

12345 first smiles

FIRST SMILES: DENTAL HEALTH BEGINS AT BIRTH

Free Continuing Education

Learning Objectives:

- What causes Early Childhood Caries and how to prevent it
- Caries Risk Assessment for Infants and Young Children
- Putting First Smiles into Practice



Brought to you by:



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INTRODUCTION

Dear Dental Team Member,

Starting January 1, 2007, a new state law requires that children receive a dental check-up by May 31 of their first year in public school, either kindergarten or first grade. The goal of this program is to establish a regular source of dental care for every child - a "dental home".

Many things influence a child's success in school - and one of the most important is their health. Children must be healthy to learn, and children with caries are not healthy. Caries are preventable, but yet they affect more children than any other chronic disease. Children need their teeth to eat properly, speak, smile and feel good about themselves. The new state mandate is a tremendous opportunity for members of the dental team to educate parents and provide young children with early prevention that will keep them healthy and decrease the number of children entering kindergarten with rampant caries.

Enclosed is a **FREE** continuing education correspondence course that will provide science-based, clinically relevant information to help prepare you and your dental team to see children in your practice in order to provide the oral health assessments necessary under the new law. The course provides the latest clinical information on how to detect caries and provide early interventions to reverse the disease process. This course also supports the work of the **CDA Foundation First Smiles** statewide education project for educating dental and medical teams with the latest information regarding early childhood caries.

This course is approved for **two Category I continuing education credits** upon receipt of the enclosed posttest. Feel free to duplicate this course and distribute it to your colleagues and staff by simply copying a blank posttest for each person wishing to complete the course. Credits will be issued via mail within four weeks of receiving the posttest.

Supporting materials and a previously recorded webcast on caries management can be found at www.first5oralhealth.org.

We hope you will take the time to learn more about early childhood caries and decide how you can make a difference in the oral health of California's children.

The Advisory Committee and Staff of the First Smiles Project

FIRST SMILES: DENTAL HEALTH BEGINS AT BIRTH

The purpose of this correspondence course is to improve the pediatric oral health and overall health of children, birth through 5 years old, including those with special needs, by instructing dental team members on how to screen, assess and provide preventive treatment to children, and provide anticipatory guidance on oral health to young children and their families.

LEARNING OBJECTIVES

- Identify pathological and protective factors for dental disease among babies and young children 0-5 years of age
- Perform an oral health assessment for babies and young children 0-5 years of age
- Apply fluoride varnish to the teeth of babies and young children
- Provide effective anticipatory guidance and family education on oral health topics
- List three behavior management techniques when working with babies and young children
- Document and bill appropriately for dental health services for babies and young children

BACKGROUND

The purpose of this course is to encourage dental team members to provide oral health assessments and simple interventions to prevent Early Childhood Caries (ECC), formerly known as Baby Bottle Tooth Decay, among children from birth through age 5. The objective of the First 5 California Oral Health Education and Training Project, *First Smiles*, is to significantly reduce the incidence of tooth decay in young children. This \$7 million, 4-year project is a collaborative effort of the California Dental Association Foundation and The Dental Health Foundation. Training is supplemented with a website, www.First5OralHealth.org, which is updated routinely to provide the latest research references, education materials for families, links to web-based trainings, and other resources. The content and materials for this course were reviewed by a Scientific Advisory Committee composed of researchers, academicians, policy-makers, public health professionals, and private dental practitioners to assure that all information is both science-based and practical.

Although the prevalence of caries significantly declined in the United States from the 1960s through the 1980s, rates are still high among many adults and children. The reductions observed during this period were undoubtedly initially related to the introduction of fluoride into the drinking water, and subsequently to the use of fluoridated dentifrice and professionally applied topical fluoride applications. However, these tools are only successful up to a point. We now must be thinking of more aggressive and effective ways to deal with dental caries as a **bacterially-based transmissible infection**. To place this into perspective, the first survey on the dental health of California's children,¹ based on examinations conducted in 1993 and 1994, reported that:

- 27 percent of preschool children had untreated decay;
- 55 percent of 6- through 8-year-olds had untreated decay;
- Up to 75 percent of minority high school students needed dental care; and
- California's children averaged twice the national level of untreated tooth decay.

An update to this survey, the "California Smile Survey," conducted in 2005 among kindergarten and third grade students, showed very little progress in the prevention of caries. Almost 54 percent of the kindergarten children had either untreated tooth decay or a history of tooth decay; by third grade, the percentage rose to almost 71 percent. Twenty-six percent of the children screened needed dental care, with 4 percent

requiring urgent care due to pain or infection.²

Millions of dollars are spent in California each year on restorative treatment needed as a result of caries, rather than on preventive interventions. Millions of hours are lost at school and work each year as a result of dental caries. There is a growing epidemic of early childhood caries in the United States, particularly in California.

EARLY ASSESSMENT

The primary teeth are important for several reasons. In addition to being essential for eating and for proper speech development, primary teeth hold space in the mouth for the permanent teeth. The primary teeth are also important for smiling, which contributes to a child's self-esteem and social development.

Improving the oral health of young children is clearly on the agenda for our nation, and specifically for California. Early oral health screening, risk assessment, and education are promoted by the American Academy of Pediatrics, American Academy of Family Physicians, American Academy of Pediatric Dentistry, American Dental Association, American Public Health Association, and American Association of Public Health Dentistry.

The American Academy of Pediatrics recommends that every child begin receiving oral health risk assessments by 6 months of age from a pediatrician or a qualified pediatric health care professional.³ This policy is also supported by the American Academy of Pediatric Dentistry, which recommends that health care professionals and all stakeholders in children's health should support the identification of a dental home for all infants by 12 months of age. According to the AAPD definition, "Dental Home" means that a child's oral health care is delivered in a comprehensive, continuously accessible, coordinated and family-centered way by a licensed dentist. The concept of the Dental Home reflects the AAPD's clinical guidelines and best principles for the proper delivery of oral health care to all children, with a concentration on infant/age one patients. The Dental Home enhances the dental professional's ability to assist children and their parents in the quest for optimum oral health care, beginning with the age one dental visit for successful preventive care and treatment as part of an overall oral health care foundation. Additionally, the establishment of the Dental Home will include referral to other dental specialists when the pediatric or general dentist cannot provide the needed care.⁴

CAUSES OF EARLY CHILDHOOD CARIES

Early childhood caries (ECC), as defined by the AAPD, is the presence of one or more decayed (noncavitated or cavitated lesions), missing (due to caries), or filled tooth surfaces in any primary tooth in a child 71 months of age or younger.⁵

ECC is an infectious, transmissible disease caused by *mutans Streptococci*, *Lactobacilli*, and other acid-



Figure 1. Chalky "White Spot" Lesions

producing bacteria. While the transmission is primarily vertical between mothers or other primary caregivers and infants for the majority of children, studies have also demonstrated horizontal transmission from children playing together sharing toys, utensils, toothbrushes, or any other object that passes saliva from one mouth to another.⁶

An early visual sign of ECC is a chalky "white spot" lesion, which is caused by demineralization of the enamel. When detected at this stage, the decay is reversible (Figure 1).

The reversal of this process is remineralization, which occurs when the tooth "heals" by incorporating the calcium and phosphate provided by saliva. This natural tooth repair is enhanced by fluoride if it is present in the mouth, and renders teeth more resistant to acid produced by oral bacteria. The natural process of demineralization and remineralization occurs in the mouth as part of daily eating, snacking and oral hygiene activities.

According to the AAPD, Severe ECC (S-ECC) is defined as any sign of smooth-surface caries. From ages 3 through 5, one or more cavitated, missing (due to caries), or filled



Figure 2. Severe ECC

smooth surfaces in primary maxillary anterior teeth, or a decayed, missing, or filled score of >4 (age 3), >5 (age 4), or >6 (age 5) surfaces constitutes S-ECC.⁷

S-ECC is characterized by a distinctive pattern of tooth decay in infants and young children, often beginning on the maxillary anterior teeth and rapidly

progressing to frank cavitations and tooth structure breakdown of the other primary teeth as they erupt (Figure 2). ECC can begin to develop as soon as teeth erupt into the mouth at 6-10 months of age. Most lesions do not need to be restored until they have penetrated through the enamel into the dentin. Lesions contained in the tooth enamel often can be reversed with a combination of fluoride and antibacterial treatment.

Data from the 1993-94 California Oral Health Needs Assessment of Children documented that the oral health of California's children was well below the rest of the nation. The 2006 California Smile Survey affirmed that 54 percent of California kindergarteners and 71 percent of 3rd grade children had experienced tooth decay. ECC is more prevalent among families with lower socio-economic status, and in certain ethnic or cultural groups, including the children of recent immigrants, and Native American, Asian, African American, and Latino children.

COST OF ECC

The cost of treating ECC can range from hundreds to thousands of dollars. In some cases, treatment requires hospitalization and general anesthesia.⁸ ECC places a large financial burden on third-party payors and public dental care programs including Medi-Cal, Healthy Families, and Healthy Kids, as well as on parents least able to afford treatment.

Once disease is established and caries penetrates to dentin and beyond, restorative care is essential. Restorative care restores the shape and function of the tooth and repairs the effects of decay. Close monitoring for follow-up care is needed. Unless there is follow-through using contemporary preventive education and other strategies, various studies have shown that 40-50 percent of children treated for ECC have recurrent decay within 4-12 months. With only traditional treatment and no preventive follow-up, the disease progresses.^{9,10}

PREVENTION OF ECC

ECC can be prevented with the active involvement of health care providers, encouraging the involvement of families and caregivers. ECC can be prevented by reducing the pathological factors and strengthening the protective ones (Figure 3).

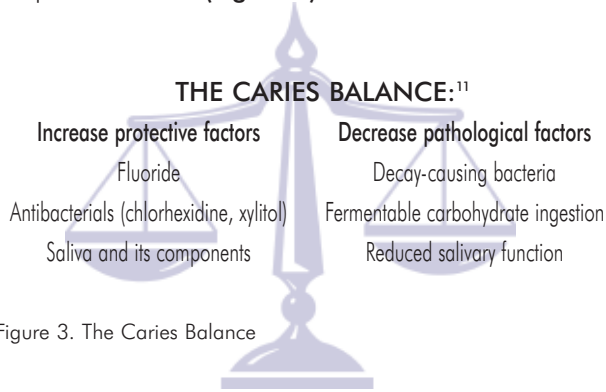


Figure 3. The Caries Balance

Children with special needs are at increased risk for ECC. They may have reduced saliva flow due to medications and other factors. They may be taking multiple medications that contain sweeteners. Because of multiple demands on caretakers, oral health care at home may be inconsistent, including use of fluoride toothpaste. Babies and young children with special needs are considered to be at high risk for tooth decay.

While fluoride hasn't eradicated tooth decay, it is a key factor in the prevention and reduction of tooth decay. Fluoride inhibits demineralization, enhances remineralization, and inhibits plaque bacteria. Water fluoridation is a cornerstone of public health programs. About 30 percent of California's population currently benefits from fluoridated drinking water.

Fluoride toothpaste is effective at preventing dental caries. Daily use in the morning and before bedtime should be promoted for all babies and young children. A small "pea-sized" dab is the recommended amount, administered by wiping it around the teeth with a soft toothbrush, or soft cloth. The toothpaste should be placed on the width of the toothbrush, not the length. This results in a much smaller dab of toothpaste. The parents should wipe off excess toothpaste until children can spit it out.

Fluoride varnish is a highly concentrated fluoride product that can be beneficial for use with moderate- to high-risk babies and young children.¹² Fluoride varnish can be used up to three times in a one- or two-week period or it can be applied three to four times a year. Most staff trained by a dentist (e.g., dental assistant, dental hygienist) or physician (e.g., medical

assistant, nurse) are permitted to apply fluoride varnish, according to the Committee on Dental Auxiliaries (COMDA), the California Nurse Practice Act, and the Medical Board of California. Pursuant to California Code of Regulations, Title 16, Division 10, section 1085(c)(14), "an unlicensed dental assistant is permitted to apply topical fluoride" and as such, "an unlicensed medical assistant is permitted to perform this same function under the supervision of a physician." The First Smiles website, www.first5oralhealth.org, maintains current information on scopes of practice and available training sessions.

Dental teams should talk with families about limiting the frequency of ingestion of simple carbohydrates, including sugary foods and drinks, and foods like white crackers and potato chips. The frequency of fermentable carbohydrate intake contributes to dental caries. Families should also be counseled to limit both total sugar intake and the frequency of carbohydrate exposures per day to enhance both general overall health as well as oral health.

Breastfeeding should be encouraged. Mothers should be advised to remove their child from the breast after feeding and wipe the baby's gums and teeth with a damp washcloth to reduce the risk of ECC. Counsel parents not to let bottle-fed babies go to sleep with a bottle or sippy cup unless it contains only water. This greatly increases the exposure to carbohydrates, and negatively impacts the caries balance. Prolonged exposure to liquids other than water produces an acid bath around the teeth.

Children should begin using a cup at 6 months of age, and parents should consider weaning from the bottle at 12-14 months of age, transitioning to an open cup that isn't easily carried around all day.

Pregnant women should be strongly encouraged to visit a dentist. Several studies have found an association between periodontal disease in pregnant women and premature and low birth weight babies.¹³⁻¹⁵ Other studies, including a recent multi-center one, have failed to find such an association.¹⁶⁻¹⁸ Nevertheless, given the relationship between oral health and general health, oral health care should be a goal in its own right for all individuals.¹⁹ This visit also gives the dental team the opportunity to assess the mother's caries risk, and subsequently the caries risk for her child. Consider interventions such as the use of xylitol or chlorhexidine during pregnancy or soon after birth. Modification of the mother's oral flora during the period from birth until the child is two years of age can significantly affect the child's oral flora.^{20,21}

Chlorhexidine therapy consists of 0.12 percent chlorhexidine gluconate, used as a prescription mouth rinse, 10 ml daily for one week per month, for approximately one year.²² The disadvantage of chlorhexidine is that it has an unpleasant taste, can cause staining, and compliance is often poor. However, if used for only one week every month, staining is decreased, compliance improved, and caries-causing bacterial levels will be reduced. Chlorhexidine may be prescribed to the post-partum mother rather than prenatally.

Xylitol is a naturally occurring, low-calorie sugar substitute with anticariogenic properties. Data from recent studies indicate that xylitol can reduce the occurrence of dental caries in young children, schoolchildren, mothers, and in children via their mothers. Xylitol, a sugar alcohol, is derived mainly from birch and other hardwoods trees. Short-term consumption of xylitol is associated with decreased *Streptococcus mutans* levels in saliva and plaque. Aside from decreasing dental caries, xylitol may also decrease the transmission of *S. mutans* from mothers to children. Commercial xylitol-containing products may be used to help control rampant decay in the primary dentition.²³ Xylitol therapy consists of daily use of lozenges, mints, or gum. Some are available over the counter, and other sources can be ordered from dental suppliers and the Internet. Optimally, xylitol should be the first ingredient listed in over-the-counter gum and mints. The therapeutic dose is 5-10 grams per day.²⁴ See www.first5oralhealth.org/library for products containing efficacious doses of xylitol and where to purchase them.

6-STEP ORAL HEALTH ASSESSMENT

The following section illustrates the simple steps involved in providing an oral health assessment to babies and young children.

Step 1: Interview/Risk Assessment/Anticipatory Guidance

A risk assessment can occur while interviewing the caregiver. This also allows an opportunity to build trust and rapport with both the caregiver and the child. Guidance should be provided throughout the appointment and the assessment should address the following topics:

1. Is the family's home served with fluoridated water, or do the children take fluoride supplements?
2. Do the caregivers brush the child's teeth with a fluoride toothpaste? If so, how often? Ask them to demonstrate how they do it.
3. Has the child been to a dentist yet? When was the last visit?

4. Have the primary caregivers or any of the child's siblings experienced cavities?
5. How often does the child snack? Ask the caregiver to describe a typical day's diet, noting if milk is offered at meals instead of sweetened beverages.
6. When interviewing the caregivers of children with special needs, be sure to get information on medications, special diets or food preferences, and current and planned medical treatment or other therapies.

Families often don't know if their water is fluoridated. It may be helpful to have a chart that lists the fluoride content of local water sources. Alternatively, families can be instructed to call their local water supplier or health department for this information.

Sample risk assessment forms and a map of California's fluoridated ZIP codes are available at www.first5oralhealth.org/library.

Step 2: Position the child

For young children, the child does not need to be put in the dental chair. Rather, the knee-to-knee position is recommended. The child is initially held in the caregiver's arms and slowly lowered to the health care



Figure 4. Knee-to-knee

provider's lap, so the head is resting on the provider's lap and the caregiver is holding the hands of the child (Figure 4). Most young children will cry when lowered back

into the provider's lap. This is normal behavior for a young child and provides a wonderful opportunity to see the child's teeth! The key is to do the screening quickly and keep calm.

Step 3: Toothbrush prophylaxis

Introducing the toothbrush first, and providing a toothbrush prophylaxis, or cleaning, reinforces use of an object the child is familiar with. A toddler can "help" with the cleaning of the teeth, while the



Figure 5. Toothbrush prophylaxis

clinician shows the caregiver proper oral hygiene and positioning techniques. This is a good time to reinforce the importance of cleaning the teeth daily, using a small

dab of fluoride toothpaste and a child-sized toothbrush (Figure 5). Parents should assist with or brush their child's teeth until the child is eight years old.

Step 4: Oral assessment

The toothbrush can serve as a mouth prop, preventing the child from biting down on your fingers. Use the toothbrush to “count” the child's teeth, while assessing for:

- Oral hygiene status (presence of thick plaque)
- Chalky white spots, brown spots, or obvious cavitation
- Tooth defects
- Abscesses or other soft tissue defects



Figure 6. Chalky “White Spot” Lesions

A common finding indicating early tooth decay is the presence of chalky white spots (Figure 6). This is a hypocalcification of the enamel. These spots often can be remineralized with the use of fluoride varnish. As the decay progresses, it may be manifested as brown or black spots (Figure 7).



Figure 7. Brown or black spots

If signs of tooth decay are present, point them out to the caregiver. Encourage the caregiver to “lift the lip” while cleaning at home and to look for chalky white or brown spots, being

sure to look at both the front and back of the teeth, and near the gum line.

Based on the interview with the caregiver and the findings from the oral assessment, you can now determine the child's risk level:

Low risk	High risk
No carious lesions	White spot lesions
No white spot lesions	Carious lesions
No visible plaque	Visible plaque
	Positive family history of caries
	Impaired saliva composition or flow
	Frequent exposures to fermentable carbohydrates

Determining the caries risk for an individual child requires evaluating the number and severity of the risk factors. Certainly, a child with caries presently or in the recent past is at high risk for future caries. A patient with low bacterial levels would need to have several other risk factors present to be considered at moderate risk. Some clinical judgment is needed while also considering the protective factors to determining the risk. Children with special healthcare needs and/or low socioeconomic status are automatically at high risk.

Step 5: Fluoride varnish treatment

Fluoride varnish should be applied to all of the teeth. Fluoride varnish is a highly concentrated fluoride treatment that is safe and effective for use with babies and young children. This task can be performed by other members of the dental team (dental assistant or hygienist) (Figure 8).

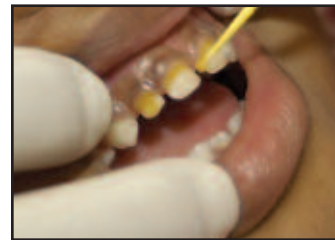


Figure 8. Fluoride varnish treatment

To apply the varnish, dry the child's teeth lightly with a gauze square. The teeth do not need to be completely dry; in fact, fluoride varnish requires a certain amount of saliva to

set up. “Paint” the varnish on the teeth using a “wipe and paint” technique. Varnish is a product where “less is more,” so applying a thin layer will provide optimum benefit.

Inform the parent that colored varnish leaves a mild yellow or brownish tint on the teeth (a new white varnish recently became available), but that teeth should not be brushed until the following day for optimal effect. The tint will disappear when the teeth are brushed.

Step 6: Summarize and review anticipatory guidance and counseling

Preventive counseling, also referred to as anticipatory guidance, can be summarized at the conclusion of the exam, along with findings and recommendations for follow-up. Talk with the caregiver about whether the child has any signs of tooth decay and whether the child is at high risk for future tooth decay. Risk-based anticipatory guidance will help the clinician focus messages on the most important issues for the child and caregiver. Offer simple, individualized messages to help the family prevent tooth decay.

For All Babies and Young Children:

- Drink fluoridated water or use fluoride supplements in non-fluoridated areas
- Daily use of fluoride toothpaste
- Limit quantity and frequency of sugar and other fermentable carbohydrates

For High-Risk Patients (*all of the above, plus*):

- Fluoride Varnish
- Consider antibacterials such as chlorhexidine and xylitol gum for older children

Health education research and learning theory support providing only one or two key messages at each visit. This will guide you to your choices of what to focus on at any given visit. Make notes about what to cover at the next appointment. Be sure to maintain a positive environment and treat the patient and caregiver with respect and kindness, while being sensitive to cultural beliefs.

DOCUMENTATION AND BILLING FOR FLUORIDE VARNISH

Billing Denti-Cal:

- A fluoride varnish application is billed in the same way as any other topical fluoride application. Currently, until Denti-Cal begins accepting CDT codes, a fluoride varnish application must be accompanied by a prophylaxis (which can include a toothbrush prophylaxis— see Denti-Cal Bulletin, Volume 21, Number 6, February 2005 at www.first5oralhealth.org/library). This can be done once every six months without prior authorization. More frequent applications for high-risk children may be prior authorized with appropriate justification.
- For children under 5, the procedure code is 061 and maximum reimbursement is \$35.
- For children 6-17, the procedure code is 062 and maximum reimbursement is \$40.

Medi-Cal also covers fluoride varnish applications as a medical procedure by medical providers.

Billing other Insurers

- Most other dental insurance carriers will cover topical fluoride application. Check with individual insurers to determine coverage.

ADDITIONAL RESOURCES:

The First Smiles website, www.first5oralhealth.org, is a useful resource for information on caries and children's oral health. On the site, you will find the following resources:

- Anticipatory guidance examples, including appropriate messages categorized by age
- Billing for fluoride varnish
- Fluoride and xylitol information
- Risk assessment forms
- Journal articles
- Caregiver education brochures in 10 languages
- Video of the 6-step oral health assessment

All materials on the First Smiles website, www.first5oralhealth.org, are available for download and distribution, free of charge.

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