PERINATAL ORAL HEALTH CARE TO PREVENT ORAL DISEASE TRANSMISSION TO THE CHILD

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“Mothers are the gardeners of the human race.”

Anna A. Rogers
Session objectives

• To explain why the perinatal period is such a significant period for the future oral health of the child;

• How mothers/ primary caregivers with high levels of decay causing bacteria infect their infants leading to early childhood caries;

• Interventions for preventing and controlling disease transmission to the child.
Goal: Optimum Oral Health for Children
Early Childhood Caries (ECC)

- Early Childhood Caries (ECC) begins with the transmission of bacteria, typically from the mother.
- ECC is defined as decayed, missing or filled tooth surfaces (due to caries) in any primary tooth in a preschool-age child between birth and 71 months.
- A severe form of ECC was formerly known as nursing bottle caries or baby bottle tooth decay.
- The American Academy of Pediatric Dentistry (AAPD) adopted the term ECC because it better reflects its multi-factoral cause of caries.
Severe ECC
Severe ECC
Sequele of ECC
Dental Caries Epidemiology

• Dental caries or tooth decay is a widespread, chronic, infectious and transmissible disease;
• It continues to be a significant oral health problem for all age groups in the United States;
• The National Health and Nutrition Examination Survey revealed that in 2011-2012:
  ➢ 36.7% of U.S. children ages 2 to 8 had dental caries in primary teeth;
  ➢ and, 14.3% had untreated tooth decay in primary teeth.

Dental Caries Epidemiology

• Tooth decay is caused by specific oral bacteria with the most common causative species being Streptococcus Mutans and Streptococcus Sobrinus.

• Mutans Streptococcus (MS) is the primary cariogenic microorganism.

• MS metabolizes sugars from the foods we eat to produce acid which demineralizes tooth structures resulting in damage to enamel and dentin.
“A woman’s oral health is a good predictor of her child’s risk for tooth decay!”
Dental Caries Epidemiology

- Women with poor oral health may unknowingly transmit decay-causing bacteria to their children.
- A child is probably most susceptible to becoming infected with MS from the mother around age 2.
- MS is transmitted from the mother or primary caregiver to the infant through saliva. This type of transmission is referred to as vertical transmission.
- There is also evidence of horizontal transmission between members of a group like siblings or children in the same nursery, classroom, or daycare.
Mutans Streptococcus Transmission

• The vehicle for transmission of MS is mother’s or primary caregiver’s saliva

• By sharing utensils:
  ➢ like spoons,
  ➢ cups

• By mother cleaning the babies pacifier or toy with her mouth.

• By mother cleaning the babies face and mouth using her saliva on a handkerchief, or tissue.
Inappropriate feeding practice is a risk factor for ECC
Dental Caries Epidemiology

• The higher the level of MS in the mother’s saliva, the greater the risk of the infant being colonized.

• Reducing the MS levels in the mother can delay the onset and reduce the impact of MS colonization in the infant.

• Children with ECC typically have a heavy infection with MS and also have a cariogenic diet (experience frequent exposure to sugared beverages).
“Adam and Eve had many advantages, but the principal one was that they escaped teething.”

Mark Twain
Intervention strategies can help:

- Reduce the level of MS in mother /primary caregiver
- Prevent MS colonization of the infant
- Reduce consumption of sugared foods and beverages by child
Intervention Strategies

• *Case management* is a collaborative process of assessment, planning, facilitation, care coordination, evaluation, and advocacy for options and services to meet an individual’s and family’s comprehensive health needs through communication and available resources to promote quality, cost-effective outcomes.
Intervention Strategies

- **Dental Home** a place where oral health care is delivered in a comprehensive, continuously accessible, coordinated and family centered way by a licensed dentist.
Intervention Strategies

- Establishing a **dental home** for mother and child
  - Routine dental checkups during pregnancy
  - Professional dental care for the expectant mother or primary caregiver
  - Preventive services for expectant mother or primary caregiver
  - Personal oral hygiene instruction for mother
  - Diet low in refined sugars
  - Dental screening of child should occur within 6 months of eruption of first tooth or by age 1
Intervention Strategies

Reducing the levels of MS in primary caregivers:

• Routine oral evaluation (check-ups)
• Proper personal oral hygiene (brushing, flossing, fluoride mouth rinse)
• Professional treatment
  – Restorative & periodontal treatment
• Oral disease prevention services
  – Nutritional counseling
  – Topical fluorides (gels or varnishes)
  – Prophylaxis, scaling and root planning
  – Xylitol chewing gum
Intervention Strategies

Preventing vertical transmission of MS in infants

- Education and counseling of mother
- Greater involvement of mother in child’s oral health
  - Good oral hygiene (care of child’s teeth and gums)
  - Brushing by caregivers using small quantity of fluoride toothpaste
  - Attention to child’s diet (non-cariogenic diet)
  - Professional application of fluoride varnish every 6 months beginning when teeth erupt
Intervention Strategies

Advise and educate mother/primary caregiver

- To avoid sharing utensils like spoons and cups
- To avoid cleaning pacifier with saliva
- To avoid putting child to bed with bottle, sippy cup or no-spill cup
- At 6 months or older, only use water in a bottle if needed
- Only offer water from a sippy or no-spill cup
- Juice should only be offered at mealtime
Care of baby’s teeth and gums
2015 Cigna Survey: *Healthy Smiles for Mom and Baby*

- 43% of pregnant women report not going for dental checkups.
- 76% of pregnant women report having an oral health problem such as bleeding gums or toothaches.
- Findings suggest that oral hygiene habits can improve significantly for mothers with dental maternity benefits.
2015 Cigna Survey: Healthy Smiles for Mom and Baby

Physicians have a strong influence on the mother’s and baby’s oral health

• Women whose doctors talked about oral health during pregnancy are:
  - Twice as likely to have a dental checkup while expecting;
  - Twice as likely to read materials about the importance of oral health;
  - New mothers are also more likely to clean their infants gums daily if their pediatricians have spoken to them about oral health.
Intervention Strategies

Education and counseling by healthcare providers is key

- By physicians, physician extenders, dentists, hygienists and dental assistants
- Role of OB/GYN
- Role of Pediatrician
Periodontal Health of MOM

Observational studies have indicated an association between poor periodontal health and adverse birth outcomes like preterm deliveries and low birthweight babies. However, a randomized control trial indicated that non-surgical periodontal therapy (scaling and root planning) does not improve birth outcomes in women with periodontal disease.

Nevertheless, good oral hygiene during pregnancy is very important in preventing periodontal infections and inflammation.

Pregnancy causes hormonal changes that increase the risk for gingivitis (inflammation of the gums) and periodontitis (gum disease).

Pregnancy Gingivitis
Periodontal Health of MOM

Oral Bacterium Associated with Uncommon Stillbirth Case

In a published case report,\(^1\) an Asian woman's delivery of a full-term stillbirth is attributed to intrauterine infection of *Fusobacterium nucleatum*, an anaerobic bacterium of the oral cavity that is also associated with periodontal disease. The woman had excessive gingival bleeding during pregnancy, and a late-stage respiratory infection may have weakened her immune system and increased the risk for transient bacteremia and possible hematogenous transmission of *F. nucleatum*.

To investigate the potential source of intrauterine infection, researchers reviewed evidence from a complete fetal autopsy and pathologic findings from the mother. Her placenta tested positive for *F. nucleatum*, as did the fetus's lung and stomach. After collecting vaginal, rectal, and plaque samples (sub and supragingival) from the mother, the research team found that the same clone of *F. nucleatum*, which was only present in her subgingival plaque, matched the isolate obtained from the stillborn infant.

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1  Commonwealth Medicine
Treatment of Gum Disease May Lower Blood Sugar Levels in Type 2 Diabetes

Researchers at the University of Edinburgh and supported by colleagues at the Peninsula Dental School, the University of Ottawa and UCL Eastman Dental Institute, suggests that the treatment of serious gum (periodontal) disease in diabetics with Type 2 diabetes may lower their blood sugar levels.

The research team analyzed randomized controlled trials of people with Type 1 and Type 2 diabetes who had also been diagnosed with periodontal disease. The team looked at 690 papers and included seven studies in the review that fulfilled pre-specified criteria for inclusion.

Their findings suggest that the treatment of periodontal disease can reduce blood sugar levels in Type 2 diabetes, although there was not enough available evidence to support the same benefit for those with Type 1 diabetes.

Current belief is that, when bacteria infect the mouth and cause inflammation, the resulting chemical changes reduce the effectiveness of insulin produced in the body, thus making it more difficult for diabetics to control their blood sugar.

United Concordia Oral Health Study

Study showed that annual medical costs and hospitalization were considerably lower for members with certain chronic conditions who completed their periodontal treatment and maintenance as compared to those who did not.

**Annual Medical Cost Savings:**

- $5,681 for members with cerebral vascular disease (stroke)
- $1,090 for members with coronary artery disease
- $2,840 for members with diabetes
  - $1,477 for diabetes outpatient drug costs
- $2,433 for women who were pregnant

**Annual Hospitalization Reductions:**

- 21.2% for members with stroke
- 28.6% for members with heart disease
- 39.4% for members with diabetes
United Concordia Oral Health Study

Take-away:
Treatment of gum disease improves overall health, lessens disease complications and lowers medical costs for individuals with chronic conditions such as stroke, heart disease and diabetes.

WAS IT SOMETHING I SAID?
THANK YOU