

# Smiles for Life

*A national oral health curriculum*

## Module 2: Child Oral Health



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# Educational Objectives

- Discuss the prevalence, etiology (causes), and consequences of Early Childhood Caries (ECC)
- Recognize the various stages of ECC on oral examination
- Assess a child's risk of developing ECC
- Implement prevention of ECC through use of fluoride, proper hygiene, diet, and appropriate dental referral
- Discuss common dental development issues in children and adolescents
- Offer appropriate anticipatory guidance regarding developmental issues



# Early Childhood Caries (ECC)

## Chapter Objectives

- Discuss the prevalence, etiology (causes), and consequences of ECC
- Recognize the various stages of ECC during an oral examination



Image: Wojciech Gajda/Photos.com

# What is ECC?

## Etiology (Causes)

- Infectious, chronic disease that destroys tooth structure leading to loss of chewing function, pain, and infection
- Now the disease is called ECC as a variety of feeding habits are implicated
- Affects 35% of 3-year-olds from low income families

## Progression

- Upper front teeth that are least protected by saliva are affected first
- Disease moves toward the back of the mouth as teeth come out



Photos: Joanna Douglass, BDS, DDS

# Prevalence

- ECC is the most common chronic disease in children and is 5 times more common than asthma
- 30 to 50% of low income children have ECC
- ECC prevalence in children 2 to 5 years old was 23% in 2011-2012
- 80% of dental caries occurs in 20% of children
- Up to 70% of Native American children may have ECC

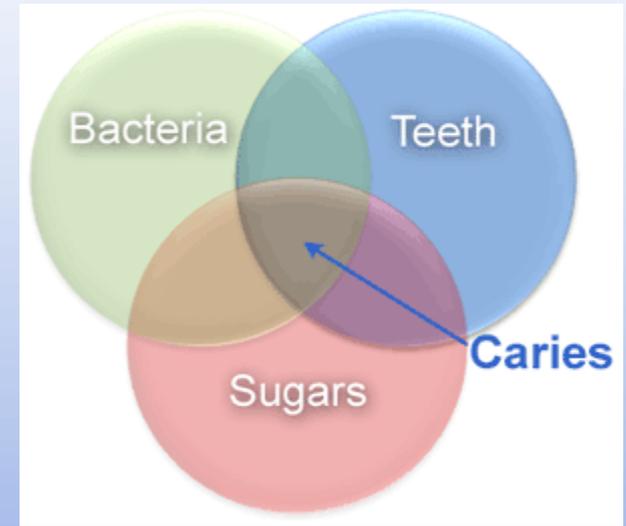


Photos: Joanna Douglass, BDS, DDS

# Etiology: The Triad

## What causes dental caries?

- Caries is a multi-step process that results in destruction of the tooth structure.
- Oral bacteria metabolize the sugars from dietary carbohydrates into acid
- The acid demineralizes the tooth enamel
- If the cycle of acid production and demineralization continues, the enamel will become weakened and break down into a cavity



## Etiology

- Bacteria that cause caries are transmitted from the primary caregiver, typically the mother
- Transfer is thought to occur via saliva contact
- The higher the bacteria level in the caregiver's mouth, the more likely the child will become colonized

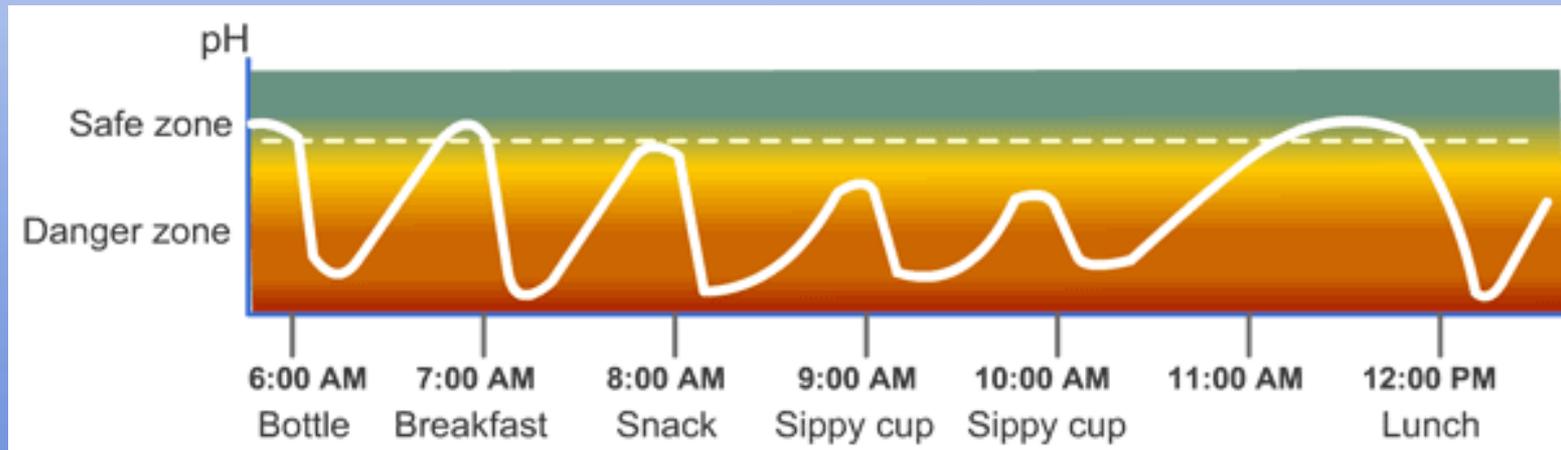
## Caregivers can decrease the risk of passing bacteria to children by:

- Receiving regular comprehensive dental care
- Limiting the frequency of sugar in the diet
- Maintaining excellent oral hygiene and using a fluoride containing toothpaste
- Using preventive agents such as topical fluorides, antibacterial mouth rinses, and xylitol containing gums in appropriate age groups

# Etiology: Sugars

## It's not just WHAT, but HOW children eat

- Oral bacteria produce acids that persist for 20–40 minutes after sugar ingestion
- Oral acids lead to enamel demineralization
- Remineralization occurs when acid is buffered by saliva
- If sugars are consumed frequently, there is insufficient time for remineralization to occur; tooth is subjected to continued demineralization and the caries process progresses



# Etiology: Teeth

## Nature of enamel defects

- 20 to 40% of children have enamel defects
- Defects may appear as changes in translucency, color, or texture
- It may be difficult to distinguish enamel defects from early clinical signs of caries (bottom photo) though this does not affect management.
- Enamel defects are associated with substantially increased risk of ECC.
- Increased incidence of enamel defects is associated with:
  - Lower socioeconomic status (SES)
  - Children who were born prematurely
  - Children who have certain congenital diseases



Photos: Joanna Douglass, BDS, DDS

# Healthy Teeth

## Nature of healthy teeth

- Creamy white with no signs of deviation in color, roughness, or other irregularities
- Any child with enamel abnormalities is at high risk for caries and should be referred to a dentist for further evaluation
- Topical fluoride varnish can prevent decay



Photos: Joanna Douglass, BDS, DDS

## Appearance & Symptoms

- White spots and lines are the first clinical signs of demineralized enamel
- Typically begins at the gingival margin
- If the disease process is not managed, lesions will progress to cavities that are initially yellow

## Treatment

- Immediate dental referral
- Dietary and oral hygiene counseling
- Topical fluoride varnish can reverse or arrest lesions



Photos: Joanna Douglass, BDS, DDS

# Brown Cavitations

## Appearance & Symptoms

- Brown cavitations represent areas where loss of enamel has exposed underlying layer of the tooth (dentin)
- Lesions darken as they become stained with pigments from food



## Treatment

- Immediate dental referral
- Dietary and oral hygiene counseling



Photos: Joanna Douglass, BDS, DDS

## Appearance & Symptoms

- Abscesses and fistulae may be present
- Patient may experience pain, but children may be too young to accurately verbalize it



**10 month old**

## Treatment

- Urgent dental referral
- Dietary and oral hygiene counseling
- Topical fluoride to prevent development of new lesions



**18 month old**

Photos: Joanna Douglass, BDS, DDS

## Appearance & Symptoms

- Multiple dark cavities appear in anterior and posterior teeth
- Possible for abscesses and draining fistulae to be present
- Patients may experience pain



## Treatment

- Urgent dental referral
- Dietary and oral hygiene counseling
- Use of fluoride to prevent development of new lesions



Photos: Joanna Douglass, BDS, DDS

# Caries Progression

ECC affects the teeth that emerge early and are least protected by saliva.

## Order of Progression

- Upper incisors (maxillary anterior teeth)
- First molars (mandibular primary molars)
- Second molars (maxillary primary molars)



Photos: Joanna Douglass, BDS, DDS

## ECC has severe consequences

- Pain
- Impaired chewing and nutrition
- Infection
- Increased caries in permanent dentition
- School/work absences
- Students with dental pain are almost 4 times more likely to have a low grade point average
- Difficulty sleeping
- Poor self-esteem
- Extensive and expensive dental work which often must be completed under general anesthesia



Photo: Donald Greiner, DDS, MS



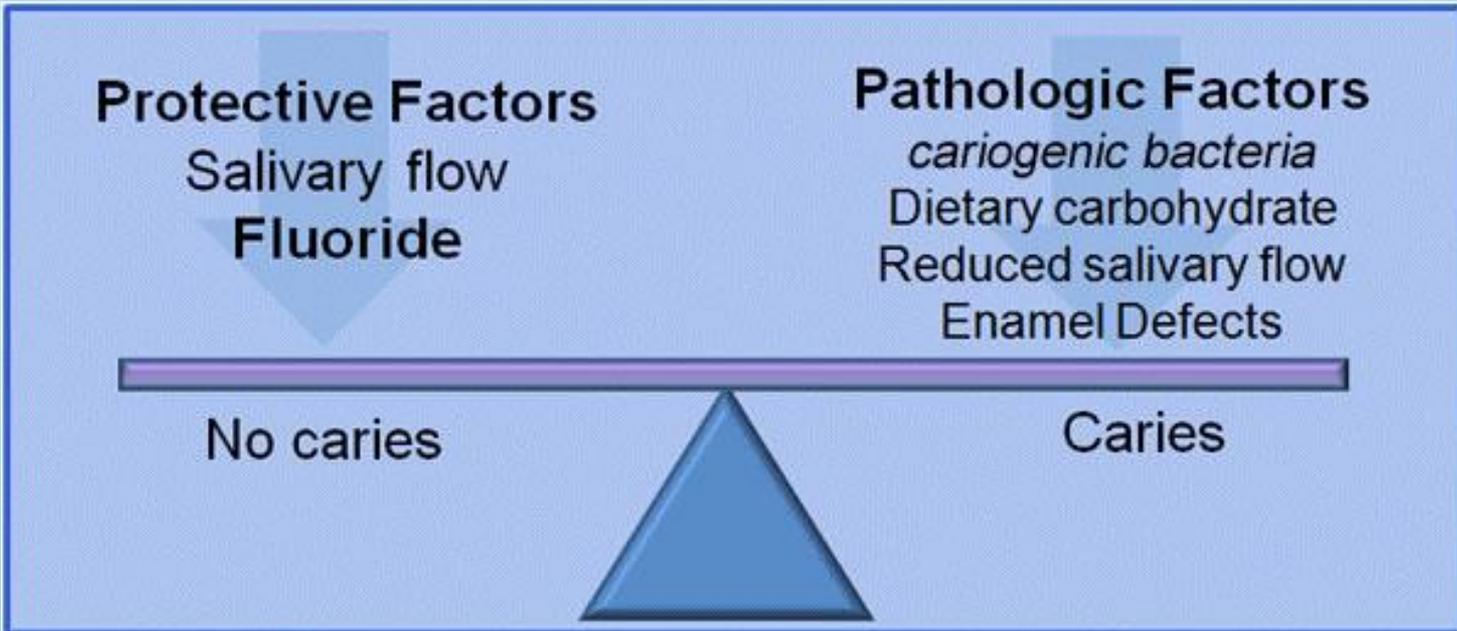
Photo: Joanna Douglass, BDS, DDS



Photo: Joanna Douglass, BDS, DDS

# Ongoing Balance

Preventing or reversing the caries process is possible by enhancing protective factors and reducing pathologic factors.





# ECC Risk Assessment

## Chapter Objective

- Assess a child's risk of developing ECC
- Understand formal ECC risk assessment tool use in clinical practice



Image: Getty

# Why Is Risk Assessment Important?

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80% of ECC occurs in 20% of children. Oral health risk assessments should begin around 4 to 6 months of age, just before the first tooth emerges.

Risk assessment determines the depth of nutritional and hygiene counseling

## Moderate Risk

One of the following risk factors:

- Lower SES
- Poor access to health care
- Family members have cavities – particularly mother
- Diet - drinks or eats sugar containing foods two or more times between meals
- Diet - sleeping with bottle
- Special health care needs
- Developmental enamel defects

## High Risk

Multiple moderate risk factors and one of the following:

- Plaque on teeth
- Presence of white spots or cavities
- No systemic fluoride exposure



# ECC Prevention

## Chapter Objective

- Implement prevention of ECC through use of fluoride, proper hygiene, diet, and appropriate dental referral



Image: Jupiterimages/Photos.com

## Topical Mechanisms (main effect)

- Inhibiting tooth demineralization
- Enhancing remineralization
- Inhibiting bacterial metabolism

## Fluoride Sources

- Topical: Fluoride toothpastes  
Gels, foams, mouthwashes  
Fluoride varnish
- Dietary: Water fluoridation  
Dietary fluoride supplements



Photos: Joanna Douglass, BDS, DDS

## Guidelines

- All children should receive fluoride through systemic water fluoridation or dietary supplements
- Children who drink optimally fluoridated water should NOT receive supplements
- Optimal water fluoridation is 0.7 ppm

## Determine patient's water source and fluoride content

- Public water supply (Local health department or water company can provide fluoridation levels)
- Bottled water (variable fluoride levels)
- Well water (variable fluoride levels, requires testing)

## Appearance and Significance

- White mottling of teeth due to chronic excessive exposure to fluoride during tooth development
- Cosmetic issue that does not affect systemic health



Photo: Joanna Douglass, BDS, DDS



Photo: John McDowell, DDS

# Hygiene: Tooth Brushing

## Guidelines

- Brush twice daily beginning as soon as teeth emerge
  - Bedtime is most critical due to decreased salivary flow at night
- Caregiver should brush child's teeth until age 8 or 9
  - Young children have difficulty brushing all areas
  - Parents should continue to intermittently supervise brushing after children assume independence
- Caregiver should stand or sit behind child
- Lift the lip and brush along the gum line
- Child should spit out, not rinse, after brushing to increase topical fluoride exposure



Photos: Joanna Douglass, BDS, DDS

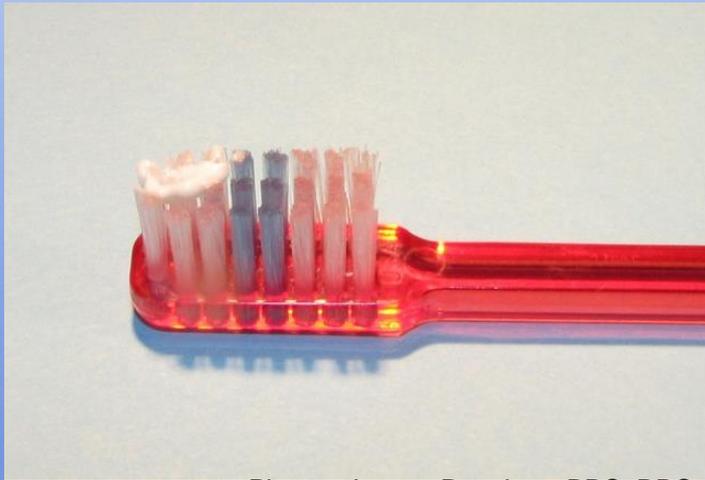
# How Much Toothpaste?

## Guidelines

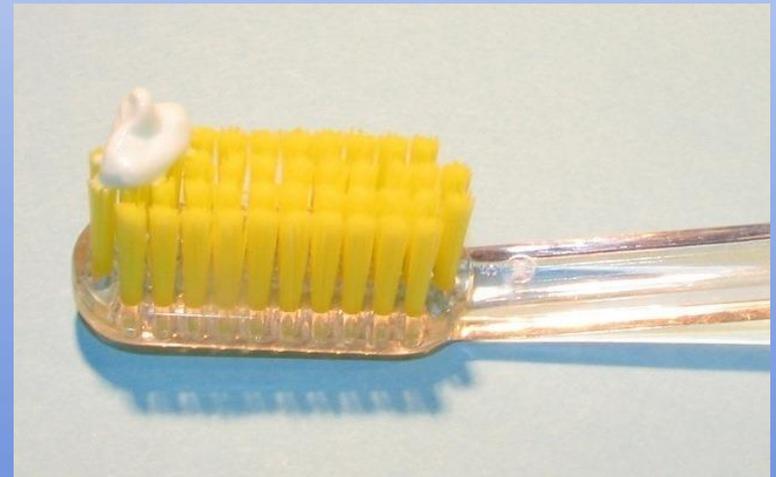
- Most preschool children swallow much of the toothpaste placed on the brush. These guidelines take this into account and these amounts are safe to swallow, but spitting out should always be encouraged
- Parents should keep toothpaste tubes out of reach of small children

### **Small smear:**

Less than 3 years of age



**Pea sized:** 3 years & over,  
regardless of caries risk



Photos: Joanna Douglass, BDS, DDS

# Brushing Techniques

## Guidelines

- Caregiver should stand or sit behind the child
- Lift lip to allow proper visualization
- Brush along the gum line, both on the outside (buccal) and inside (lingual) of the tooth
- Brush the top or chewing surface (occlusal)
- Use small backwards and forwards brushing movements or small circles
- Spit out toothpaste and don't rinse after brushing
- No food or drink after brushing
- Begin flossing daily once teeth touch
- Encourage use of electric toothbrush beginning at age 4 years

## Lift the lip



## Brush behind teeth



Photos: Joanna Douglass, BDS, DDS

# Foods that may cause Cavities

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## Low Risk Snacks

- Fruit
- Veggies
- Cheese
- Crackers
- Pretzels
- Popcorn
- Nuts
- Sugar free gum
- Plain milk
- Cheese & whole wheat crackers
- Water

Images: Photos.com

## High Risk Snacks

- Fruit Roll-ups
- Gummy bears
- Cookies
- Cupcakes
- Donuts
- Granola bars
- Pop tarts
- Sugared Cereals
- Soda, Iced tea
- Sugared drinks
- Raisins

Images: Photos.com

## Follow these tips to lower caries risk

- Avoid frequent snacking (two or more times between meals) especially on foods like
  - Juice or soft drinks
  - Candy, cookies, or sweetened breakfast cereals
- Refrain from eating sticky, retentive snacks and slow dissolving carbohydrates, such as
  - Raisins, dried fruit, fruit rolls, bananas, caramels, jelly beans, or peanut butter and jelly sandwiches
- Do not eat or drink before bed after tooth brushing
- No bottle use in bed

## Recommendations

- Strongly encourage breast feeding
- Hold infant for bottle feeding
- Avoid giving bottles at bedtime or naptime
- Don't use sweetened pacifiers
- Introduce cup at 6 months
- Discourage/stop using bottle by 12 months
- Avoid constant use of sippy cup unless it contains water
- Recommend no juice in the first year of life
- Snacks should contain no added sugar

## Recommendations

- Discontinue bottle by 12 months
- Limit juice to 4 oz. per day and serve with meals only
- Avoid carbonated beverages and juice drinks containing sweeteners
- Choose fresh fruits, vegetables, or sugar free whole grain snacks
- Only drink milk or water between meals
- Limit eating occasions to 3 meals a day with 1 snack in between
- Reserve soda, candy, and sweets for special occasions, preferably with meals

# Establish a Dental Home

The American Academy of Pediatric Dentistry and the American Academy of Pediatrics both recommend establishment of a dental home by the first birthday.

## **Dentist will provide**

- Enhanced preventative services
- Comprehensive evaluation and diagnosis of oral disease
- Evaluation of growth and development
- Counseling on oral habits and interceptive orthodontic treatment as needed
- Fluoride varnish and cleanings
- Dental x-rays when indicated
- Sealants to permanent molars as child grows
- Dental trauma management



# Developmental Issues

## Chapter Objective

- Review common developmental issues in children and offer appropriate guidance to parents
- Discuss and counsel adolescents regarding the risks associated with oral piercings and grills



Image: Maurizio Milanesio /Photos.com

## Concerns

- Teething does not cause fever, upper respiratory infection, ear infection, or diarrhea
- Teething may cause fussiness
- Drooling is developmentally common at this age

## Anticipatory Guidance

- Apply cold teething ring or cloth to gums
- Provide acetaminophen or ibuprofen if necessary
- Avoid teething gels
- Tooth emergence may be preceded by a hematoma—no treatment is needed in primary dentition

## Eruption Hematoma



Photo: ICOHP

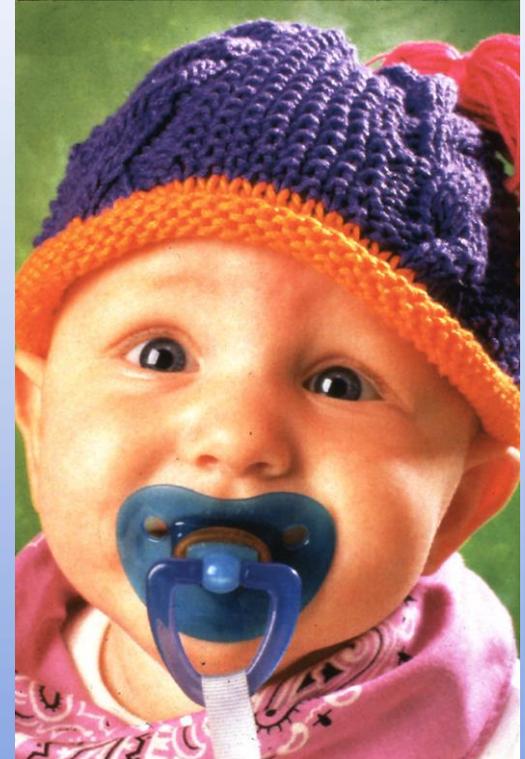
# Nonnutritive Sucking

## Etiology

- Satisfies a psychological need and decreases as the child ages
- Increases risk of anterior open bite and delayed speech development if habit persists

## Anticipatory Guidance

- Intervene to stop habit by 36 months, especially if changes to occlusion are noted
- Breaking the habit:
  - Restrict to limited situations
  - Cover hands at night with mittens
  - Provide alternative comfort object such as stuffed animal
- Pacifier use is preferable to digit sucking
- Recommend never to dip pacifier in honey or other sweetened food



# Adolescence - Oral Piercings

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## Procedure-related Risks

- Swelling – most common symptom post-piercing
- Prolonged bleeding, nerve damage
- Infection
  - Skin or oral tissues
  - Hepatitis B,C,D,G and tetanus
  - Endocarditis

## Jewelry-Related Complications

- Injury to the gums and dental fractures, scarring
- Interference with oral hygiene, speech, chewing and swallowing
- Allergic/hypersensitivity reaction to metal
- Aspiration or ingestion if jewelry is loose

The American Academy of Pediatric Dentistry (AAPD) "strongly opposes" the practice of piercing tissues and around the mouth and use of jewelry on these tissues.



Photos by Rebecca Slayton DDS, PhD

Grills on the teeth can increase the risk of developing caries and trigger allergic reactions to the metal.

## Counsel grill-wearers to

- Remove the grill to eat and sleep
- Brush and floss regularly
- Limit amount of time the grill is worn



Photos by Scott Eidson DDS



# Take Home Messages

- ECC develops through the interaction of bacteria, dietary sugars, and teeth
- Assess teeth and risk factors
- Prevention by CHWs targeting:
  - Hygiene
  - Fluoride
  - Diet
- Establish a dental home by age one for all children where possible



# Questions?



Image: Jupiterimages/Photos.com