# Dental Care for Infants


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**CE Credits:** 1 hour
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## Conflict of Interest Disclosure Statement

- Dr. Ganem reports no conflicts of interest associated with this course.
- Dr. DiMarco reports no conflicts of interest associated with this course.

## Introduction – Infant Dental Care

The Centers for Disease Control and Prevention report that caries is perhaps the most prevalent infectious disease in US children. By the time they reach kindergarten, more than 40% of children have caries.[1] A dental home should be established within six months of eruption of the first tooth and no later than 12 months of age.[2] This is to ensure that parents have the proper education on how to prevent Early Childhood Caries (ECC) and to obtain a baseline of the child's oral health. This course will describe the importance of educating parents on when a dental home should be established for their children and describe how preventative measures and regular dental appointments starting in infancy can prevent ECC.

## Course Contents



## Overview

The Centers for Disease Control and Prevention report that caries is perhaps the most prevalent infectious disease in US children. By the time they reach kindergarten, more than 40% of children have caries. To prevent oral disease, parent education and oral hygiene practices must begin in infancy. It is important that providers know how to educate parents on when a dental home should be established for their children. Bringing a child to the dentist early is important for parent education on oral hygiene practices, oral habits, dietary counseling, and to have an exam completed on the child to ensure oral health.

## 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.
- Understand how to perform an initial oral exam.
- Perform a caries risk assessment and teach preventive strategies to the mother or caregiver.
- Understand high risk dietary practices.

## Introduction

The American Academy of Pediatric Dentistry (AAPD) recognizes that education, prevention, diagnosis, and treatment are the components necessary to maintain optimal oral health for infants. The goals of infant oral care are to decrease the likelihood that the child will experience ECC, decrease the amount of caries causing bacteria or delay transmission, manage oral habits, and identify a dental home.

## Dental Home

The AAPD recommends that every child has a dental home within six months of eruption of the first tooth and no later than 12 months of age.[2] (This will ensure that parents receive the appropriate recommendations on caries prevention and how to maintain optimal oral health for their child). The dentist and staff will ensure that parents receive dietary recommendations and proper oral hygiene instructions. Having this information as the first teeth begin to erupt will make it more likely that the child will be able to avoid early childhood caries.

Besides preventative care, establishing a dental home early on will ensure that the child receives the proper care in times of trauma and when in need of acute care.

According to the AAPD the dental home should provide:[3]

- comprehensive family centered care
- acute and preventative care
- assess oral health and diseases
- tailored care and plan for each patient
- growth and development guidance
- care for acute and chronic pain or infection
- trauma care
- care instructions for the oral cavity
- dietary counseling
- referral to the appropriate specialist when necessary
- referral to adult dentist when the time is appropriate and transition

## Anticipatory Guidance

Anticipatory guidance is when a provider counsel's parents on physical, psychological, and emotional milestones so that they are prepared and can guide their child through these events. This should occur at each visit and will change as the child gets older. The more that the parent understands about the importance of the primary dentition, the more likely they will be to help with oral hygiene

on a daily basis and seek appropriate care when necessary. This will also guide the parent on how to recognize when there is a delay in development or when something out of the ordinary is going on.[2] 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.

Counseling should include:
- Addressing 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 determines the likelihood of developing carious lesions, or the likelihood that there will be a change in current carious lesions (size or activity).[3] If 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 Academy of Pediatric Dentistry (AAPD) developed a caries risk assessment form for children age 0-5 years that evaluates three areas and includes.[4]
- Contributing Conditions
- General Health Conditions
- Clinical Conditions
- These subjects are further categorized as High, Moderate or Low Risk.

## Diet

Dietary choices affect oral health as well as general health and well-being. Good dietary practices can be established by 12 months of age and are maintained through early childhood.[4] Breast milk is superior in providing the best nutrition to infants.

Epidemiological research shows that human milk and breastfeeding of infants provide general health, nutritional, developmental, psychological, social, economic, and environmental advantages while significantly decreasing risk for a large number of acute and chronic diseases.

Breast milk is superior in providing the best possible nutrition to infants. Although breast milk may not cause caries by itself, it is cariogenic in combination with other foods that are high in carbohydrates.[4]

Teaching the parents/caregiver the following preventive measures can help reduce the incidence of disease.
- Encourage young children to drink primarily water and plain milk.[5]
- Limit 100% juice. Per *2017 AAP recommendations*:
  - Parents should avoid giving any juice to children younger than 1 year of age
  - Children ages 1-3 years should have no more than 4 ounces a day
  - Children ages 4-6 should have no more than 4-6 ounces per day
- Limit snacking (less than 3x per day)
- Replace high carbohydrate snacks with cheese and protein snacks

## Perinatal Oral Care

Beginning with the completion of 20-28 weeks gestation to 1-4 weeks after birth is considered the perinatal period.[6] Many expectant and current mothers are unaware of the implications that poor oral health can have on their overall health and pregnancy, as well as their child. Many women do not seek dental care during pregnancy, and those that do may confront unwillingness by dentists to provide care.

Elective dental care should be completed 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. During the third trimester laying in the dental chair for long periods of time can pose a risk to the pregnant women. Necessary dental care is safe in all trimesters though.[6]

### Table 2. Caries-risk Assessment Form for 0-5 Year Olds [59,60]

(For Dental Providers)

| Factors | High Risk | Moderate Risk | Protective |
|---|---|---|---|
| **Biological** | | | |
| Mother/primary caregiver has active caries | Yes | | |
| Parent/caregiver has low socioeconomic status | Yes | | |
| Child has >3 between meal sugar-containing snacks or beverages per day | Yes | | |
| Child is put to bed with a bottle containing natural or added sugar | Yes | | |
| Child has special health care needs | | Yes | |
| Child is a recent immigrant | | Yes | |
| **Protective** | | | |
| Child receives optimally-fluoridated drinking water or fluoride supplements | | | Yes |
| Child has teeth brushed daily with fluoridated toothpaste | | | Yes |
| Child receives topical fluoride from health professional | | | Yes |
| Child has dental home/regular dental care | | | Yes |
| **Clinical Findings** | | | |
| Child has >1 decayed/missing/filled surfaces (dmfs) | Yes | | |
| Child has active white spot lesions or enamel defects | Yes | | |
| Child has elevated mutans streptococci levels | Yes | | |
| Child has plaque on teeth | | Yes | |

Circling those conditions that apply to a specific patient helps the practitioner and parent understand the factors that contribute to or protect from caries. Risk assessment categorization of low, moderate, or high is based on preponderance of factors for the individual. However, clinical judgment may justify the use of one factor (eg, frequent exposure to sugar-containing snacks or beverages, more than one dmfs) in determining overall risk.

Overall assessment of the child's dental caries risk: High ❒ Moderate ❒ Low ❒

### Table 3. Caries-risk Assessment Form for >6 Years Olds [60-62]

(For Dental Providers)

| Factors | High Risk | Moderate Risk | Protective |
|---|---|---|---|
| **Biological** | | | |
| Patient is of low socioeconomic status | Yes | | |
| Patient has >3 between meal sugar containing snacks or beverages per day | Yes | | |
| Patient has special health care needs | | Yes | |
| Patient is a recent immigrant | | Yes | |
| **Protective** | | | |
| Patient receives optimally-fluoridated drinking water | | | Yes |
| Patient brushes teeth daily with fluoridated toothpaste | | | Yes |
| Patient receives topical fluoride from health professional | | | Yes |
| Additional home measures (eg, xylitol, MI paste, antimicrobial) | | | Yes |
| Patient has dental home/regular dental care | | | Yes |
| **Clinical Findings** | | | |
| Patient has ≥1 interproximal lesions | Yes | | |
| Patient has active white spot lesions or enamel defects | Yes | | |
| Patient has low salivary flow | Yes | | |
| Patient has defective restorations | | Yes | |
| Patient wearing an intraoral appliance | | Yes | |

Circling those conditions that apply to a specific patient helps the practitioner and patient/parent understand the factors that contribute to or protect from caries. Risk assessment categorization of low, moderate, or high is based on preponderance of factors for the individual. However, clinical judgment may justify the use of one factor (eg, >1 interproximal lesions, low salivary flow) in determining overall risk.

Overall assessment of the dental caries risk: High ❒ Moderate ❒ Low ❒

**Figure 1.** Caries Risk Assessment Form (Ages 0-5 years and ≥6 years).

Dental emergencies should be dealt with as they arise throughout the entire pregnancy. The management of pain, and elimination of infection is important so that stress to the mother and endangerment of the fetus are avoided.

A child born to a mother with poor oral health, and untreated caries, will most likely acquire the caries causing organism *Streptococci mutans* (*S. mutans*) earlier than others. This occurs through vertical transmission (kissing, using same utensils for food)[7]

The goal is to decrease the number of cariogenic bacteria in the expectant mother so that the colonization of *S. mutans* in the infant is delayed. This can be achieved by educating and counseling pregnant women on ideal oral health practices and eliminating carious lesions in the pregnant women.

## Initial Exam

An initial exam should happen within 6 months of the eruption of the first tooth or no later than 12 months of age.[2]

The initial visit should consist of the following:

- Thorough medical (infant) and dental (mother or primary caregiver and infant) histories.
- Intraoral and extra oral exam of the hard and soft tissues.
- Assess the child's risk of developing oral disease using a caries risk assessment.
- Provide education on infant oral health.
- Assess behavior of the child.
- Provide 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.
- Plan for comprehensive care in accordance with accepted guidelines and periodicity schedules for pediatric oral health.
- Refer patients to the appropriate health professional if intervention is necessary.

The initial exam is usually completed as a lap-to-lap exam. During this type of exam, the caregiver will sit facing the provider with both caregiver and providers knees touching. The infant will face the caregiver and the caregiver will gently lay the infant into the providers lap. The infant will most likely cry, so it is important to warn the caregiver of this. If the infant is crying, the provider should visualize the oral cavity while possible with the infants mouth open. The provider should demonstrate proper oral hygiene techniques.

**Figure 2.** Lap-to-lap or knee-to-knee technique.
Image courtesy of Erin L. Brown, DDS, Neighborhood Family Dentistry, Utica, NY.

**Normal Clinical Findings in the Initial Exam:**

- No teeth present or up to 12 teeth present
- Rugae in palate
- Prominent bulges in upper and lower arch where primary teeth will soon erupt
  - Blue to purplish bulges may be present with the eruption of primary teeth
- Pink and healthy tissue
- High labial frenum

**Natal/Neonatal Teeth:**

**Natal** – present at birth

**Neonatal** – within the first 30 days

- Incidence 1-2 per 6000 births[8]
- 85% are mandibular primary incisors[9]
- Many are very mobile due to poor root development[9]
- Most occur in normal infants, some are a result of environmental cause or underlying syndrome[8]

Treatment: Leave if not very mobile. If mobility is severe causing tooth to be aspiration

risk, then removal is indicated. If there is a sharp edge causing irritation of tongue, then the tooth can be smoothed or removed. If removing, it is important to curette the socket so that any cellular remnants are not left behind as these can develop into other abnormal structures that require future removal.[9] It is also important to consult with patients' physician regarding vitamin K shot to prevent hemorrhage.

Associated finding – Riga-Fede disease. This is a traumatic ulcer on the tongue from the tooth.

**Cysts of the Newborn:**

These can incorrectly be diagnosed as natal teeth.

**Figure 3.** Bohn Nodules (palatal cyst).
Image courtesy of Janelle Aby, MD.

- Buccal, lingual aspects of alveolar ridges and on palate away from midline raphe
- Remnants of mucous gland tissue[8]

**Figure 4.** Dental Lamina Cysts (gingival cyst).
Image courtesy of Janelle Aby, MD.

- Found in the crest of the alveolar ridge
- Remnants of the dental lamina

**Figure 5.** Epstein Pearls (palatal cyst).
Image courtesy of Janelle Aby, MD.

- Midpalatal raphe
- Remnants of epithelial tissue

## 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 child's gums should be cleaned with a 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" or rice sized amount of toothpaste for children less than three years of age.
- "pea-size" amount of toothpaste for children three to six years.

Perform your child's toothbrushing. Flossing should begin when contact points between the teeth close.

### Fluoride

Fluoride for the prevention and control of caries is safe and effective. Ready to feed milk based infant formulas in the US contain an average of 0.15ppm and soy based 0.21ppm of fluoride. The powder based infant formula combined with fluoridated water is less of an issue than in the past since community water supplies of 0.7ppm have been instituted.[10]

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

**Fluoride:**

It is recommended that 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 mottling of the teeth. Fluorosis can occur if more than 1.8ppm/day is ingested.

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 potential to get reimbursed as seen in the map below.

## Early Childhood Caries (ECC)

ECC is a severe form of caries that affects infants and young children. ECC is defined as "the presence of more than one decayed (cavitated or non cavitated lesions), missing (due to decay), or filled tooth surface in any primary tooth in a child 71 months or younger."[12] ECC remains prevalent in children of lower socioeconomic class. 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 and mandibular first primary molars→mandibular canines.[12] It can be considered a particularly virulent form of caries. The mandibular incisors are usually unaffected.[12]

Children with significant levels of *S. mutans*, are at a higher risk. It affects the general population but is 32 times more likely to occur in infants who are of low socioeconomic status, who consume diets high in sugar and whose mothers have a low educational level.

Frequent bottle-feeding at night, ad-lib breastfeeding, and extended and repetitive use of sippy/training cups are associated with ECC.

ECC can have a lasting and detrimental impact on dentition.

## Other Issues Affecting Infants

**Teething** – Can cause systemic distress

Can cause daytime restlessness, increased finger sucking, rubbing of gums, increase in drooling, sometimes a loss of appetite, very slight rise in temperature.

Treatment:

- Maintain/increase fluid consumption, analgesics, palliative care, teething rings.
- Avoid topical meds (Ambesol).

Non-nutritive Habits

- Arise from psychological needs and physiologic need for nutrition.
- 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 malocclusionand facial developmental changes.

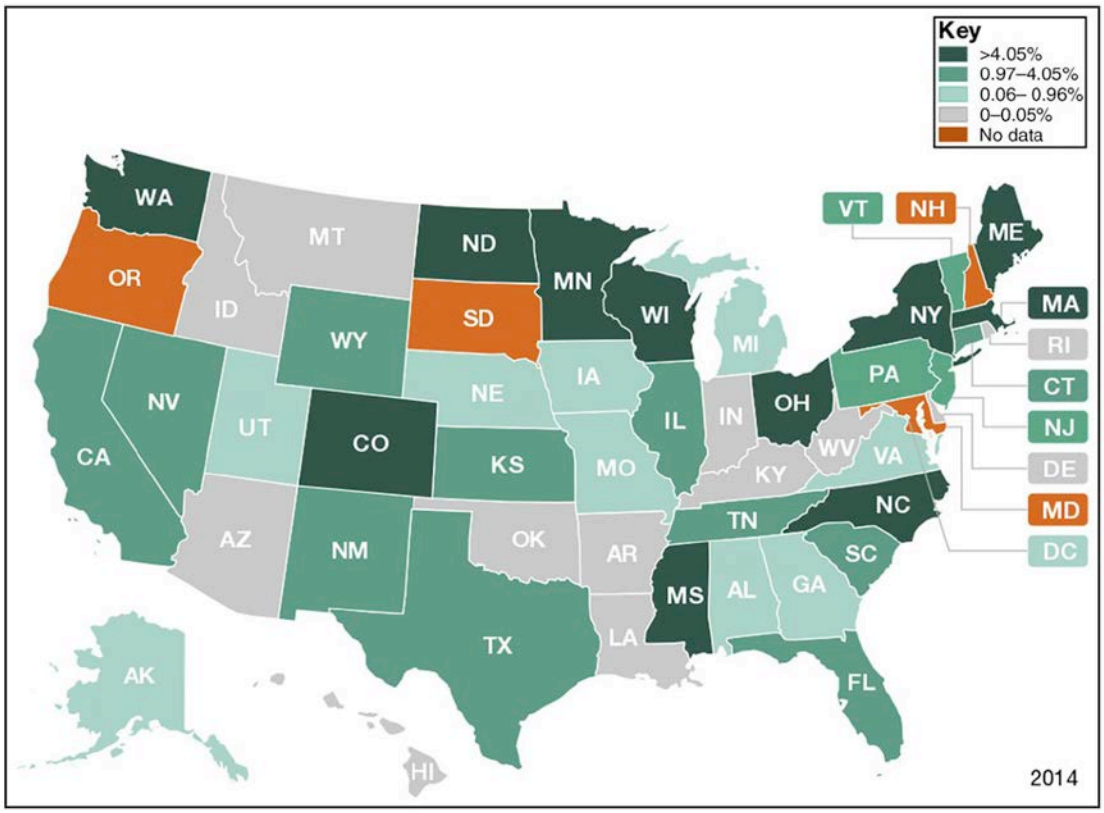


**Figure 6.** Percentage of Nondental Providers who Performed Oral Preventive Services in 2014.[11] (The map was assembled by M. E. by using publicly available Medicaid Early and Periodic Screening, Diagnostic, and Treatment Survey data for 2014.) AK, Alaska; AL, Alabama; AR, Arkansas; AZ, Arizona; CA, California; CO, Colorado; CT, Connecticut; DC, District of Columbia; DE, Delaware; FL, Florida; GA, Georgia; HI, Hawaii; IA, Iowa; ID, Idaho; IL, Illinois; IN, Indiana; KS, Kansas; KY, Kentucky; LA, Louisiana; MA, Massachusetts; MD, Maryland; ME, Maine; MI, Michigan; MN, Minnesota; MO, Missouri; MS, Mississippi; MT, Montana; NC, North Carolina; ND, North Dakota; NE, Nebraska; NH, New Hampshire; NJ, New Jersey; NM, New Mexico; NV, Nevada; NY, New York; OH, Ohio; OK, Oklahoma; OR, Oregon; PA, Pennsylvania; RI, Rhode Island; SC, South Carolina; SD, South Dakota; TN, Tennessee; TX, Texas; UT, Utah; VA, Virginia; VT, Vermont; WA, Washington; WI, Wisconsin; WV, West Virginia; WY, Wyoming.

**Figure 7.** Initial white decalcification of the anterior teeth and incipient caries lesion.
Image courtesy of Norman Tinanoff, DDS, MS.

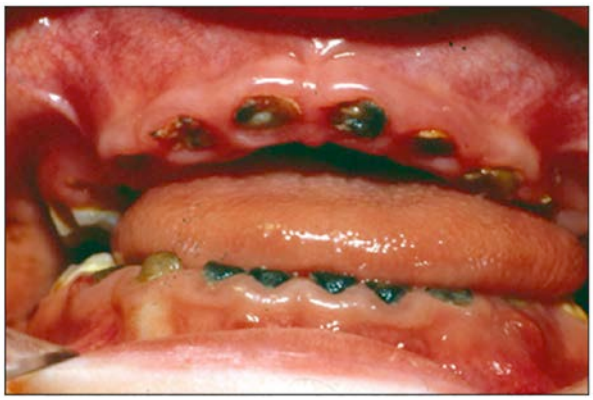

**Figure 8.** Late or severe form of ECC.
Image courtesy of Dr. LaQuia Vinson.

- 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 dysplasiaoccurs.

It is important to discuss the need to wean from the habits before malocclusion or skeletal dysplasia occurs. 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. Both conventional pacifiers and orthodontic pacifiers have the same effect on 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
Implementing good oral health practices in infancy sets a foundation of optimal oral health for life. An array of factors contributes to the oral health of a child. Finding a dental home and having a preventive care plan can decrease the likelihood of the infant to experience dental disease. Educating the parents and/or caregivers on preventative practices, good oral hygiene, how cariogenic bacteria can be transmitted, 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: *www.dentalcare.ca/en-ca/professional-education/ce-courses/ce387/test*

**1. The goals of infant oral care are _____.**

A. decreasing the likelihood that the child will suffer from ECC
B. decrease the amount of cariogenic bacteria in the oral cavity or delay the transmission
C. manage oral habits
D. identify a dental home
E. Only A, B and C
F. All of the above.
G. None of the above.

**2. All of the following should be included in counseling parents during their developmental stages EXCEPT:**

A. Dietary counseling
B. Oral hygiene and fluoride application
C. Injury prevention
D. Oral habits
E. Psychological counseling

**3. The first dental visit should occur when the child is between six to 12 months of age.**

A. True
B. False

**4. A caries risk assessment evaluates all of the following factors EXCEPT:**

A. Caries history
B. Fluoride exposure
C. Race and ethnicity
D. Carbohydrate exposure
E. Periodontal condition

**5. 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.

**6. 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

**7. 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.

**8. Neonatal teeth erupt within the first 30 days of life.**

A. True
B. False

**9. What is the percentage, according to the CDC, of children that demonstrate caries before kindergarten?**

A. 10
B. 20
C. 30
D. 40

**10. A smear of fluoridated toothpaste should be used for children less than three years of age. A pea size amount should be used for children three to six 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.

**11. 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 and mandibular first primary molars, mandibular canines
C. Mandibular anteriors→mandibular posterior→maxillary anteriors→maxillary posteriors
D. Mandibular posterior→mandibular anterior→maxillary posterior→maxillary anteriors

**12. 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

**13. 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

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## Additional Resources

- No Additional Resources Available.

## About the Authors

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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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Dr. DiMarco graduated from SUNY at Buffalo School of Medicine and Dentistry in 2015. She then completed a two-year residency program in pediatric dentistry at SUNY Buffalo School of Medicine and Dentistry/Women and Children's Hospital of Buffalo. She is currently practicing as a pediatric dentist in a private practice in Pittsford, NY and is also on staff in the department of dentistry at Rochester General Hospital.

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