Oral Health Risk Assessment
Training for Pediatricians and Other Child Health Professionals

Developed by
American Academy of Pediatrics
Pediatrics Collaborative Care (PedCare) Program

Supported by the Maternal and Child Health Bureau,
Health Resources and Services Administration
Department of Health and Human Services
U93MC00184
Child Health Professionals’ Role in Promoting Oral Health

• See children early and regularly.

• Become experts in oral health prevention strategies.

• Advocate for child health: Oral health is part of overall health!
AAP Recommendations for an Oral Health Risk Assessment

• Assess mothers’s/caregiver’s oral health.

• Assess oral health risk of infants and children.

• Recognize signs and symptoms of caries.

• Assess child’s exposure to fluoride.

• Provide anticipatory guidance and oral hygiene instructions (brush/floss).

• Make timely referral to a dental home.
Learning Objectives

• Understand the role of the child health professional in assessing children’s oral health.
• Understand the pathogenesis of caries.
• Conduct an oral health risk assessment.
• Identify prevention strategies.
• Understand the need for establishing a dental home.
• Provide appropriate oral health education to families.
Course Outline

• *Overview of Dental Caries and Early Childhood Caries*
• Pathophysiology of Caries Process
• History: Determining Caries Risk
• Physical: Oral Health Assessment
• Anticipatory Guidance
• Treatment and Referral
Prevalence of Dental Caries

• 5 times more common than asthma
• 7 times more common than hay fever

Caries Rate
• 18% aged 2 to 4 years
• 52% aged 6 to 8 years
• 67% aged 12 to 17 years
Early Childhood Caries

- A severe, rapidly progressing form of tooth decay in infants and young children
- Affects teeth that erupt first, and are least protected by saliva
Early Childhood Caries Can Lead to …

- Extreme pain
- Spread of infection
- Difficulty chewing, poor weight gain
- Extensive and costly dental treatment
- Risk of dental decay in adult teeth
- Crooked bite (malocclusion)
Consequences of Dental Caries

- Missed school days
- Impaired speech development
- Inability to concentrate in school
- Reduced self-esteem
- Possible systemic illness for children with special health care needs
Course Outline

• Overview of Dental Caries and Early Childhood Caries

• *Pathophysiology of Caries Process*

• History: Determining Caries Risk

• Physical: Oral Health Assessment

• Anticipatory Guidance

• Treatment and Referral
Factors Necessary for Caries

**TOOTH**
- Age
- Fluorides
- Morphology
- Nutrition
- Trace Elements
- Carbonate Level

**SUBSTRATE**
- Oral Clearance
- Oral Hygiene
- Salivary Stimulants
- Frequency of Eating
- Carbohydrate (type, concentration)

**FLORA**
- *Strep mutans* (Substrate)
- Oral Hygiene
- Fluoride in Plaque
Factors Necessary for Caries

- Strep mutans (Substrate)
- Oral Hygiene
- Fluoride in Plaque

TOOTH
- Age
- Fluorides
- Morphology
- Nutrition
- Trace Elements
- Carbonate Level

SUBSTRATE
- Oral Clearance
- Oral Hygiene
- Salivary Stimulants
- Frequency of Eating
- Carbohydrate (type, concentration)
Oral Flora

- Normal oral flora = billions of bacteria
- Site-specific and not colonized until the eruption of first tooth
Oral Flora: Pathogenesis of Caries

- An infectious process
- Initiated by pathogenic bacteria—*Streptococcus mutans, Lactobacillus, and Streptococcus sobrinus*
Oral Flora: How Does Infection Occur?

- Transmitted mainly from mother or primary caregiver to infant
- Window of infectivity is first 2 years of life
- Earlier child colonized, the higher the risk of caries
Fluoride’s Influence on Oral Flora

• Reduces enamel solubility

• Promotes remineralization of enamel, and may arrest or reverse early caries

• Inhibits the growth of cariogenic organisms, thus decreasing acid production

• Concentrated in dental plaque

• Primarily topical even when given systemically
Factors Necessary for Caries

Strep mutans (Substrate) Oral Hygiene Fluoride in Plaque

TOOTH
Age
Fluorides
Morphology
Nutrition
Trace Elements
Carbohydrate Level

SALIVA
Flow Rate
pH

SUBSTRATE
Oral Clearance
Oral Hygiene
Salivary Stimulants
Frequency of Eating
Carbohydrate (type, concentration)
Substrate: You Are What You Eat

- Promoted by carbohydrates, which break down to acid.
- Acid causes demineralization of enamel.
Substrate: Environmental Influences

- Saliva inhibits bacterial growth.
- Frequent snacking promotes growth of cariogenic bacteria.
- Unremoved plaque promotes the caries process.
Not Just What You Eat, But How Often

- Acids produced by bacteria after sugar intake persist for 20 to 40 minutes.
- Frequency of sugar ingestion is more important than quantity.
Breastfeeding

• The AAP and AAPD strongly endorse breastfeeding.

• Although breastmilk alone is not cariogenic, it may be when combined with other carbohydrate sources.

• For frequent nighttime feedings with anything but water after tooth eruption, consider an early dental home referral.
Course Outline

- Overview of Dental Caries and Early Childhood Caries
- Pathophysiology of Caries Process
- *History: Determining Caries Risk*
- Physical: Oral Health Assessment
- Anticipatory Guidance
- Treatment and Referral
High-Risk Groups for Caries

• Children with special health care needs
• Children from low socioeconomic and ethnocultural groups
• Children with suboptimal exposure to topical or systemic fluoride
• Children with poor dietary and feeding habits
• Children whose caregivers and/or siblings have caries
• Children with visible caries, white spots, plaque, or decay
Children With Special Health Care Needs (CSHCN)

Recommendations for Child Health Professionals

- Be aware of oral health problems/complications associated with medical conditions.
- Monitor impact of oral medications and therapies.
- Choose non–sugar-containing medications if given repeatedly or for chronic conditions.
- Refer early for dental care (before or by age 1 year).
- Emphasize preventive measures.
Common Issues Among Children With Special Health Care Needs

- Children with asthma and allergies are often on medications that dry salivary secretions increasing risk of caries.

- Children who are preterm or low birth weight have a much higher rate of enamel defects and are at increased risk of caries.

- Children with congenital heart disease are at risk for systemic infection from untreated oral disease.
Socioeconomic Factors

The rate of early childhood dental caries is near epidemic proportions in populations with low socioeconomic status.

• No health insurance and/or dental insurance

• Parental education level less than high school or GED

• Families lacking usual source of dental care

• Families living in rural areas
Ethnocultural Factors

- Increased rate of dental caries in certain ethnic groups
- Diet/feeding practices and child-rearing techniques influenced by culture
Fluoride Exposure

- Determine fluoride exposure: systemic versus topical

- Fluoridated water
  - 58% of total population
  - Optimal level is 0.7 to 1.2 ppm
  - Significant state variability
  - CDC fluoridation map
Course Outline

• Overview of Dental Caries and Early Childhood Caries
• Pathophysiology of Caries Process
• History: Determining Caries Risk
• Physical: Oral Health Assessment
• Anticipatory Guidance
• Treatment and Referral
Maternal/Primary Caregiver Screening

- Assess mother’s/caregiver’s oral history.
- Document involved quadrants.
- Refer to dental home if untreated oral health disease.
Child Oral Health Assessment

Prepare for the Examination

• Provide rationale.

• Describe caregiver role.

• Ensure adequate lighting.

• Assemble necessary equipment.
Positioning Child for Oral Examination

• Position the child in the caregiver’s lap facing the caregiver.

• Sit with knees touching the knees of caregiver.

• Lower the child’s head onto your lap.

• Lift the lip to inspect the teeth and soft tissue.
Primary Teeth Eruption

**Upper Teeth**
- Central incisor: 8-12 months, Exfoliate: 6-7 years
- Lateral incisor: 9-13 months, Exfoliate: 7-8 years
- Canine (cuspid): 16-22 months, Exfoliate: 10-12 years
- First molar: 13-19 months, Exfoliate: 9-11 years
- Second molar: 25-33 months, Exfoliate: 10-12 years

**Lower Teeth**
- Second molar: 23-31 months, Exfoliate: 10-12 years
- First molar: 14-18 months, Exfoliate: 9-11 years
- Canine (cuspid): 17-23 months, Exfoliate: 9-12 years
- Lateral incisor: 10-16 months, Exfoliate: 7-8 years
- Central incisor: 6-10 months, Exfoliate: 6-7 years
What to Look For

• Lift the lip to inspect soft tissue and teeth.

• Assess for
  - Presence of plaque
  - Presence of white spots or dental decay
  - Presence of tooth defects (enamel)
  - Presence of dental crowding

• Provide education on brushing and diet during examination.
Check for Normal Healthy Teeth
Check for Early Signs of Decay: White Spots
Check for Later Signs of Decay: Brown Spots
Check for Advanced/Severe Decay
AAPD
Caries Risk Assessment Tool (CAT)

<table>
<thead>
<tr>
<th>Caries Risk Indicators</th>
<th>Low Risk</th>
<th>Moderate Risk</th>
<th>High Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clinical Conditions</strong></td>
<td>• No carious teeth in past 24 months</td>
<td>• Carious teeth in the past 24 months</td>
<td>• Carious teeth in the past 12 months</td>
</tr>
<tr>
<td></td>
<td>• No enamel demineralization (enamel caries “white spot lesions”)</td>
<td>• 1 area of enamel demineralization (enamel caries “white spot lesions”)</td>
<td>• More than 1 area of enamel demineralization (enamel caries “white spot lesions”)</td>
</tr>
<tr>
<td></td>
<td>• No visible plaque; no gingivitis</td>
<td>• Gingivitis</td>
<td>• Visible plaque on anterior (front) teeth</td>
</tr>
<tr>
<td><strong>Environmental Characteristics</strong></td>
<td>• Optimal systemic and topical fluoride exposure</td>
<td>• Suboptimal systemic fluoride exposure with optimal topical exposure</td>
<td>• Frequent (ie, 3 or more) between-meal exposures to simple sugars or foods strongly associated with caries</td>
</tr>
<tr>
<td></td>
<td>• Consumption of simple sugars or foods strongly associated with caries initiation primarily at mealtimes</td>
<td>• Occasional (ie, 1-2) between-meal exposures to simple sugars or foods strongly associated with caries</td>
<td>• Low-level caregiver socioeconomic status (ie, eligible for Medicaid)</td>
</tr>
<tr>
<td></td>
<td>• High caregiver socioeconomic status</td>
<td>• Mid-level caregiver socioeconomic status (ie eligible for school lunch program or SCHIP)</td>
<td>• No usual source of dental care</td>
</tr>
<tr>
<td></td>
<td>• Regular use of dental care in an established dental home</td>
<td>• Irregular use of dental services</td>
<td>• Active caries present in the mother</td>
</tr>
<tr>
<td><strong>General Health Conditions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Children with special health care needs</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Conditions impairing saliva composition/flow</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Course Outline

• Overview of Dental Caries and Early Childhood Caries
• Pathophysiology of Caries Process
• History: Determining Caries Risk
• Physical: Oral Health Assessment
• *Anticipatory Guidance*
• Treatment and Referral
Anticipatory Guidance

- Minimize risk of infection.
- Optimize oral hygiene.
- Reduce dietary sugars.
- Remove existing dental decay.
- Administer fluorides judiciously.
Minimize Risk for Infection

- Address active oral health disease in mother/caregiver.
- Educate about the mechanism of cariogenic bacteria transmission.
- Model positive oral hygiene behaviors.
- Provide xylitol gum in certain cases.
Xylitol for Mothers

Xylitol gum or mints used 4 times a day may prevent transmission of cariogenic bacteria to infants.

- Helps reduce the development of dental caries
- A “sugar” that bacteria can’t use easily
- Resists fermentation by mouth bacteria
- Reduces plaque formation
- Increases salivary flow to aid in the repair of damaged tooth enamel
Substrate: Contributing Dietary and Feeding Habits

- Frequent consumption of carbohydrates, especially sippy cups/bottles with fruit juice, soft drinks, powdered sweetened drinks, formula, or milk

- Sticky foods like raisins/fruit leather (roll-ups), and hard candies

- Bottles at bedtime or nap time not containing water

- Dipping pacifier in sugary substances
# Toothbrushing Recommendations

<table>
<thead>
<tr>
<th>Age</th>
<th>Toothbrushing Recommendations (CDC, 2001)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1 year</td>
<td>~ Clean teeth with soft toothbrush</td>
</tr>
<tr>
<td>1–2 years</td>
<td>~ Parent performs brushing</td>
</tr>
</tbody>
</table>
| 2–6 years | ~ Pea-sized amount of fluoride-containing toothpaste 2x/day  
            ~ Parent performs or supervises |
| > 6 years | ~ Brush with fluoridated toothpaste 2x/day |
Toothpaste and Children

- Children ingest substantial amounts of toothpaste because of immature swallowing reflex.

- Early use of fluoride toothpaste may be associated with increased risk of fluorosis.

- Once permanent teeth have mineralized (around 6-8 years of age), dental fluorosis is no longer a concern.
Toothpaste

A small pea-sized amount of toothpaste weighs 0.4 mg to 0.6 mg fluoride, which is equal to the daily recommended intake for children younger than 2 years.
Optimizing Oral Hygiene: Flossing

When to Use Floss

• Once a day (preferably at night)

• When 2 teeth touch
Course Outline

• Overview of Dental Caries and Early Childhood Caries
• Pathophysiology of Caries Process
• History: Determining Caries Risk
• Physical: Oral Health Assessment
• Anticipatory Guidance
• Treatment and Referral
# Recommended Fluoride Supplement Schedule

<table>
<thead>
<tr>
<th>Age</th>
<th>Fluoride Concentration in Community Drinking Water</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;0.3 ppm</td>
</tr>
<tr>
<td>0–6 months</td>
<td>None</td>
</tr>
<tr>
<td>6 mo–3 yrs</td>
<td>0.25 mg/day</td>
</tr>
<tr>
<td>3 yrs–6 yrs</td>
<td>0.50 mg/day</td>
</tr>
<tr>
<td>6 yrs–16 yrs</td>
<td>1.0 mg/day</td>
</tr>
</tbody>
</table>

Fluoride Varnish

- 5% sodium fluoride or 2.26% fluoride in a viscous resinous base in an alcoholic suspension with flavoring agent (eg, bubble gum)

- Has not been associated with fluorosis

- Application does not replace the dental home nor is it equivalent to comprehensive dental care
Applying Fluoride Varnish
Remove Existing Dental Decay: Treating an Infection
Referral: Establishment of Dental Home

What is a dental home?

When to refer?

- Refer high-risk children by 6 months.
- Refer all children by 1 year.
Community Systems of Care

• Identify dental care professionals in your community.

• Develop partnerships.
You Can Make a Difference!

• Institute oral health risk assessments into well-child visits.
• Provide patient education regarding oral health.
• Provide appropriate prevention interventions (eg, feeding practices, hygiene).
• Document findings and follow-up.
• Train office staff in oral health assessment.
• Identify dentists (pediatric/general) in your area who accept new patients/Medicaid patients.
• Take a dentist to lunch to establish a referral relationship.
• Investigate fluoride content in area water supply.