Virginia Dental Home Initiative

Early Childhood Training

Virginia Oral Health Coalition

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Presentation Overview

1. VaOHC Mission and VDHI Purpose
2. Early Childhood Caries
    - Prevalence and disease progression
3. Importance of the Dental Home
4. Components of Early Childhood Oral Health
    - Risk assessment and risk factors of caries
    - Detection of caries
    - Prevention: anticipatory guidance and clinical modalities
5. Oral Health During Pregnancy

Virginia Oral Health Coalition

Virginia Oral Health Coalition

Mission:

The Virginia Oral Health Coalition is a group of committed individuals and organizations working to bring excellent oral health to all Virginians

Ongoing Activities:

- Drive the objectives within the VA Oral Health Plan
- Increase the number of children who have a dental home and the number of dental providers treating very young children
- Advocate on behalf of oral health legislation

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Virginia Dental Home Initiative

VDHI's purpose is to:

- Inform educators and caregivers of the important role that early dental visits and an established dental home play in preventing dental problems
- Address the unique challenges and key pediatric clinical techniques in providing dental care to young children
- Provide techniques to assist caregivers with positive behavior change
- Secure comprehensive, ongoing dental care from a consistent provider (a dental home) for all Virginia children

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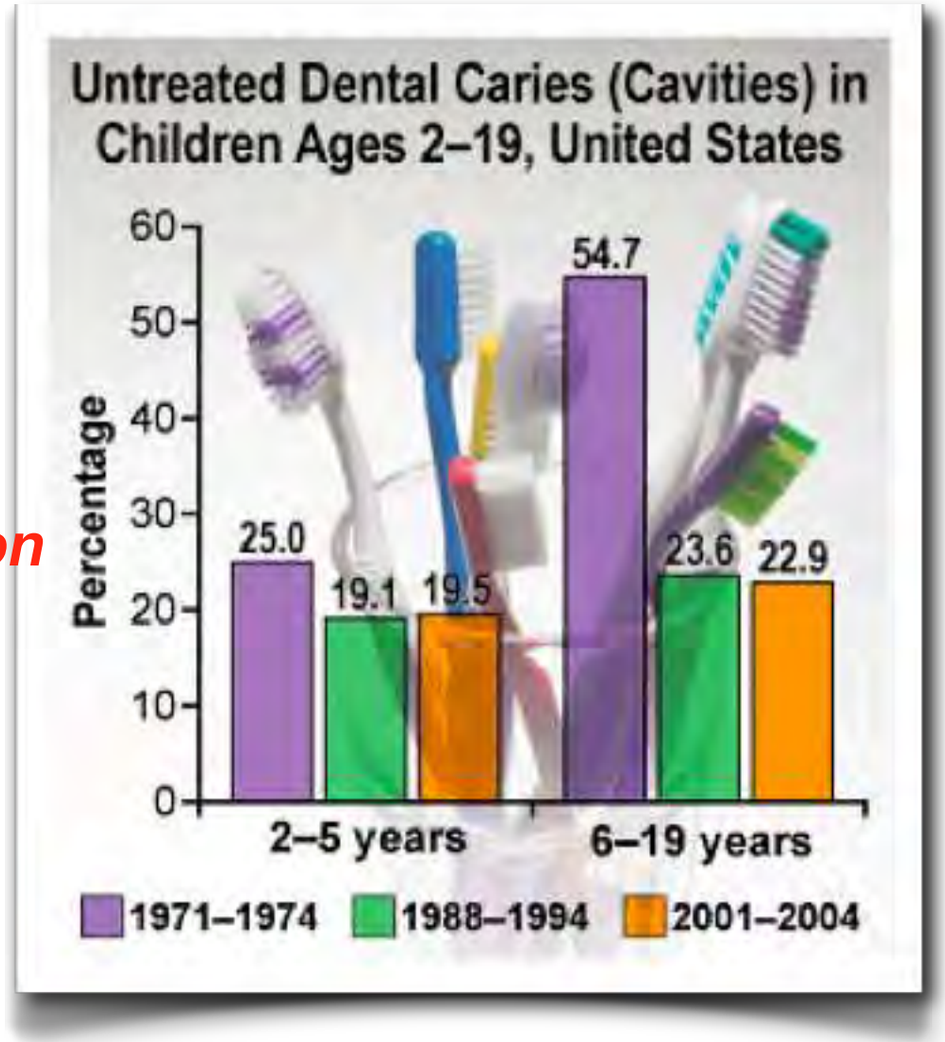
Early Childhood Caries

"The presence of one or more decayed noncavitated or cavitated, missing due to caries, or filled tooth surfaces in any primary tooth" in children under 6 years of age"

Epidemiology of Caries

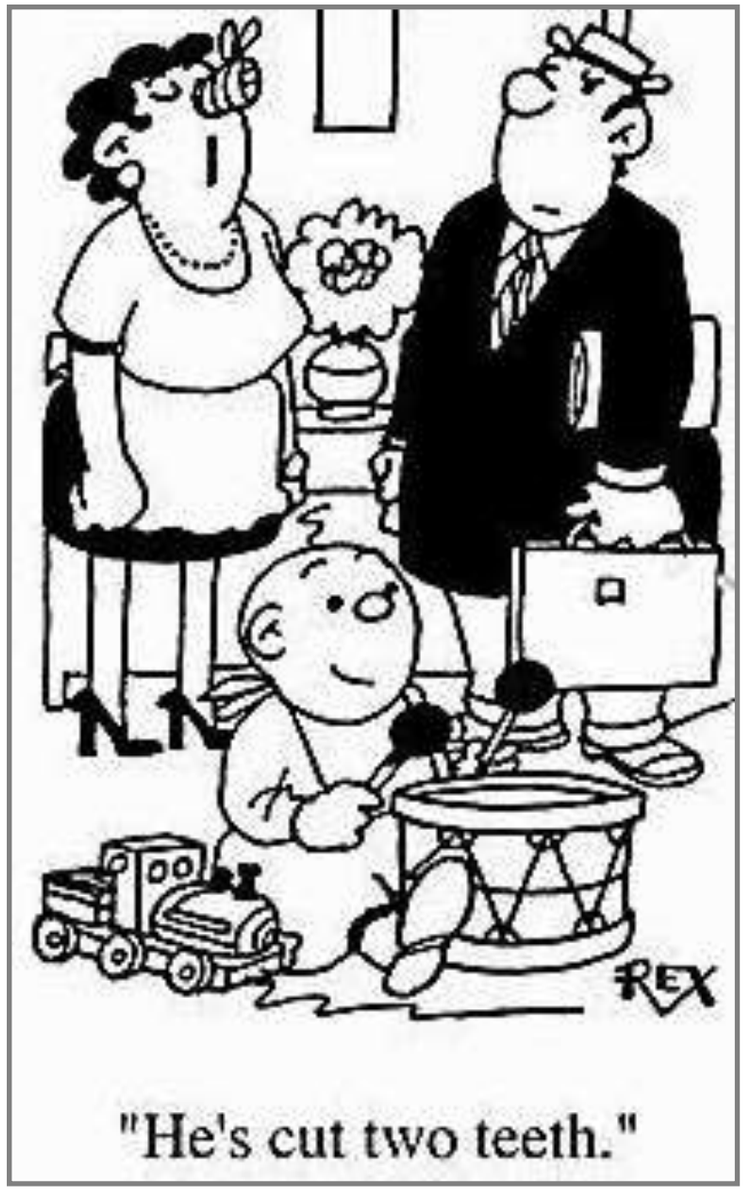
Prevalence of Disease

- Single most common disease of early childhood
- 5X more common than asthma
- NHANES III (CDC, 2007) - 2-5 year-old U.S. children
  - 27.9% have experienced cavities ***= 4.5 million***
  - of these, 73.4% have unrepaired cavities ***= 3 million***
  - Decay rates among Head Start programs
  - 30-40% = 3 year olds
  - 50-60% = 4 year olds
  - Dental caries has been identified as the most prevalent, unmet health need in U.S. children



National Center for Health Statistics. Health, United States, 2009,
Edlestein, B. Public Health Reports. Sept./Oct. 1995.
Oral Health America, NIH. 2000

Consequences of Caries

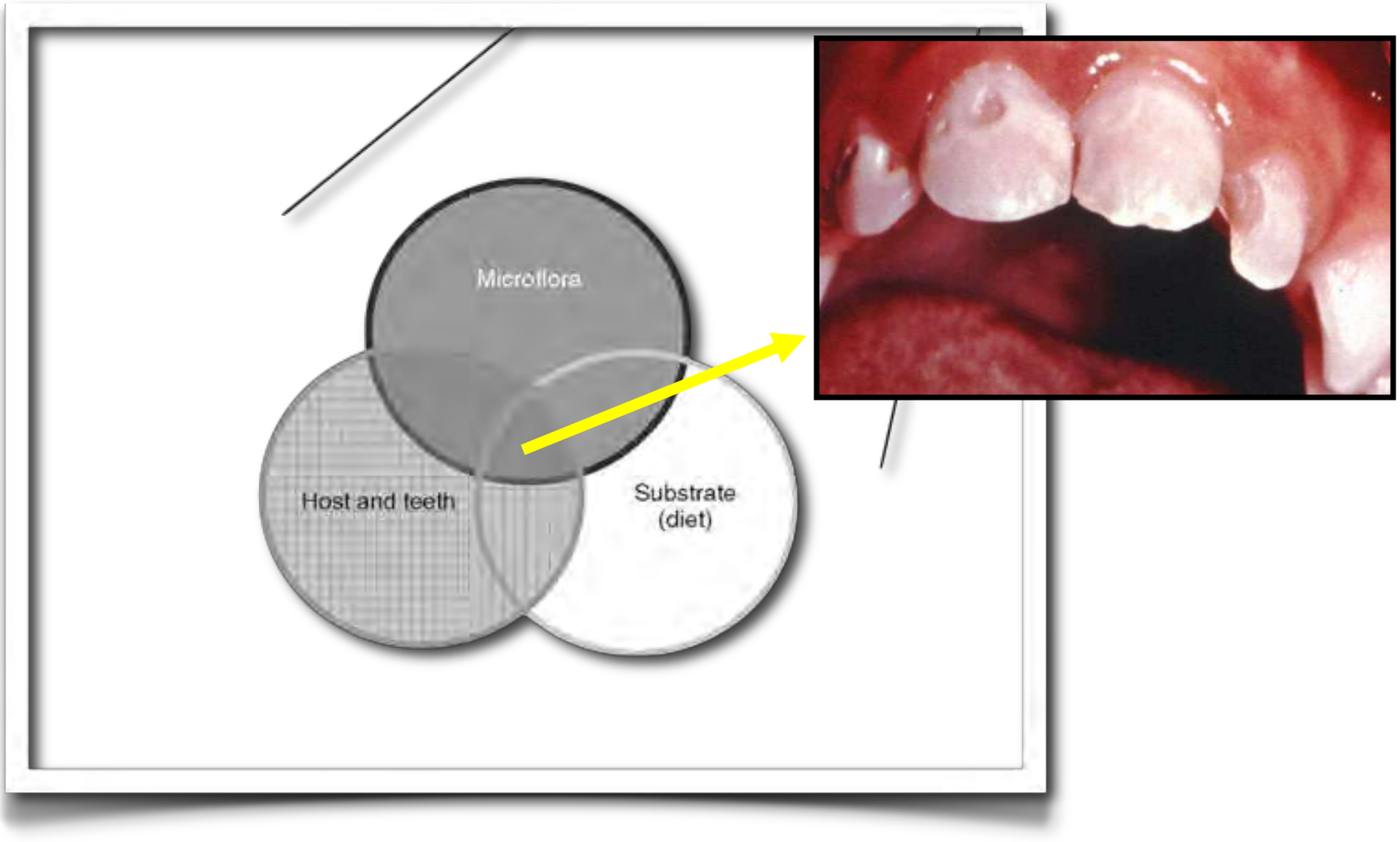


"He's cut two teeth."

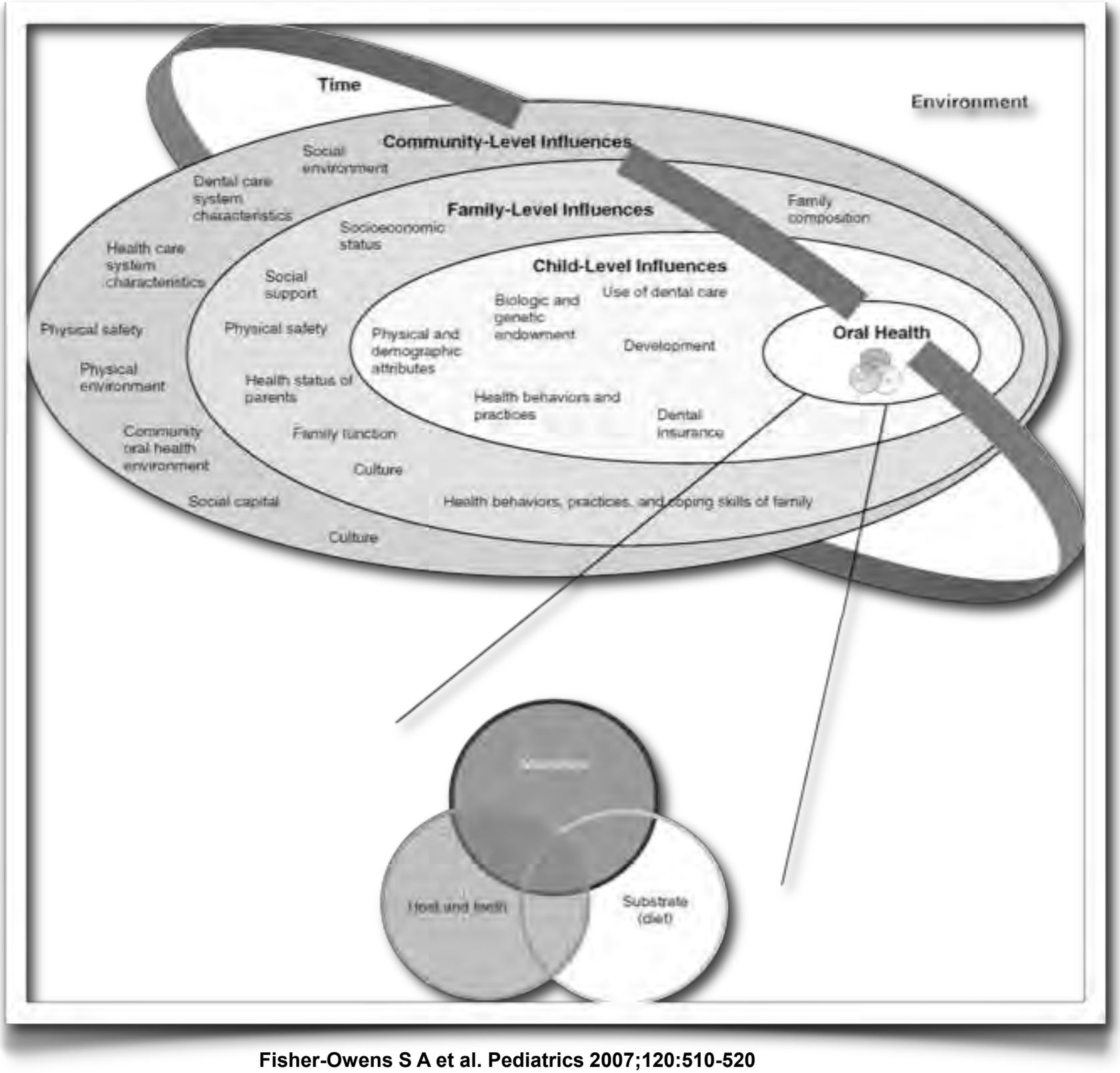
<u>To the Child</u>

- Delayed physical growth and development
- Loss of school days and decreased activity
- Diminished ability to learn
- Increased treatment costs and time
- Increased hospitalizations and ER visits

Caries as a Disease



Child, family, and community influences on oral health outcomes of children.



Fisher-Owens S A et al. Pediatrics 2007;120:510-520

The Importance of the Dental Home

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The Dental Home

- Age 1 dental visit and early risk assessment
- Anticipatory guidance and motivational interviewing
- Ongoing relationship and close follow up
- Multi-team approach and communication
- Individualized, comprehensive, continuous care and risk-based disease management

Components of Early Childhood Oral Health

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Caries-Risk Assessment

"Determination of the likelihood of the incidence of caries during a certain time period or the likelihood that there will be a change in the size or activity of lesions already present" (AAPD)

Caries-Risk Assessment

- Caries-risk factors:
  - *Biological*: cariogenic bacteria levels and time of colonization, active caries of the mother
  - *Clinical*: poor oral hygiene/plaque presence, decalcified areas (white spots), previous history of caries, enamel defects, special healthcare needs, chronic medical conditions/medication use
  - *Behavioral:* sugar consumption and dietary practices, fluoride (professionally applied, at-home use), night time use of the bottle, frequent breastfeeding
  - *Socio-economic*: income, parental education, insurance, minority status

Caries Risk Factors: Biological

<u>*Strep mutans* Levels</u>

- In children with ECC, *Strep mutans* exceeded 30% of cultivable plaque flora (compared to 0.1% in children with no caries activity)
- *Strep mutans* at a young age = greater risk for early caries initiation

Caries Risk Factors: Clinical

- Early eruption
  - First tooth Before 6 months of age

- Lack of interdental spacing (Hollywood smile)

24 to 36 months

Caries Risk Factors: Clinical

<u>Enamel Defects</u>

- Low birth weight (LBW-less than 1500 grams, 3.3 lbs.) is correlated with enamel defects (hypoplastic teeth)
- Hypoplastic teeth are more susceptible to tooth decay
  - 62.3% of children with LBW had hypoplastic primary teeth
  - 27.3% of children with birth weights between 1500-2500 grams (3.3-5.5 lbs.) had hypoplastic primary teeth

Caries Risk Factors: Clinical

<u>Poor Oral Hygiene/Plaque Presence</u>

- Teeth covered by plaque is an indicator of poor oral hygiene
- Children with plaque on their teeth are at high risk for decay as plaque contains the bacteria that cause caries

Caries Risk Factors: Clinical

<u>Chronic medical conditions:</u>

- Frequent feedings may be necessary
- Oral aversions may impede home care
- Motor skills may be delayed
  - Longer use of baby bottle
  - Unable to brush

<u>Medication usage:</u>

- May decrease saliva and cause gingival overgrowth
- Children taking liquid medication experience more tooth decay in their primary upper front teeth
- 20% had 2 or more cavities versus 2% not taking liquid medication

Caries Risk Factors: Behavioral

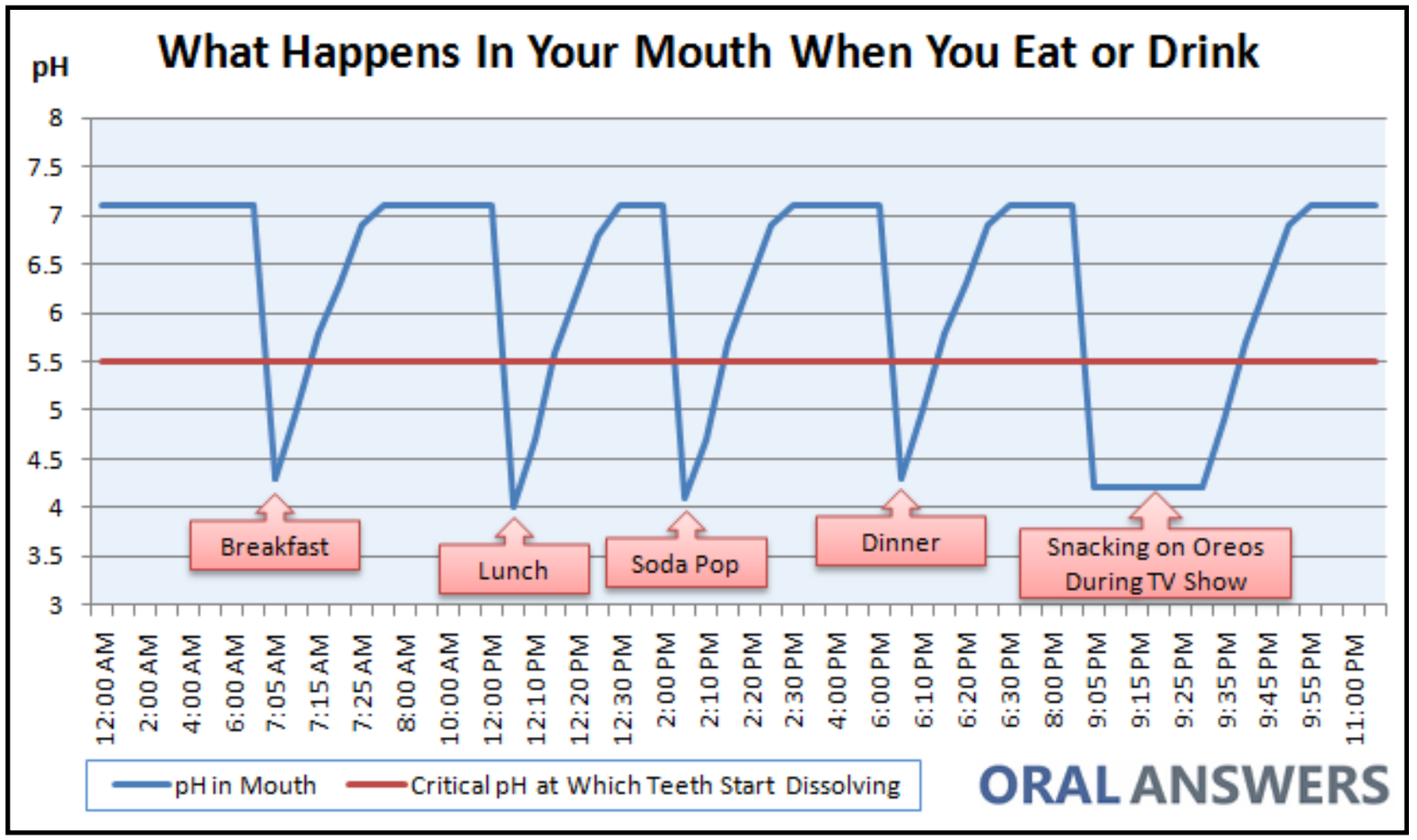
<u>Sugar Consumption and Dietary Practices</u>

- *Frequent* consumption of fermentable carbs
- *Sugary and sticky s*nacks
- *Juices and sodas* in a bottle or sippy cup
  - Caries incidence: soft drink > juice > milk/water

<u>Bottle Use and Breastfeeding</u>

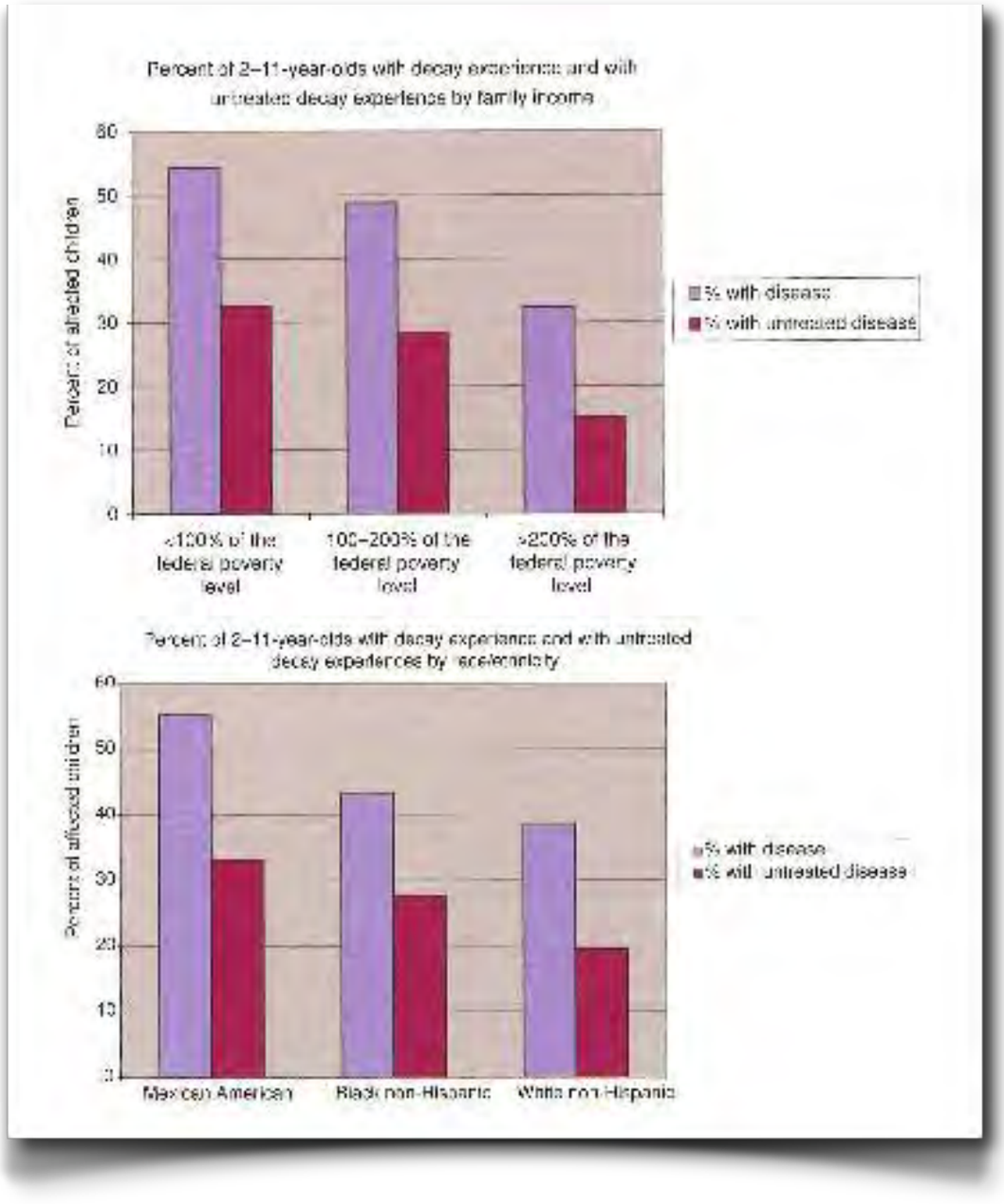
- Putting a baby to bed with a bottle/nursing a baby to sleep
- 1.5 times more likely to develop ECC when sleeping with the bottle at night

Caries Risk Factors: Behavioral



Caries Risk Factors: Socio-economic status

- Children from low SES experience the majority of tooth decay
- There is a high prevalence of dental caries in children from low SES
  - 40% of 3 year olds enrolled in WIC and 42% enrolled in Head Start had tooth decay
  - This compares to 21% of 3 year old children from more affluent families being affected by tooth decay



Caries-risk Assessment Tool (CAT)

Caries-risk Assessment Form for 0-5 Year Olds
(For Dental Providers)

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

Circling those conditions that apply to a specific patient helps the practitioner and parent understand the factors that contribute to or protect from caries. Risk assessment categorization of low, moderate, or high is based on preponderance of factors for the individual. However, clinical judgment may justify the use of one factor (eg, frequent exposure to sugar-containing snacks or beverages, more than one dmfs) in determining overall risk.

Overall assessment of the child's dental caries risk: High ☐ Moderate ☐ Low ☐

AAPD, Reference Manual 2011

- *Preventive:* likelihood of the incidence of caries
- *Snapshot:* caries risk at a point in time
- *Dynamic:* changes in the risk status
- *Functional:* used by dental and non-dental personnel

Detection of Caries

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Oral Screening

<u>Examination Technique</u>

- Knee-to-Knee Exam
  - Best with children <3 y.o.
  - Safe and comfortable platform for the child (interlocking knees, pillow)
  - Direct visualization for the dentist
  - Positive head control
  - Parent controls the arms and legs

Oral Screening

<u>Examination Technique</u>

- Intra-oral Exam
  - “Lift the Lip”
  - Finger pressure posterior to maxillary dentition for opening

Prevention:

Anticipatory Guidance

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Anticipatory Guidance: Oral Hygiene

Regular Brushing and Flossing

- Brushing
  - Soft-bristle toothbrush (cloth < 1 y.o)
  - Fluoridated toothpaste (non-fluoridated < 1 y.o.)
  - Pea-size amount (smear amount < 2 y.o)
  - 2X a day (morning and last thing before bed)
  - 2 minutes each time
  - Help from caregiver and/or check afterwards
- Flossing
  - Initiated when teeth are touching
  - 1X a day at bedtime
  - Supervised by caregiver

2min2x.org

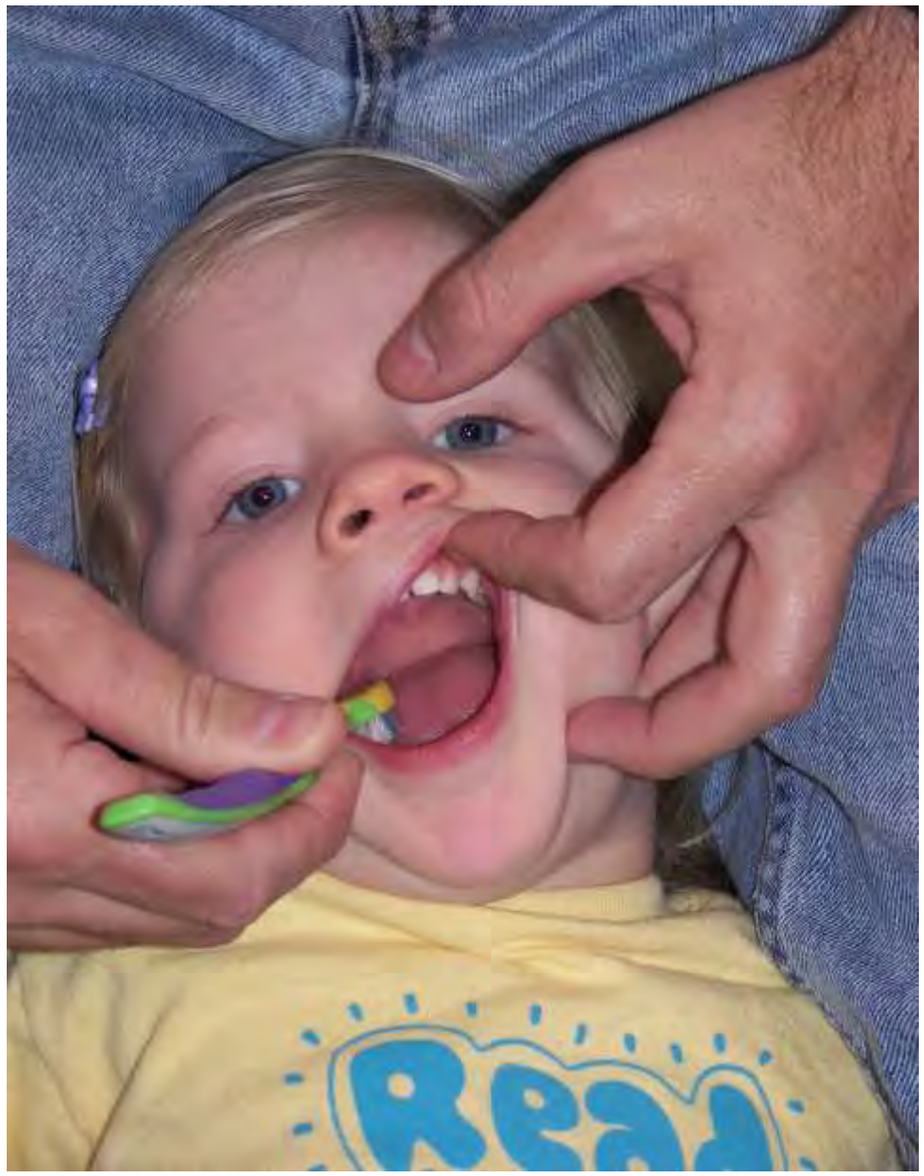
- The Ad Council

- http://www.2min2x.org/kids-healthy-mouths

- http://youtu.be/trDKhHDRc4M

- http://youtu.be/oBfxQY8qs-E

Brushing Positions



Anticipatory Guidance: Nutrition

<u>Nutritional Messages</u>

- Cariogenic snacks between meals should be limited
- Children should not carry around juice or soda pop in a bottle or sippy cup
- If a baby is put to bed with a bottle it should only contain plain water

Anticipatory Guidance: Dietary consumption

GOOD

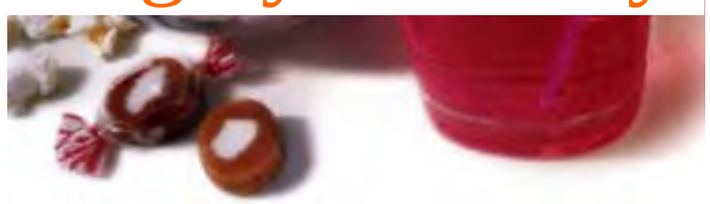
Snack Item	Cariogenicity Score
Peanut butter, nuts, vegetables	0
Cheese	1
Milk	2
Fresh fruit (excl. bananas)	3
Tortillas, pasta, rice, beans	4
Cereal	5
Crackers	6
Bread	7
Soda, Kool-Aid, Juice	8
Apple sauce, yogurt, ice cream, pudding, gelatin desserts	9
Cookies, donuts, chips	10
Bananas, raisins, jam	11
Candy	12

BAD

Juice

- **4-6 oz./day**
- **1X/day**
- **mealtime**

Sugary & Sticky



Prevention:
Clinical Modalities

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Evidence-based Prevention Modalities

Sealants

- 74% of 6-year molars remained caries-free (Simonson, et. al.)
- 71% reduction in caries (Lodra JC, et. al.)
- 71% reduction in caries progression (Griffin SO, et. al.)

Xylitol

- Reduction in Strep mutans levels in saliva and plaque
- Decrease in caries rates and onset

Fig. 2. A two-year study measuring the development of new cavities in children chewing xylitol-sweetened gum (One piece of gum contains 3.5 grams of xylitol), and a control group not chewing gum. (Isokangas P, Alanen P, Tiekso J, Makinen KK. Xylitol chewing gum in cavity prevention. A field study in children at caries-active ages. *J Am Dent Assoc* 1988.)

Evidence-based Prevention Modalities

<u>Fluoride</u>

- Supplements: 20-30% reduction in caries
- Dentifrices: 25% DMFS prevented fraction (adult dentition)
- Mouthrinses: 26% DMFS prevented fraction (adult dentition)
- Gels: 20% DMFS prevented fractions (not clinically significant)
- Varnishes: 38% reduction in caries (adult dentition)
    - Fluoride Varnish applied every 6 months is effective in preventing caries in the primary and permanent dentition of children and adolescents.

Evidence-based clinical recommendations for professionally applied topical fluoride. The Council on Scientific Affairs. ADA. (July, 2006)

Evidence-based Prevention: Varnish Data

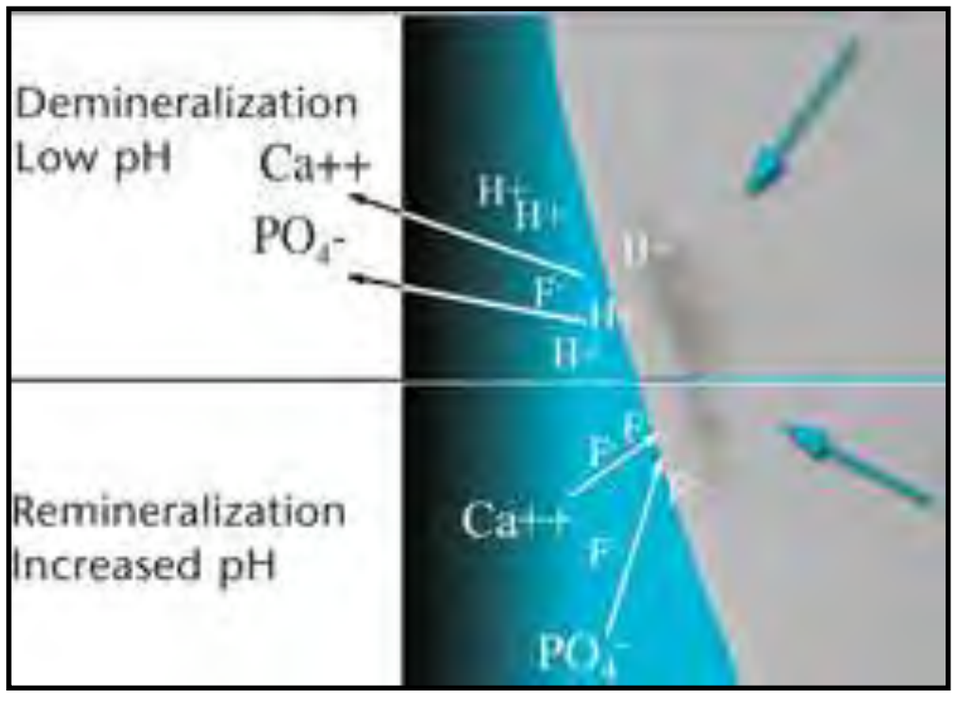
Weintraub et al. Fluoride Varnish Efficacy in Preventing Early Childhood Caries. Journal of Dental Research, 85(2):172-176, February 2006.

As little as one fluoride varnish treatment a year can cut the cavity rate in half for infants and small children.

- Randomized control trial of 376 children
- Ages 6 months to 3.5 years
- Children who had no varnish were more than twice as likely to have had a cavity as those who had yearly varnish treatments,
- Children who had no varnish were almost four times as likely to have decay as those who had had treatments at six-month intervals.

Prevention: Fluoride

- Topical Mechanisms of Action: inhibits demineralization, promotes remineralization, inhibits bacterial metabolism
- Systemic: improves enamel crystalinity, reduces acid solubility
- Sources:
  - Controlled/ natural water (1mg/L ideal)
  - Diet (infant formula usually has 0.1-0.3 ppm)
  - Casual ingestion (dentifrice/rinses)
  - Prescribed supplements



- Low-dose, high frequency is most effective for preventing caries!

Prevention:
Fluoride Supplementation

Fluoride Assessment

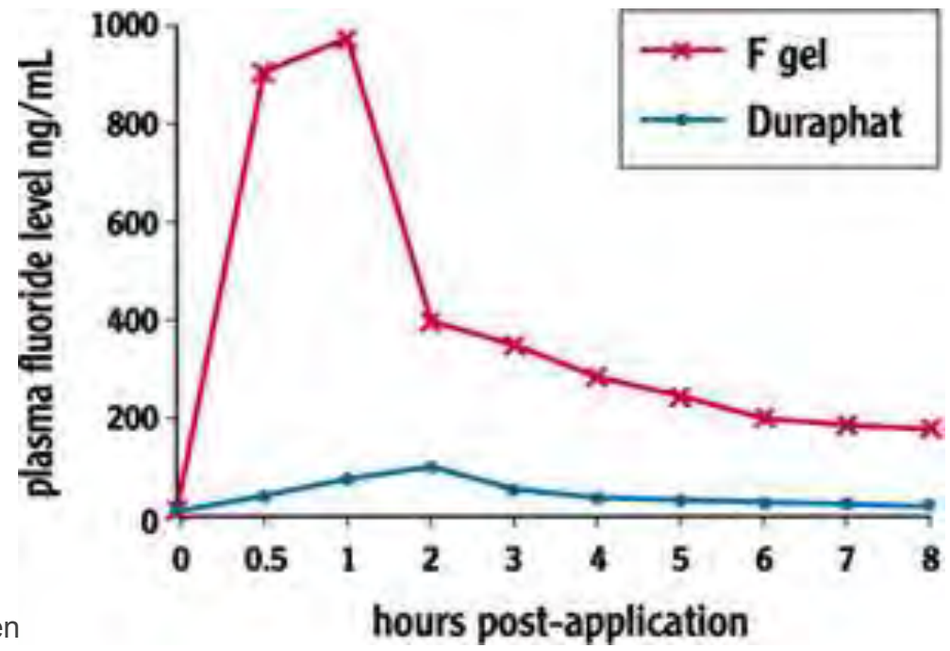
- Patient's drinking water
  - Community water system
  - Well water system
- Halo Effect
  - Processed foods
  - Day care/school

Water Fluoride Concentration

Age	<0.3 ppm	0.3-0.6 ppm	>0.6 ppm
Birth < 6m	0	0	0
6m < 3yrs	0.25	0	0
3yrs < 6yrs	0.50	0.25	0
>6 yrs	1.00	0.50	0

Prevention: Fluoride Varnish

- The first topical fluoride that can be safely and effectively applied to teeth of infants and very young children.
- Fluoride varnish eliminates the risk of toxicity that exists with traditional fluoride treatment.
- Must be based on caries-risk assessment
- Prophylaxis not necessary prior to fluoride



Ekstrand J, Koch G, Petersson LG. Plasma fluoride concentration & urinary fluoride excretion in children following application of the fluoride-containing varnish Duraphat. Caries Res 1980;14:185-9.

Ekstrand et al., 1980

RCT Varnish Data

- As little as one fluoride varnish treatment a year can cut the cavity rate in half for infants and small children.
  - Randomized control trial of 376 children
  - Ages 6 months to 3.5 years
  - Children who had no varnish were more than twice as likely to have had a cavity as those who had yearly varnish treatments,
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Weintraub et al. Fluoride Varnish Efficacy in Preventing Early Childhood Caries. Journal of Dental Research, 85(2):172-176, February 2006.

Prevention:
Fluoride Varnish

Apply a thin coat over all surfaces of the clinically present teeth using a small amount of varnish with finger or brush.

VARNISH COST (w/brush):
Cavity Shield $1.06/dose
Duraphat $1.36/dose
Durashield $1.56/dose
Vanish $2.40/dose

Speed and Ease of Application

- Performed by dentist, dental hygienist, dental assistant
- Can be done Knee-to-Knee
- Application ~ one minute
- Small amount placed with a finger or disposable brush
- Varnish sets immediately
- Once applied, contamination with saliva not a concern
- May drink & eat soft foods immediately

Prevention:
Fluoride Varnish

<u>Post-application Instructions</u>

- Eat a soft, non-abrasive diet for the remainder of the day.
- Do not brush the teeth until the next day.
- Yellow or white film on teeth will wear or brush away within a day.
- The child can drink water immediately.

Caries Management Protocol for 1-2 year olds

Risk Category	Diagnostics	Interventions Fluoride	Diet	Restorative
Low risk	– Recall every 6-12 months – Baseline MS[α]	– Twice daily brushing	Counseling	– Surveillance[ϰ]
Moderate risk parent engaged	– Recall every 6 months – Baseline MS[α]	– Twice daily brushing with fluoridated toothpaste[β] – Fluoride supplements[δ] – Professional topical treatment every 6 months	Counseling	– Active surveillance[ε] of incipient lesions
Moderate risk parent not engaged	– Recall every 6 months – Baseline MS[α]	– Twice daily brushing with fluoridated toothpaste[β] – Professional topical treatment every 6 months	Counseling, with limited expectations	– Active surveillance[ε] of incipient lesions
High risk parent engaged	– Recall every 3 months – Baseline and follow up MS[α]	– Twice daily brushing with fluoridated toothpaste[β] – Fluoride supplements[δ] – Professional topical treatment every 3 months	Counseling	– Active surveillance[ε] of incipient lesions – Restore cavitated lesions with ITR[φ] or definitive restorations
High risk parent not engaged	– Recall every 3 months – Baseline and follow up MS[α]	– Twice daily brushing with fluoridated toothpaste[β] – Professional topical treatment every 3 months	Counseling, with limited expectations	– Active surveillance[ε] of incipient lesions – Restore cavitated lesions with ITR[φ] or definitive restorations

AAPD, Reference Manual 2011

“Children get used to feeling constant pain. They go to sleep with it. They go to school with it...Children live for months with pain that grown ups would find unendurable. The gradual attrition of accepted pain erodes their energy and aspiration.”

- Jonathan Kozol, educational sociologist,
in his landmark study of children in poverty

Oral Health During Pregnancy

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Why does it matter?

- Hormone changes during pregnancy impact susceptibility to oral infections and the ability to repair and maintain soft tissues in the mouth[1]
- Oral disease (periodontal) associated with preterm birth, low birth weight and gestational diabetes[2]
- Children whose mothers have poor oral health are 5x more likely to have oral health problems than children whose mothers have good oral health[3]

1. Gaffield ML, Gilbert BJ, Malvitz DM, Romaguera R. 2001. Oral health during pregnancy: An analysis of information collected by the pregnancy risk assessment monitoring system. Journal of the American Dental Association 132(7):1009–1016.
2. Xiong X, Buekens P, Fraser WD, Beck J, Offenbacher S. 2006. Periodontal disease and adverse outcomes: A systematic review. *BJOG: An International Journal of Obstetrics and Gynecology* 113(2):135–143.
3. Clothier B, Stringer M, Jeffcoat MK. 2007. Periodontal disease and pregnancy outcomes: Exposure, risk and intervention. *Best Practice and Clinical Research. Obstetrics and Gynaecology* 21(3):451–466.

Oral Health Care During Pregnancy

- Preventive diagnostic and restorative dental treatment is safe throughout pregnancy and is effective in improving and maintaining oral health[1]
- About 1 in 5 women do not visit the dentist during the year before they become pregnant[2]; 35-44% do not receive any oral health care while pregnant
- Dental providers are often concerned about safety and liability issues and lack of training[3,4]

1. Oral Health Care During Pregnancy Expert Workgroup. 2012. Oral Health Care During Pregnancy: A National Consensus Statement—Summary of an Expert Workgroup Meeting. Wshington, DC: National Maternal and Child Oral Health Resource Center.
2. D'Angelo D, Williams L, Morrow B, Cox S, Harris N, Harrison L, Posner SF, Hood JR, Zapata L. 2007. Preconception and interconception health status of women who recently gave birth to a live-born infant—Pregnancy Risk Assessment Monitoring System (PRAMS), United States, 26 Reporting Areas, 2004. *Morbidity and Mortality Weekly Report Surveillance Summaries* 56(SS-10):1–35.
3. *Kloetzel, M. K., Huebner, C. E., Milgrom, P., Littell, C. T. and Eggertsson, H. (2012), Oral health in pregnancy: educational needs of dental professionals and office staff. Journal of Public Health Dentistry, 72: 279–286.*
4. *Access to Oral Health Care During the Perinatal Period: A Policy Brief* . 2008 . National Maternal and Child Oral Health Resource Center, Georgetown University.

Promoting Oral Health: What Can You Do?

- Educate
- Establish relationships with prenatal and primary care providers (ob-gyns, family physicians and pediatricians)
- Provide oral disease management, treatment and support services
- Help establish the future dental home