Risk-based Disease Prevention and Management of Early Childhood Dental Disease

Elizabeth Berry DDS, MPH, MSD
Objectives

Define Early Childhood Caries

Describe how to utilize caries risk assessment for management of early childhood caries

Explain how to implement early childhood caries management within a dental clinic
Early Childhood Caries Collaborative

- A national quality improvement collaborative
- “Designed to foster the rapid spread of an alternative disease management model of ECC care, focused on prevention and minimally invasive treatment”
- Led and funded by the DentaQuest Institute
- 40 sites
Early Childhood Caries Collaborative

- Phase III
  - Redesign care delivery systems
  - Every child receives a caries risk assessment
  - Oral health education
  - Frequency of recall dependent on assessment
Early Childhood Caries

Definition

- Caries in any primary tooth in a child younger than 6 years of age
- “Presence of 1 or more decayed, missing (due to caries), or filled tooth surfaces in any primary tooth in a child younger than 6 years of age”
- Distinctive pattern
- Many teeth affected
- Caries progresses rapidly
Severe Early Childhood Caries

- Children younger than 3 years of age, any sign of smooth-surface caries
- Children 3 to 5 years of age: 1 or more cavitated, missing (due to caries), or filled smooth surfaces in primary maxillary teeth or a decayed, missing, or filled score of ≥4 (age 3), ≥5 (age 4), or ≥ 6 (age 5) surfaces also constitutes S-ECC.
Early childhood caries is the most common chronic condition among children in the US with a prevalence in 2-5 year olds having increased 15% in recent years to 28%

80 percent of tooth decay is found in 20 to 25 percent of children, large portions of whom live in poverty or low-income households and lack access to an on-going source of quality dental care.

Nearly half of all children experience cavities before kindergarten with minority and low income children disproportionately affected

Early Childhood Caries

- Associated with great morbidity and even mortality
- Children 5 to 7 years of age in the United States have been estimated to lose more than 7 million school hours annually because of dental problems

Direct and Indirect Costs
- Emergency room
- Difficulty eating
- Decrease quality of life
- Lost school days

Early Childhood Caries

- Costs of general anesthesia are high and relapse rates are 37 to 79 percent.
- Restorative treatment alone does not stop the disease process.
- Children with ECC are at higher risk for future carious lesions in primary and permanent dentitions.

How do we treat this complex disease?
Dental Caries is an Infectious Disease

1. Host
2. Cariogenic microflora
3. Carbohydrate source
4. Exposure time
Complex Intervention

- Complex intervention for a complex disease
- Chronic disease management
“Combined and unceasing effort of everyone-healthcare professionals, patients and their families, researchers, payers, planner and educators - to make changes that will lead to better patient outcomes”

Batalden

Systematic and continuous improvement in health services and health status of targeted patient groups

Incorporation of evidence-based knowledge
Age One Dental Visit

- Dental Home- derived from AAP model of medical home
- Ongoing relationship, comprehensive, continuously accessible
- Start early and establish a dental home
  - 6 months after first tooth erupts or by 12 months of age
Caries Risk Assessment

- Disease process instead of treating outcome of the disease
- Disease factors for a specific patient
- Individualizing/customized preventive plan
- Anticipatory guidance
# Caries Risk Assessment

**AAPD Clinical guidelines**

## Table 2. Caries-risk Assessment Form for 0-5 Year Olds\(^{59,60}\)

*For Dental Providers*

<table>
<thead>
<tr>
<th>Factors</th>
<th>High Risk</th>
<th>Moderate Risk</th>
<th>Low Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biological</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother/primary caregiver has active caries</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent/caregiver has low socioeconomic status</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child has &gt;3 between meal sugar-containing snacks or beverages per day</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child is put to bed with a bottle containing natural or added sugar</td>
<td>Yes</td>
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</tr>
<tr>
<td>Child has special health care needs</td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Child is a recent immigrant</td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Protective</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child receives optimally-fluoridated drinking water or fluoride supplements</td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Child has teeth brushed daily with fluoridated toothpaste</td>
<td></td>
<td></td>
<td>Yes</td>
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<tr>
<td>Child receives topical fluoride from health professional</td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Child has dental home/regular dental care</td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Clinical Findings</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child has &gt;1 decayed/missing/filled surfaces</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child has active white spot lesions or enamel defects</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child has elevated mutans streptococci levels</td>
<td>Yes</td>
<td></td>
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<td>Child has plaque on teeth</td>
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Clinical guidelines AAPD
Caries Risk Assessment

Three Main Domains:
- Risk and/or biological factors
  - Patient frequently snacking
  - Patient goes to bed with bottle or sippy cup with fluid other than water
- Protective factors
  - Fluorinated water
  - Fluorinated toothpaste use
  - Xylitol
- Clinical Findings
  - Demineralized enamel surface
  - Cavitated lesions
  - Plaque
  - Salivary flow
### CRA- Biological Factors

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- Mother or caregiver has active caries
- Parent or caregiver low socioeconomic status
- Child has > 3 between meal sugar-containing snacks or beverages per day
- Child is put to bed with a bottle containing natural or added sugar
- Child has a special health care need
- Child is a recent immigrant
## CRA- Protective

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- Child receives optimally-fluoridated drinking water or fluoride supplements
- Child has teeth brushed daily with fluoridated toothpaste
- Child receives topical fluoride from health professional
- Child has a dental home/regular dental care
CRA- Clinical Exam

- Child has > 1 decayed/missing/filled surfaces
- Child has active white spot lesions or enamel defects
- Child has elevated mutans streptococci levels
- Child has plaque on teeth
CRA-Clinical Exam

- International Caries Detection and Assessment System (ICDAS)

- Important to note and chart cavitated, white spot lesions, and enamel defects
Caries Risk Assessment

- Protective Factors
- Biological Factors

No caries  Caries
## Caries Risk Assessment

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<td>Overall assessment of dental caries risk Description of CRA</td>
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- Divided into high and moderate risk factors and protective factors
- AAPD guidelines
- Completed at every recall and new patient exam
- Ease of use but still retaining essential information
- Implemented in electronic health record
Caries Risk Assessment

Dental assistant works with family to obtain information

Provider determines overall risk

Provider also reports in the progress note

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Self-management Goals

- Receives dental treatment
- Health snacks
- Brush with fluoride toothpaste at least twice daily
- No soda
- Less or no juice
- Wean off bottle (at least no bottle for sleeping)
- Only water or milk in sippy cup
- Chew gum with xylitol
- Drink Tap water
- Less or no candy or junk food
Goals for Healthy Teeth (Age 5 and younger)

Patient Name: ____________________________
Date of Visit: ____________________________
Dentist: ____________________________
Hygienist: ____________________________

Your child has been assessed to have the following for caries (cavities):
✓ High      ☐ Medium      ☐ Low

Between today and your next visit, please work on the Goals checked (✓) below:

☐ Next fluoride visit in ___ months
☐ Healthy snacks such as fruit, carrot sticks, yogurt, low fat cheese, pretzels, whole grain crackers
☐ No soda/energy drinks
☐ No juice
☐ Juice only with meals
☐ Less or no candy & junk food
☐ Chew sugar-free gum (e.g. Trident, Extra)
☐ No sippy cup/bottle
☐ Only plain milk or water in cup or bottle
☐ If bottle to bed, use only water
☐ Drink fluoridated water, tap water
☐ Daily flossing with floss string or pick
☐ Brush morning and before bed with fluoride toothpaste:
  ☐ Thin smear (<2 years old)
  ☐ pea-size amount (2-5 years old)
☐ Fluoride varnish was applied in clinic today.
  * Wait until tomorrow to brush/floss. Avoid hard, crunchy, and sticky foods.
☐ Use Gel-kam ___ a day
  - Apply thin smear to all teeth
  * Wait 30 minutes before eating, drinking or rinsing after

IMPORTANT:
The last thing that touches your child’s teeth before bedtime is the toothbrush with fluoride toothpaste.

On a scale of 1-5, how likely do you think you can help your child meet these goals?

1 = Not very likely
2 = Not sure
3 = Very likely

Clinician’s Comments:

Next visit Date: ______________
☐ Preventative
☐ 1 month follow-up
☐ Restorative
☐ 3 month follow-up
☐ 6 month checkup

Dentaquest Institute
2400 Computer Drive
Westborough MA 01581
Scale where parent/guardian states how likely they are to meet these goals
Motivational Interviewing

- Asking questions encouraging individuals to talk about their personal goals
- Open-ended questions and reflective listening
- Provide advice or information that is best tailored to the patient and their goals
- Motivate others to make changes in behavior based on the patient’s stage of readiness
Motivational Interviewing

"What are the challenges you face in bringing your child in for appointments?"

"You've got a lot on your plate and I think you're doing a great job. What can we do to help you get your son here for his appointments?"

"How often does your child...." (Rather than, "Does your child brush their teeth/drink soda/etc.")
Parent/Guardian

Dental Assistant

Dentist

Patient
Visual Aids

Risk-Based Disease Prevention and Management of Early Childhood Caries (ECC)

A partnership between families and care providers

FLIPCHART

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Visual Aids

Gummy/Sticky Snacks in Grooves of Teeth

Cavities: Multiple Factors are Important

- Bacteria
- Sugars/Starches in foods and drinks
- Frequency of eating
- Amount of saliva

TIME
Recalls

- Moderate to high risk patient:
  - 3 month recalls

- Low risk patient:
  - 6 month recalls

- Every recall
  - Update caries risk assessment
  - Self management goals
  - Fluoride varnish application
Fluoride

- Fluoride Varnish
  - Concentrated topical fluoride with a resin or synthetic base
  - 22,600 ppm versus APF or NaF gels 12,300 ppm
  - 11-12 mg of fluoride exposure versus 45-65 mg of F exposure

- Fluoride toothpaste:
  - All children 2-5 years of age should brush with “pea-size” amount of fluoride toothpaste
  - Moderate to high caries risk patient younger than 2 years of age should have their teeth brushed with a “smear” amount of fluorinated toothpaste
Electronic Health Record

- Caries Risk Assessment
- Code if patient high/moderate/low risk
- Code in place if complete self-management goals
- Progress note includes self management goal
How To Implement?

- Start small, be realistic
  - Target population: Children with early childhood caries that require general anesthesia for full mouth dental rehabilitation
  - Three practitioners implementing within the clinic
  - Team of individuals working just on this project
  - Data/coding in electronic health record to assess progress
PDSA Learnings

Plan:
- What change is to be implemented?
- Carry out the change/test

Do:
- Study the data or what happened after the change, reflect

Act:
- Plan the next change based on your study

Study:
- Plan
- Act
Team

- Monthly Meetings
- Reassess what is working and what is not working
- PDSAs
- Remember overall goal: making a difference


Guidelines on Caries Risk Assessment and Management of Infants, Children, and Adolescents. Clinical Guidelines AAPD
References

- Policy on Dental Home. Clinical Guidelines AAPD.
- Dental Health Foundation, the 2006 oral health needs assessment of children, dentalhealthfoundation.org
- www.cdafoundaJon.org/educaJon/ cambra
Thank you

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