



# Early Childhood Dental Caries

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A presentation to Wyoming health care providers

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11:30 am – 1:00 pm



## Prevention Goals

### Goals

- Reduce incidence and impact of tooth decay in pre-school population
- Reduce costs associated with treatment

Severe early childhood caries  
In a 30-month old child



## Public Health Points

- **Disparities in oral health:**
  - Access to care, SES, ethnicity, CSHCN
- **Workforce issues:**
  - Dental workforce
  - Education gaps in dentistry and medicine
  - Shared responsibility with PCP
- **Evidence-based caries prevention:**
  - Need to reach children early



## Disparities and Oral Health

- **Oral disease is common and has consequences for overall health**
- **Most oral disease is preventable**
- **Profound disparities\* in oral health and access to care (all ages) by SES, ethnicity, children with special health care needs (CSHCN)<sup>+</sup>**

\*USDHHS, *Oral Health in America: A Report of the Surgeon General, 2000*

+Vargas et al, 1998; Newacheck et al, 2000a, 2000b, Mouradian, Wehr and Crall, 2000

## Disparities and Oral Health

- **Ethnically diverse populations have more oral disease**



- **Cultural dimensions of eating, sleeping, child-rearing, health behaviors in relation to oral health**

## Disparities and Oral Health

- **Dental caries (tooth decay) most common chronic disease of childhood**
- **Dental care most common unmet health need\***
- **Dental insurance: children 2.5 x more likely to lack dental coverage than medical coverage\***
- **Medicaid: only 1/5 children accessed dental care\***

*\*Vargas et al, 1998; Newacheck et al, 2000a, 2000b, Mouradian, Wehr and Crall, 2000*

## Oral Disease: Impact on Children

- **Disease burden, pain**
  - Systemic infections; growth problems
  - ER visits, hospitalizations and surgeries
  - Oral-systemic consequences - especially for CSHCN
- **Economic, quality of life, long term impacts**
- **52 million school hours lost per year for dental problems**

## Dental Workforce Issues

- **Number of dentists per capita declining**
- **Few pediatric dentists (3,500) nationwide**
- **Acute shortages in rural and underserved areas**



## Gaps in Dental Training

- General dentists not trained in oral health care of infants and young children, or those with special needs
- Ten dental schools have closed
- Dental education isolated from medical education



## Oral Health in Medical Training

- Survey of pediatricians in US\*
  - Lack of knowledge: > 50% of pediatricians - little oral health training
- Willingness to participate in oral health promotion
  - 90% felt oral health is their job

\*Lewis et al, 2000

## PCP Role in Oral Health

- Anticipatory guidance and counseling
- Risk assessment
- Oral screening exam
- Applying fluoride varnish
- Dental referral and collaboration



## PCP Role in Oral Health

- Management of dental emergencies and simple trauma
- Oral-systemic health interactions, especially for CSHCN, and all patients with chronic illnesses
- Ages and Stages:
  - Adolescent oral health
  - Maternal oral health



## Evidence Based Prevention Recommendations

- **Personal:**

- Brush with fluoridated toothpaste
- Visit dentist regularly



- **Professional (high-risk populations):**

- Sealants, F supplements, F gels/varnishes (perm), dietary counseling

- **Public Health Advocacy:**

- Water fluoridation
- School based sealant programs



## Public Health Advocacy

- Help monitor children's health in community
- Mobilize community partnerships
- Help develop policies, actions at community level
- Link families to needed care
- Problem solving with local dental society



## Sources of Fluoride

- **Systemic**
  - Water fluoridation
  - Fluoride supplements
- **Topical**
  - Fluoride toothpastes
  - Gels
  - Fluoride varnish



## Early Childhood Dental Caries

### Learning Objectives

1. Understand the caries process and early childhood caries (ECC)
2. Provide anticipatory guidance in oral health, including appropriate nutrition messages
3. Assess risk of developing caries – “The Oral Health History”
4. Recognize caries on an oral exam
5. Refer children for dental visits as appropriate
6. Collaborate with dental professionals

## Caries Process

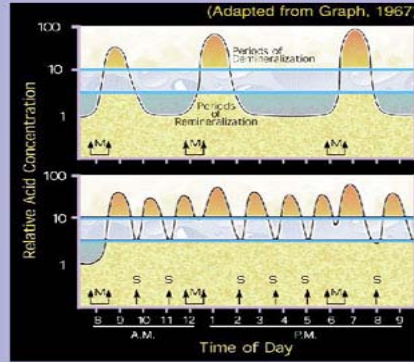
- Biofilm (‘plaque’) is a living community of bacteria
- Bacteria ferment carbohydrates and produce acid
- Over time acid demineralizes enamel (white spot lesion)
- REVERSIBLE stage
- End result is a cavity (caries) hole in the tooth non reversible



## Diet and Dental Caries

Regular Meals (M)

Regular Meals (M)  
plus  
Sweet Snacks (S)



Plaque Level Acids

## Ongoing Balance

**Protective Factors**  
Salivary flow  
Peptides (defensins)  
**Fluoride**

**Pathologic Factors**  
Strep Mutans  
Carbohydrates  
Reduced salivary flow

No caries

Caries

## Fluoride Can Prevent and/or Reverse White Spot Lesions

### Mechanisms of action:

- Reduces enamel solubility
- Promotes remineralization of enamel
- Anti-bacterial activity in higher concentrations
- Action is topical, in saliva

## Sources of Fluoride

- **Systemic**
  - water fluoridation
  - fluoride supplements
- **Topical**
  - fluoride toothpastes
  - gels
  - fluoride varnish

## Recommended Fluoride Supplement

Approved by the American Dental Association, the American Academy of Pediatrics, and the American Academy of Pediatric Dentistry.

### Fluoride ion level in drinking water (ppm)\*

Age	less than 0.3 ppm	0.3 - 0.6 ppm	greater than 0.6 ppm
Birth - 6 months	None	None	None
6 months - 3 years	0.25 mg/day**	None	None
3 - 6 years	0.50 mg/day	0.25 mg/day	None
6 - 16 years	1.0 mg/day	0.50 mg/day	None

\* 1 part per million (ppm) = 1 milligram/liter (mg/L)

\*\* 2.2 mg sodium fluoride contains 1 mg fluoride ion.

## Early Childhood Caries

### Decay in primary teeth

Formerly known as:

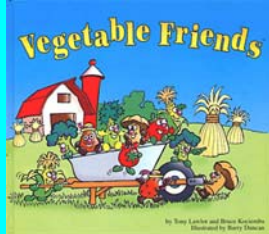
- “Baby bottle” tooth decay
- Nursing bottle caries



## Early Childhood Caries

- A transmissible infection caused by **Streptococcus Mutans**
- Diet dependent – fermentable carbohydrates with frequent exposure
- Occurs on erupted susceptible teeth
- Causes cavities to develop over time
- ECC affected children are at higher risk for decay as adolescents and adults

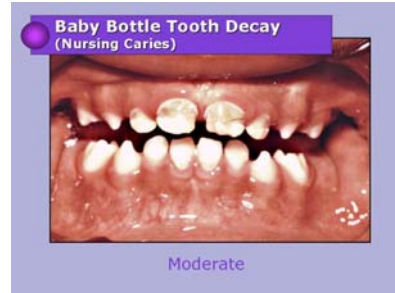
## Cariogenicity of Foods

Non-Cariogenic	Low Cariogenicity	High Cariogenicity
Tuna, chicken, eggs, cottage cheese, vegetables, seltzer water, diet soft drinks, diet yogurt, cheese [nuts, sunflower, pumpkin seeds, popcorn]	Milk, fresh fruits, whole grain products 	<b>DON'Ts</b> Cookies, cake, candy, raisins, dried fruit, fruit rolls, breakfast bars, doughnuts, crackers, pretzels, sugared cereals, granola bars, juice, Koolade, Tang

## Early Childhood Caries

### Characteristics:

- Usually affects maxillary incisors first
- Lesions can progress rapidly
- Enamel on primary teeth thinner than enamel on permanent teeth



## Early Childhood Caries - Maternal Transmission

- Window of infectivity:  
before age 2
- Transmission is a natural  
process
- Don't suggest mother  
decrease contact with infant
- Help mother meet her oral  
health care needs
- Provide and suggest other  
preventive measures



## Messages for Parents

### General:

- Oral health - important to overall health
- Primary teeth matter
- Caries can start when teeth erupt
- *Strep Mutans* is transmissible
  - Stress importance of caretaker's oral health
  - Advise pregnant mothers to get dental care
- Diet/feeding
  - Avoid frequent intake of carbohydrates

## Messages for Parents

### Specific:

- “Lift the Lip” and check for decay
- Use Fluorides
  - Brush teeth, use fluoridated toothpaste
  - Use fluoride supplements if water not fluoridated
- Dental exam
  - By age 1 (high risk)
  - By age 2-3 (lower risk)

## Tooth Brushing

### < 1 year

- clean teeth with cloth or soft toothbrush
- no toothpaste

### 1-2 years

- pea-sized amount of fluoridated toothpaste 2x/day
- parent performs

### age 2 - 6 years

- pea-sized fluoridated toothpaste 2x/ day
- parent performs or supervises

### > age 6 years

- brush with fluoridated toothpaste 2x/day



## Diet And Feeding: 0-12 months

- Hold infant for bottle and breast feedings
- No bottles at bedtime or nap (water only)
- No pacifiers dipped in honey
- Introduce cup at 6 mos, wean bottle at 12-18 mos
- Avoid constant use of sippy cup
- Avoid cariogenic snacks between meals
- Introduce appropriate snacks



## Diet And Feeding: 1-2 yr.

- Discontinue bottle feeding 12-18 mos
- Avoid constant use of sippy cup unless it contains water
- Avoid excessive intake of juice (> 4oz/day)
- Limit cariogenic snacks between meals
- Reserve soda, candy and sweets for “special occasion” treats

## Diet And Feeding : 2-5 yr.

- Limit cariogenic snacks between meals
- Reserve soda, candy and sweets for ‘special occasion’ treats
- Avoid excessive intake of juice (> 4oz/day)
- Choose fresh fruits, lightly cooked vegetables, or whole grain foods for snacks
- *Good preventive medicine for obesity too!*



## Caries Risk Assessment

### HIGH RISK if by history:

- Previous or current caries
- Siblings or mom with caries
- No fluoride in water
- Chronic health condition and/or medication use
- Inadequate fluoride
- SES, cultural factors
- CSHCN



Adapted, Bright Futures in Practice, Oral Health, 1996

## Children with Special Health Care Needs

- Frequent feedings may be necessary
- Oral -motor skills often delayed, longer use of bottles
- Oral aversion may impede home care
- Medications (decrease saliva, contain sugar, cause gingival hypertrophy)
- Other oral/craniofacial problems
- Monitor closely
- Refer for dental care early!



## Oral Screening Exam

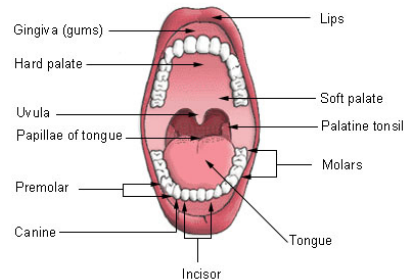
- All children: oral/dental evaluation - age 1
- Anticipatory guidance earlier
- Trained PCP can do first oral exam at 6 -12 mo.
- Prioritize dental referral: visible disease or high risk for disease
- Pregnant women, mothers with disease need referral
- All children need a regular source of dental care (“dental home”)



## Oral Screening Exam

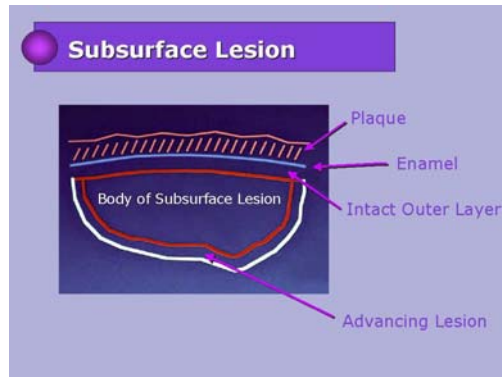
- Facial Structure
- Teeth
- Soft Tissues – Lips, gingiva, buccal mucosa, palate
- Pharynx
- Salivary glands
- Tongue, floor of mouth

**Mouth (Oral Cavity)**



## Recognizing Early Decay

White Spot Lesions  
=  
Subsurface  
demineralization



### "Lift the Lip" Exam

- **Knee-to-Knee position**
- **Use toothbrush**
- **Place mirror in baby's cheek**
- **Examine the front surfaces of the 4 upper front teeth**
- **Using the mirror, examine the back surfaces of the 4 upper front teeth**

### Oral Exam - Teeth

- **Look at each tooth for plaque, looseness, decay**
- **Check occlusion (bite)**
- **Examine gums – firm and pink, not soft, swollen or inflamed**

## Oral Screening Exam

### High Risk

- Visible plaque on the teeth
- Enamel defects
- White spots or cavities
- Inflamed gums



## Routine Dental Visits and Preventive Care

- Frequency of visits based on individual need
- Evaluate
  - Personal hygiene success
  - Periodontal status – probing, radiographs
  - Complicating factors – malocclusion, medical disorders, handicapping conditions

## Routine Dental Visits and Preventive Care II

- **Plaque removal on a regular basis**
- **Sealants**
  - **Important preventive measure, esp. for teeth with deep fissures and pits**
  - **A resin material which is bonded to the biting and chewing surfaces of the teeth**
  - **One treatment may protect for a lifetime, but may need replacement at the bond breaks down over time**

## Pocket Guide

### Primary Care Office Guide to Pediatric Oral Health



## Risk Assessment

### Conduct a Caries Risk Assessment

Yes	No	Questions:
		1. Are decay or white spot lesions visible?

If "yes" to question 1, apply fluoride varnish, encourage brushing with toothpaste, and healthy diet.

Yes	No	Questions:
		2. Has the child ever had any cavities or fillings?
		3. Has the mother (or primary care giver) had cavities or fillings in the past year?
		4. Have any of the child's brothers or sisters ever had cavities or fillings?

While all children should be linked with a dental home, high risk children with a "yes" response to any question should be referred to a dentist.

## Risk Assessment

### If you see this: No Dental Disease



#### Do this:

1. Reinforce current toothbrushing behavior.

Photo: University of Washington, Pediatric Dentistry

## Risk Assessment

### If you see this: White Spot Lesions



#### Do this:

1. Apply fluoride varnish.
2. Make referral to dentist.
3. Explain the importance of regular tooth brushing with fluoride toothpaste.
4. Emphasize early decay can be reversed.

## Risk Assessment

### If you see this: Mild Dental Disease



#### Do this:

1. Apply fluoride varnish.
2. Make a referral to dentist for next available appointment.
3. Explain the importance of regular toothbrushing with fluoride toothpaste.

Photo: University of Washington, Pediatric Dentistry

## Risk Assessment

### If you see this: Moderate Dental Disease



#### Do this:

1. Apply fluoride varnish.
2. Make a referral to dentist (within 1-2 weeks).
3. Explain the importance of regular toothbrushing with fluoride toothpaste.
4. Emphasize early decay can be reversed.

## Risk Assessment

### If you see this: Severe Dental Disease



#### Do this:

1. Apply fluoride varnish.
2. Make urgent referral to dentist (1 week or less).
3. Explain the importance of regular toothbrushing with fluoride toothpaste.
4. Emphasize early decay can be reversed.

## Risk Assessment

If you see this: Dental Abscess



**Do this:**

1. Apply fluoride varnish.
2. Make urgent referral to dentist (preferably same day). Dentist can then identify and treat tooth that caused abscess.
3. If urgent care is not available, consider antibiotic prescription. Suggested antibiotics include Penicillin or Clindamycin.

Photo: Dr. Chris Delecki, Odessa Brown Children's Clinic

## Medical Office Billing Information

- EqualityCare will reimburse PCP for Early Childhood Caries Risk Assessment and Prevention Procedures, namely fluoride varnish application.
- Children up to three years of age
- Three applications per year
- Use CPT code 99429 which pays \$35.00 per application

## Summary

- Dental decay is a significant health problem for children
- Primary care providers have a key role
- Anticipatory guidance during WCC
- Oral exam by age 1
- Fluoride – safe and effective
- Collaborate with dentists to improve oral health and access to care



## Additional Resources

- American Academy of Pediatrics:  
<http://www.aap.org/>
- American Dental Association:  
<http://www.ada.org/>
- Wyoming Department of Health Dental Program:  
<http://wdh.state.wy.us/dental/index.asp>
- University of Washington College of Dentistry:  
<http://www.dental.washington.edu/>
- National Maternal Child Oral Health Resource Center  
(Web-Based Oral Health Curricula for Professionals) :  
<http://mchoralhealth.org/SpecialCare>

## Resources

- If you are treating EqualityCare clients, they are eligible for health and case management services through the Wyoming Department of Health's ***Healthy Together!*** program.
- The program is provided at no cost to EqualityCare clients and family.
- Refer EqualityCare (Medicaid) clients to the ***Healthy Together!*** Health Management program
  - 1-888-545-1710
  - [www.wyoming.apshealthcare.com](http://www.wyoming.apshealthcare.com)