Oral Health Care During Pregnancy and Early Childhood

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School of Dental Medicine

- 14 hospital attendings, 26 community attendings
- 11 residents
- 20 dental students
- 95 support staff
- 70,000 outpatient visits per year
- 1,600 ambulatory surgery cases per year
- 600 after hours ER visits
- Community outreach
- 6 locations
Office Locations

• Women and Children’s Hospital Annex
• Mercy Hospital, 515 Abbott Road
• Getzville, 1660 Hopkins Road
• Niagara Falls, 521 Buffalo Avenue
• East Aurora, 100 Riley Street
• Squire Hall, UB South Campus
Today’s Presentation

• Oral health overview, caries etiology
• Pregnancy and dental treatment considerations
• Role of prenatal health care provider in oral health
• Oral health care in early childhood
• Oral health risk assessment
• Dental anticipatory guidance
• Infant dental home
Maternal and Infant Oral Health, What We Always Knew

- Importance of prenatal care
- Teeth are developing from 14 weeks in utero
- Mineralization beginning around the fourth month of fetal development
- Drugs and illnesses during pregnancy and infancy could damage teeth
Maternal and Infant Oral Health, What’s New

- Surgeon General’s Report
- AAPD recommendations
- AAP recommendations
- Dental caries transmissible
- Medical vs. Surgical management of dental caries, Risk Assessment Tool
- Anticipatory guidance
- Development of “Dental Home” concept
2000 Surgeon General’s Report

- Barriers to oral health care
- Lack of service to most susceptible: young and old
2000 Surgeon General’s Report

- Underserved and underinsured most susceptible to dental caries and other oral diseases
- General health must include oral health
- Identified links between oral health and systemic health
- 80% dental problems in 20% population
- Tooth decay still most common infectious disease in children, 5X more than asthma
- 40% of children have tooth decay by age 5
- Early childhood caries, ECC, a mini-epidemic
- Stressed need for “dental home” for all children, most children don’t see dentist until 3, seen MD 11 times
- Challenged all health care workers to understand and be involved in improving oral health, especially for children
AAPD Policy

• A Dental Visit by the Age of One
• Supported by the American Dental Association
• Supported by AAP
• Medical and dental history, prenatal, perinatal and postnatal periods
• Oral examination
• Caries risk assessment using advanced techniques
• Appropriate prevention plan with follow ups
• Anticipatory guidance
Policy continues…

- Infants identified as having significant risk of caries or assessed to be within one of the risk groups should be entered into an aggressive anticipatory guidance and intervention program provided by a dentist between 6 months and a year.
AAP Policy

• Developed by 2002-03 AAP Section on Pediatric Dentistry
• Policy statement published, May, 2003
Recommends Oral Health Risk Assessments within six months of first tooth eruption and referral of all moderate and high risk infants to dentist. All others referred by 12 months of age
Caries Etiology

Host and Teeth

Microflora

Substrate: Diet
MICROFLORA

• Acidogenic and plaque forming bacteria
  – Streptococcus mutans
  – Streptococcus sanguis
  – Streptococcus salivarius
  – Lactobacillus acidophilus
Streptococcus mutans

- Detected only after the primary teeth begin to erupt. Occurs between 6 and 30 months of age
- Transmitted orally from mother to infant
- Delay colonization of the infant by reducing the numbers of S.mutans in the mother which must start during prenatal period. Moms must be dentally healthy for child to be healthy
Host and Teeth Factors

- Genetic component
- Familial component
- Saliva composition important
- “Soft teeth” don’t exist
Substrate and Diet

• Most important controllable factor in caries initiation
• Frequency and consistency of refined carbohydrates drives caries rate
• Most common form of carbohydrates for infants is liquid
Transmissibility of Caries

• Strep mutans is typically transmitted from mother or caregiver to child by behaviors that directly pass saliva
  – Sharing a spoon
  – Cleaning a dropped pacifier by mouth
  – Babies’ fingers in mother’s mouth
• Colonization can happen anytime but most often occurs when teeth present
• The earlier the colonization, the more it will comprise oral flora
• Mother is most common donor using DNA studies – 70% of cases
• Mother’s need to be healthy
Reducing Transmission

• Reduce maternal reservoir
  – Topical chlorhexidine and fluoride
  – Xylitol gum
  – Dietary counseling, improve hygiene
  – Treat perio and caries

• Avoid transmission vectors
  – Anticipatory guidance with mother

• Increase child’s resistance
  – Limit carbohydrates
  – Fluoride varnish
Maternal Oral Health

• Pregnancy and Treatment Considerations
• What the Prenatal Care Provider Should Do
• Management of Oral Health Problems in Pregnant Women

Source: New York State Department of Health, August 2006
Providing Dental Care During Pregnancy

First Trimester
• Dental procedures never shown to increase rate of malformations
• Limit dental treatment to immediate problems

Second Trimester
• 14-20 weeks safest time to perform dental procedures

Third Trimester
• Can perform necessary dental procedures but safety and comfort of mother of concern
Pregnancy and Treatment Considerations

- Hypertensive Disorders of Pregnancy
- Diabetes
- Heparin use
- Risk of Aspiration
- OTC and Prescription Drugs
- Nitrous Oxide in Dental Office
- Diagnostic dental x-rays
- Mercury and amalgam
- Prophylactic antibiotics
- Periodontal disease and preterm/low birth weight babies
- Xylitol chewing gum
Diabetes

• Oral health particularly important in diabetic patient for control of infections
• Diabetic control most important in first trimester
• Rates of congenital anomalies increase as degree of uncontrolled diabetes increases
OTC and Prescription Drugs in Pregnancy

- Teratogenic potential of many agents not known
- Few research studies include pregnant women
- Most meds can be used
- Complications of disease often pose more serious risk
Acceptable Drugs for Pregnant Women

• Antibiotics
  – Penicillin
  – Amoxicillin
  – Cephalosporins
  – Clindamycin
  – Erythromycin (Except for estolate form)

<table>
<thead>
<tr>
<th>Antibiotics</th>
<th>FDA Category</th>
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<td>Penicillin</td>
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<td>Amoxicillin</td>
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<td>Clindamycin</td>
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</tr>
<tr>
<td>Erythromycin (Except for estolate form)</td>
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</table>
Acceptable Drugs for Pregnant Women

• Analgesics
  – Acetaminophen  B
  – Acetaminophen with codeine  C
  – Codeine  C
  – Hydrocodone  C
  – Meperidine  B
  – Morphine  B

After 1st trimester & for 24-72 hours only
  – Ibuprofen  B
  – Naprosyn  B
# Unacceptable Drugs for Pregnant Women

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<th>Antibiotics</th>
<th>FDA Category</th>
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<tr>
<td>Quinolones</td>
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<td>Clarithromycin</td>
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<table>
<thead>
<tr>
<th>Analgesics</th>
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<tr>
<td>Aspirin</td>
<td>C</td>
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Diagnostic X-rays During Pregnancy

• No single diagnostic procedure results in radiation dose significant enough to harm embryo or fetus

• Evidence suggests no increased risk to fetus with regard to congenital malformation, growth retardation, or abortion when dose of less than 5 rad given.

• Full mouth dental series <1mrem

• Uterine dose from naturally occurring background about 75mrem

• Can take diagnostic x-rays
X-rays and Low Birth Weight Babies

• Hujoel et al. recently reported association between dental x-rays in 1st trimester and low birth weight babies.
• Exposure to maternal thyroid cause low birth weight
• Weaknesses in design
• Benefits of x-rays outweigh risks
• Use shielding and follow guidelines for x-rays

Mercury fillings and Pregnancy

- No evidence that exposure of fetus to mercury released from mother’s existing amalgam fillings cause adverse effect.
- Some countries have restricted use of amalgam in pregnant women
- Bisphenol-A, present in resins has been shown to be endocrine disrupter in animal studies
- Both amalgam and resins would be considered Category B by FDA
- Hujoel et al. found that placement of amalgams during pregnancy did not increase risk for low birth weight babies.

Periodontal Disease and Preterm/low birth weight babies

- Several studies have indicated that periodontal disease may be a risk factor for preterm and low birth weight babies
- Preliminary evidence suggests periodontal intervention might reduce adverse outcomes
- Recent review paper reported on 25 studies, 18 suggested an association between periodontal disease and adverse pregnancy outcomes and 7 did not
Xylitol Chewing Gum

• NIH consensus conference recognized xylitol containing products as an effective caries preventive agent
• Significant reduction of mother-child transmission of Strep mutans occurred when chewing gum with xylitol 2-3 times per day
• Still uncertain as to frequency, amount and duration required for bacterial transmission reduction
What Prenatal Care Providers Should Do

• Assess problems with teeth and gums and make appropriate referrals
• Encourage all women at the first prenatal visit to schedule an oral health visit
• Document in the prenatal care plan whether the woman is under care of oral health professional
• Facilitate treatment by providing written medical clearance for the oral health referral
• Share appropriate clinical information
Summary

• Pregnancy by itself is not a reason to defer routine dental care and necessary treatment for oral health problems
• First trimester diagnosis and treatment including needed dental x-rays can be undertaken safely to diagnose disease processes that need immediate treatment
• Needed treatment can be provided throughout the remainder of pregnancy. The most ideal time period is between the 14th and 20th weeks
• Need to reduce oral disease in mother as it can be transmitted to baby
Oral Health Care in Early Childhood
Role of Pediatrician

• Assess the risk for oral diseases beginning at 6 months of age by identifying the risk indicators such as:
  – Inadequate fluoride exposure
  – Caries in siblings, parents and other household members
  – Lack of age appropriate hygiene efforts by parents
  – Frequent use of bottle
  – Medications that contain sugar
Role of Pediatrician

- Plaque or white spot lesions
- Special health care needs
- Referral of high risk children
- Assist in finding dental home

• Advise caretakers that the following may reduce the risk of caries:
  - Wipe infant’s teeth after eating
  - Supervise children’s brushing until they can tie their shoes
  - No bottles at bed or nap time
  - Feed foods with sugar only at meal time
  - Avoid saliva sharing behaviors with mother and siblings
  - Visit dentist between 6 and 12 months
The Infant Dental Visit

• Lap, knee to knee exam
• Prenatal, medical, dental history of child, siblings and parents (mom)
• Oral Exam
• Risk Assessment
• Anticipatory Guidance
• Establish Dental Home
• Establish follow up periodicity
Oral Health Risk Assessment

• Performed within 6 months of eruption of first tooth, no later than 12 months of age
• Use 8 indicators
• Assessed as low, moderate, high
• Any one of the indicators high/moderate, child high/moderate risk
• Refer all moderate and high risk infants to dentist immediately, all others at 12 months of age
Oral Health Risk Factors

- Oral health of mother
- Birth order of child
- Dental caries
- Enamel demineralization
- Visible plaque
- Fluoride content of drinking water
- Dietary sucrose (bottle feeding)
- Socioeconomic status
- Children with special health care needs
Dental Anticipatory Guidance, What to Tell Parents

• Dental and oral development
• Fluoride status
• Non-nutritive oral habits
• Injury prevention
• Oral hygiene
• Effects of diet on dentition
Dental and Oral Development

- Eruption timing and sequence
- Early eruption
- Delayed eruption
- Teething
- Eruption problems
Eruption Timing & Sequence

- Eruption timing can vary widely
- Eruption sequence is more important than timing
Eruption Timing and Sequence

- First tooth erupts around 6 months of age
- Mandibular teeth precede Maxillary
- First to erupt are lower central incisors
- Eruption should occur symmetrically in each arch
- Maxillary incisors a month or two later.
Early Eruption

- Natal Teeth – those present at birth
- Neonatal Teeth – those that erupt during first 30 days
- Not supernumeraries but baby’s deciduous teeth
- 85% are lower incisors
- Remove if problem with feeding or aspiration danger
Early Eruption

- Precocious puberty
- Hyperthyroidism
- Hemifacial hypertrophy
- Sturge-Weber
Delayed Eruption

- Low birth weight
- Down Syndrome
- Cleidocranial dysostosis
- Hypothyroidism
- Hypopituitarism
- Craniofacial synostosis
- Hemifacial atrophy
Teething

- A natural process
- Increased drooling
- Desire to chew
- Mild pain
- Conflicting evidence it causes fever, diarrhea, facial rashes or sleep problems.
Prevalence of Disturbances During Tooth Eruption

- Gingival itching 85%
- Irritation 74%
- Increased salivation 70%
- Fever 46%
- Agitated sleep 39%
- Diarrhea 35%
- Runny nose 26%
Teething Home Care

• Keep gum tissue clean with damp gauze or washcloth
• Frozen teething rings
• Avoid teething biscuits
• Palliative care for associated symptoms
Eruption Problems

- Eruption hematoma
- Translucent
- Painless
- No treatment!

Blue to dark red if there is blood in the cystic fluid.
Fluoride Adequacy

- Tailor to each patient case
- Fluoridated water
- Reverse Osmosis removes 90% of fluoride
- Charcoal filtration 10%
- Supplements only after careful investigation of need.
- Fluoridated toothpaste...Instruct on safety!
- Fluoride varnish (Duraphat)
## Dietary Fluoride Supplementation Schedule

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<tr>
<th>Age</th>
<th>&lt;0.3ppm</th>
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<th>&gt;0.6ppm</th>
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<tr>
<td>0-6mo</td>
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<tr>
<td>6-36mo</td>
<td>0.25mg</td>
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</table>
Non-nutritive Sucking

• Avoid non-nutritive sucking
• Digit habits
  – Hard to break
  – Discourage when child can understand why
• Pacifiers
  – Better than digits
  – No strings around neck
  – Big enough to avoid aspiration
  – One piece construction
• Bottles, sippy cups
Non-Nutritive Sucking and Early Childhood Caries

- An infant should not be placed in bed with a bottle containing anything but water.
- Grazing on a bottle, breast or ‘sippy’ cup is non nutritive sucking that can lead to caries formation.
Early Childhood Caries (ECC)

• An infectious and preventable disease that is vertically transmitted from the mother or other intimate caregiver to infants.
• Failure to clean the baby’s teeth
• Extended nursing
• Exposure to fermentable carbohydrates.
Early Childhood Caries

- A distressing syndrome
- Caries in the primary maxillary incisors of infants
- 1-3yrs of age
- Tooth crowns completely destroyed
- Difficult and expensive to treat
No Feeding and Falling Asleep
Injury Prevention

• Car seats
• Helmets
• Mouth guards
• Electrical cords
Oral Hygiene and When to start brushing

- Pre-tooth cleaning of the gums
- With the first tooth
- Soft, small child’s toothbrush
- Fluoride free toothpaste
- Brush twice daily or after meals
- Floss when spaces close
- Review early colonization and avoid sharing of utensils or using saliva to clean dropped pacifiers
Toothbrushing
Diet and Oral Health

- Number one controllable factor in tooth decay
- Frequency and consistency
- Breast feeding is best, but grazing can lead to early childhood caries
- Minimize fruit juices
- Avoid bottle to bed
- Wean on time
- Brush after last feeding
The concept of the “dental home” for all children is derived from the American Academy of Pediatrics’ definition of ‘medical home’.
Dental Home

• A specialized primary dental care provider
• Accurate risk assessment
• Individualized preventive dental health program
• Anticipatory guidance
• A plan for emergency dental trauma
• Information about proper care of teeth and gingiva
• Comprehensive dental care
• Referrals to other specialists as needed
Important facts to remember

• Tooth decay is still common in children
• Dental caries is infectious and is transmitted from mother/caregiver to child as teeth erupt
• Diet/bottle is the most important controllable factor in tooth decay formation
• All 6-12 month old infants should have a caries risk assessment
• Infants should be referred to a dentist by 12 months of age, establish dental home