raphe)
- Mucous gland tissue

These are visible in 80% of newborns.

Periodic Exam
The periodicity of reappointments is based upon the risk assessment. It provides a time critical opportunity to implement preventive health practices and reduce the child’s risk of preventable diseases.

Prevention and Oral Hygiene
At birth, the children’s gums should be cleaned with a soft infant toothbrush or cloth and water.

Growth of cariogenic bacteria and diet combine to promote plaque development and subsequent production of acid. Oral hygiene practices should be implemented no later than eruption of the first primary tooth.

Cleansing the infant’s teeth as soon as they erupt with either a washcloth or soft toothbrush will help reduce bacterial colonization. Teeth should be brushed twice daily with fluoridated toothpaste and an age-appropriate toothbrush:
- “smear” of toothpaste for children less than two years of age.
- “pea-size” amount of toothpaste for children two to five years.

Perform or assist your child’s toothbrushing. One technique to show the parent will be knee-to-knee, supine position. Flossing should only be done when adjacent tooth surfaces cannot be cleansed with a toothbrush.

Fluoride
Fluoride for the prevention and control of caries is safe and effective. Infant formula and the water used to reconstitute the formula may contain fluoride (less than 0.1ppm F). The formula can be mixed with fluoridated water.

The AAPD and FDA do not recommend pre-natal fluoride.

Fluoride:
- Does not cross the placenta
- No significant difference in caries with mothers who were and who were not given fluoride
varnish at their medical offices with a potential to get reimbursed as seen in the map above.

**Early Childhood Caries (ECC)**

ECC begins usually soon after tooth eruption and can be a predominantly virulent form of caries. It usually affects children that come from a low socioeconomic status that consume a high sugar content diet whose caregivers/mother have a low educational level. Preventive strategies and appropriate therapeutic interventions guided by oral health risk assessments should be utilized by the dental professional in order to educate the mother and assist with the prevention and treatment of disease for children at higher risk for developing infections.

It develops in smooth surfaces and progresses rapidly. There is usually a pattern seen in this disease in which affects - maxillary anterior→maxillary posterior→mandibular post→mandibular anteriors. It can be considered a particularly virulent form of caries.

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**Figure 10. States with Medicaid funding for Physician Oral Health Screening and Fluoride Varnish.**

It is recommended the dentist's decisions concerning the administration of additional fluoride are based on the needs of each patient depending on their caries risk assessment and their existing fluoride exposure.

Chronic excessive fluoride intake can result in fluorosis, and unaesthetic motting of the teeth. For an average five-year-old, a dose of 5mg per kg of fluoride from tooth paste represents 95ml, or about one half of typical 8-oz tube. Larger dosis of fluoride can cause life-threatening hypocalcemia with convulsions, tetanus, decreased myocardial contractility, ventricular arrhythmia’s and cardiac arrest.

The risk of fluorosis should be evaluated. Fluorosis has been associated with cumulative fluoride intake during enamel development, with the severity dependent on the dose, duration, and timing of intake.

Some states are providing funding for physicians to provide oral health screenings and fluoride varnish at their medical offices with a potential to get reimbursed as seen in the map above.
• Non-nutritive oral habits (e.g., digit and pacifier habits, bruxism, abnormal tongue thrusts) may apply forces to teeth and dentoalveolar structures that result in occlusion and facial developmental changes.
• Early dental visits provide an opportunity to encourage parents to help their children stop habits by age three years or younger, before malocclusion or skeletal dysplasias occur.

It is important to discuss the need to wean from the habits before malocclusion or skeletal dysplasias occur. For school-aged children, counseling regarding habits is appropriate. It occurs in 70-90% of children.

Digit habits are harder to break than pacifier habits. Conventional pacifiers are the same to orthodontic pacifiers in their effects to orofacial structures.

Habits of sufficient frequency, intensity, and duration can contribute to:
• Reduced overbite, increased overjet.
• Protrusion of maxillary incisors.
• Anterior open bite.
• Narrowing of the maxillary arch width, widening of mandibular arch.

Injury Prevention
An age-appropriate injury prevention counseling for parents/caregivers should be put in place for potential orofacial trauma accidents.

Discussions with parents would include play objects, pacifiers, car seats, and chewing of electric cords. Little ones love to put things into their mouths.

Conclusion
Adult general health, especially oral health
starts with infant oral care. An array of factors contributes to the oral health status of a child. Finding a dental home and having a formal preventive care plan can decrease the likelihood of the infant to experience dental disease.

Educating the parents and/or caregivers on the infant’s oral health on bacteria transmission, injury prevention and the importance of having regular scheduled visits at appropriate intervals, plays an important role to maintain a healthy child.
Course Test Preview
To receive Continuing Education credit for this course, you must complete the online test. Please go to:

1. The goals of the infant oral care are:
   a. Decrease the chance of a child to experience Early Childhood Caries.
   b. Decrease the amount of bacteria that cause periodontal disease.
   c. Management of acquired habits of the child.
   d. Identify a dental home.
   e. All of the above.
   f. Only A, B and C
   g. None of the above.

2. Infants are considered children between the ages of zero to five.
   a. True
   b. False

3. All of the following should be included in counseling the parents during their developmental stages except:
   a. dietary counseling
   b. oral hygiene and fluoride application
   c. Injury prevention
   d. Oral habits
   e. Psychological counseling

4. The first dental visit should occur when the child is between six to 12 months of age.
   a. True
   b. False

5. A caries risk assessment evaluates the following factors except:
   a. Caries history
   b. Fluoride exposure
   c. Race and ethnicity
   d. Carbohydrate exposure
   e. Periodontal condition

6. Breast milk alone can cause ECC. Breast feeding provides developmental, nutritional and psychological advantages to the child.
   a. Both statements are true.
   b. Both statements are false.
   c. The first statement is true the second is false.
   d. The first statement is false the second is true.

7. Vertical transmission of oral bacteria to the child happens through which of the following:
   a. sharing of utensils
   b. sneezing
   c. coughing
   d. kissing on the cheek
8. **Which of the following techniques is recommended for the initial exam of the infant?**
   a. Tell Show Do
   b. Modeling
   c. Lap-to-lap/Knee-to-knee
   d. All of the above.
   e. None of the above.

9. **Neonatal teeth erupt prior to three months of age.**
   a. True
   b. False

10. **What is the percentage, according to the CDC, of children that demonstrate caries before kindergarten?**
    a. 10
    b. 20
    c. 30
    d. 40

11. **A smear of fluoridated toothpaste should be used for children less than two years of age. A pea size amount should be used for children two to five years of age.**
    a. Both statements are true.
    b. Both statements are false.
    c. The first statement is true the second is false.
    d. The first statement is false the second is true.

12. **Which of the following is the pattern of the teeth affected by ECC?**
    a. Maxillary posterior→maxillary anterior→mandibular posterior→mandibular anterior
    b. Maxillary anterior→maxillary posterior→mandibular posterior→mandibular anteriors
    c. Mandibular anteriors→mandibular posterior→maxillary anteriors→maxillary posteriors
    d. Mandibular posterior→mandibular anterior→maxillary posterior→maxillary anteriors

13. **Teething can cause systemic distress. Which of the following is not recommended for the child?**
    a. maintain and increase fluid consumption
    b. give analgesics to the child
    c. apply topical medication
    d. teething rings

14. **Habits should be stopped by the age of _____ to decrease the risks for malocclusion and skeletal dysplasias.**
    a. 1
    b. 2
    c. 3
    d. 4
References

About the Author

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Dr. Ganem graduated from Universidad Javeriana School of Dentistry (Bogotá, Colombia) in 1999. In 2001 she completed her Masters in Public Health, majoring in Policy and Management, at Emory University in Atlanta, Georgia. Dr. Ganem joined the faculty at Temple University, Kornberg School of Dentistry in 2002. She obtained her DMD from the Kornberg School of Dentistry in 2008. She also serves as Director of Community Outreach Programs and Minority Affairs Liaison at Temple University, Kornberg School of Dentistry. She manages all community outreach grants and their successful implementation. Dr. Ganem has been involved in access to care policy and research. Her interests include policies that affect access to care in underserved communities and access to dental education of underrepresented minorities. Dr. Ganem has also been involved in teaching both the graduate and pre doctoral levels in areas of Dental Ethics and Public Health. She has been an invited grant reviewer for governmental and private organizations and presents on topics relating to school-based dental clinics and community outreach.

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