Perinatal Oral Health

Irene V. Hilton DDS, MPH
San Francisco Department Public Health
UCSF Schools of Medicine & Dentistry
NEW MEXICO HEALTH RESOURCES
2011 CLINICAL AND QUALITY CONFERENCE
May 21, 2011
Objectives

• Understand effect of maternal oral health on families
• Describe why pregnancy provides opportunity to provide oral health interventions for women
• Learn elements of clinical prevention and treatment guidelines for pregnant women
• Learn how to develop medical-dental integration in the HC setting that improves perinatal & infant oral health
Impact of Maternal Oral Health on Families
Periodontal Disease

• Peri- around & Odont- teeth
• Two main disease categories with different causative bacterial agents
  – Gingivitis
    • Reversible, no bone loss, aerobic
  – Periodontitis
    • Irreversible, loss of supporting bone, anaerobic
Clinical Presentation
Disease Response to Bacterial Plaque

Fatty acids
FMLP
LPS

Low
IL-10
TGF-β
IL-1ra
TIMPs

High
TNFα
IL-6
IL-1β
IFN-γ
PGE2
MMPs
Epi: Attachment loss > 6mm by race/ethnicity

Periodontitis & Pregnancy

• **Case control** *(Offenbacher et al 1996, 1998, Goepfert et al 2004)*

  – Both showed association between periodontitis and LBW (37, 35 weeks), pre-term birth or preclampsia
  – Known risk factors - smoking, race, alcohol, age etc. controlled
Periodontitis & Pregnancy Mechanisms

- Circulating periodontal bacteria induce activation of maternal immune responses, lead to cytokine production, release of prostaglandins (Offenbacher 1998)
- Periodontal bacteria & toxins cross the placental barrier
- Pregnant women with periodontitis had higher C-reactive protein (C-RP) levels than periodontally healthy (Pitiphat et al, 2006)
• Obstetrics and Periodontal Therapy (OPT) Study
  – Nov. 2006 NEJM
  – 410 control, 413 Tx group @ 4 US sites
  – No significant difference between Tx and control groups in number of pre-term births (<37 weeks)

• MOTOR
  – Sept. 2009 Obstet Gynecol
  – 1,800 subjects @ 3 US sites
  – No significant differences when the two groups were compared for obstetric or neonatal outcomes
Newer Evidence

  – No effect on adverse birth outcomes

  – *F. nucleatum* isolated from placenta and stillborn fetus. Examination of different microbial flora from mother identified the same clone in her subgingival plaque
What we know…

• Association probably relates to inflammation in causal pathways
• Periodontitis in pregnancy is still a chronic disease/pathological state
• Periodontal health has a value in itself regardless whether there is a link with systemic disease
• Routine dental treatment of periodontitis is safe during pregnancy
Dental Caries

- Dental caries, once acquired, is a **chronic, ongoing disease PROCESS** that must be managed throughout the life cycle
- Cavities are the **RESULT** or final disease endpoint of the dental caries process
- Multifactorial disease
- Primary cariogenic organisms
  - *Strep mutans*
  - *Lactobacilli*
Decay Equation

Sugar + Streptococcus Mutans → Acid

Acid + Healthy Tooth → Decay

Help Prevent Cavities By Brushing and Flossing Daily.
Acquisition of Caries Causing Bacteria

- Maternal transmission of *strep mutans* during normal activities (feeding etc.)
  

- Highest fidelity of transmission with mother

- DNA analysis shows same sequence in maternal and infant *strep mutans*
Strep Mutans Transmission
Epi: Prevalence of Coronal Caries Among Dentate Adults

NHANES 1999-2004
Early Childhood Caries

• Caries lesions in a child 0-5
• Loss of function
• Failure to thrive \textit{(Elice and Fields 1990, Acs et al. 1999)}
• Unequal expenditure of resources for ER and hospital-based treatment \textit{(Ettelbrick, Webb and Seale 2000, Griffen et al. 2000)}

• \textbf{Lifetime of caries} \textit{(Weinstein 1998)}
Early Childhood Caries Disparities

% 2-4 y/o Untreated Decay

Data Source: NHANES, 1999-2004, NCHS/CDC.
Influences on Children's Oral Health

Maternal Influence

• Diet
• Level of home care
• Importance of primary teeth & oral health
• Genetic & transmissibility components
Pregnancy Presents an Opportunity

- Introduce risk reduction & self management strategies for mom and child
- Stabilize maternal periodontal status
- Break the cycle of s. mutans maternal transmission
Opportunity…

• At risk populations in contact with health care delivery system more frequently than usual
• Pregnant women may be interested in their oral health & open to health education messages
• May be only time have any type of dental insurance coverage
Medical- Dental Integration is Key!!!!!

Perinatal educating pregnant women

Dentists willing to treat pregnant women
Clinical Interventions
Guidelines

- Systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances *(IOM, 1990)*
- Recommendations based on evidence from rigorous systematic review and synthesis of published medical literature
- Define practices that meet the needs of most patients in most circumstances
2006 NY State Guidelines

Physician section:
Importance of oral health to pregnancy, responses to common concerns by dentists

Dentist section:
Evidence based recommendations and protocols for clinical treatment of pregnant women
“Because pain was so great she took ‘excessive doses’ (Tylenol) resulting in toxicity to her and her baby. At the time she was approximately 29 weeks pregnant. The baby died from liver toxicity. My patient suffered acute liver failure and was flown to Pittsburgh expecting a liver transplant.”
2010 California Guidelines

- California Dental Association Foundation
- American College of Obstetricians and Gynecologists, District IX
Need For Guidelines

- 2006 California Maternal and Infant Health Assessment (MIHA) data showed 35.1% pregnant women had a dental visit
- 53.8% stated they had an oral health problem during pregnancy, but of those 62.3% did not visit the dentist while pregnant
- Desire among both dentists and ObGyn’s for professional guidelines and education
Need For Guidelines - Patient

- Attitude towards dental treatment while pregnant
- Concerns regarding dental care not verbalized to perinatal providers
- Belief poor oral health status during pregnancy is normal
- Low awareness of importance of maternal oral health and relationship to infant’s long-term oral health
Need For Guidelines - Perinatal Providers

• Lack knowledge about the importance of oral health status
• Not performing routine assessment and referral of pregnant women into dental care
• Not enough information to provide rationale why attending dental visits is important & respond to concerns
Need For Guidelines-Dental Providers

• Insufficient training combined with lack of experience treating pregnant women in dental school
• Fear of malpractice suit if something goes wrong with a patient’s pregnancy
• Concerns about the safety of procedures
• Addressing patient perceptions of risk
Guidelines Development Process

• Advisory committee
• Nationally recognized experts
  – Periodontology, medicine (FM/Ob-Gyn/Radiology), ethics, environmental & occupational health, public health, cariology
• Experts write guidelines - best available evidence - 250 references!
• Guidelines reviewed & disseminated
Role of Perinatal Provider

• Ask about and assess oral health

• Facilitate oral health examination by identifying dental provider

• Facilitate treatment by providing written medical clearance

• Ask if any concerns & address. Inform dental care is safe and effective
San Francisco General Hospital and Trauma Center
Community Health Network

PRE/PERINATAL ORAL HEALTH REFERRAL

Date: ____________________________

Referral to Dental Clinic: □ Silver □ Chinatown □ Potrero □ S.E. □ SMHC □ Native American □ UOP

Reason for referral: □ Routine □ Bleeding gums □ Pain □ Other: ____________________________

Weeks gestation (at time of referral): __________ Estimated delivery date: __________

Patient Phone #: ____________________________

☐ This patient is cleared for routine evaluation and dental care, which may include but not be limited to:
- Dental x-rays as needed for diagnosis (with abdominal and neck lead shield)
- Oral health examination
- Dental prophylaxis
- Scaling and root planing
- Restoration of untreated caries
- Extraction
- Standard local anesthetic (lidocaine with or without epinephrine)
- Analgesics (if needed): Acetaminophen and/or Acetaminophen with codeine (Nonsteroidal anti-inflammatory drugs are not recommended during pregnancy.)
- Antibiotics (if needed and no known allergies): Penicillin, Amoxicillin, Cephalaxinor, Clindamycin, Erythromycin-not estolate form (Cipro and Tetracycline are not recommended during pregnancy)

Significant Medical Conditions: □ NONE □ YES, (e.g., heart condition, liver disease, kidney disease, etc.)

Known Allergies: □ NONE □ YES

Drug(s)/Reactions(s): ____________________________

Current Medications: □ NONE □ Prenatal Vitamins □ Iron □ Calcium □ OTHERS (PCP to attach updated list of active Rx with referral)

Any Precautions: □ NONE □ SPECIFY (List if any comments or instructions): ____________________________

Perinatal Care Provider (PCP)/Print name): ____________________________ CHN #: ____________________________

PCP Fax #: ____________________________

Perinatal Care Provider:
1. Clerk or patient to call Dental Clinic for appointment
2. Fax referral form to Dentist/Dental Clinic
3. Give copy of referral form to patient to bring to dentist
4. Place one copy in patient’s chart

Dental Clinics:
Silver Ave 657-1785 FAX (657-1730 phone) Chinatown 291-8794 FAX (364-7636 phone)
Potrero Hill 356-1639 FAX (648-7699 phone) Southeast 822-3620 FAX (671-7066 phone)
SMHC 863-0990 FAX (626-2380 phone) Native American 621-1429 FAX (621-8056 phone)
UOP 351-7187 FAX (929-6591 phone - initial visit is a “first come/first served” drop-in, at 8 am & 1pm)

Dentist: Please fax back information (to PCP Fax # above) after initial dental visit
Exam Date: □ Missed Appt.
☐ Needs additional treatment visits for: □ Caries □ Periodontitis □ Referral to OMFS/ Oral Surgery

Comments: ____________________________
Role of Dental Provider

• Same as any comprehensive care patient
• Exam & risk assessment
• Surgical intervention/treatment appropriate disease level
• Preventive activities including risk reduction self-management strategies
• Recall
Oral Conditions Unique to Pregnancy

- Pregnancy Gingivitis
- Pregnancy Epulis
- Erosion from morning sickness
Guidelines Consensus Statement

Prevention, diagnosis and treatment of oral diseases, including needed dental radiographs and use of local anesthesia, are highly beneficial and can be undertaken during pregnancy with no additional fetal or maternal risk when compared to the risk of not providing care.

*Pregnancy is not a reason to defer routine dental care or treatment of oral health problems.*
Key Findings

• No evidence relating early spontaneous abortion to first trimester oral health care or dental procedures.
• Not necessary to have approval from the prenatal care provider for routine dental care of healthy patient.
• Control of oral diseases in pregnant women has potential to reduce transmission of oral bacteria from mothers to their children.
Consult Indicated

- Co-morbidities that may affect management - diabetes, pulmonary issues, heart or valvular disease, hypertension, bleeding disorders, or heparin-treated thrombophilia
- Nitrous oxide needed for dental treatment
- Intravenous sedation or general anesthesia needed
Dentist’s Concerns for Surgical Intervention/treatment

- X-rays
- Emergency care
- Nitrous oxide
- Local anesthesia
- Restorative materials
- Medications
- Perception of patient discomfort
Adverse Pregnancy Outcomes

• Risk of pregnancy loss before 20 weeks - 15 - 25%. Most are not preventable

• Risk of teratogenecity - up to 10 weeks
  – Rate of malformations - 3 to 4%
X-rays

• Radiographic imaging not contraindicated
  – Very low levels of radiation
  – Thyroid collar and abdominal apron
• Should be utilized as required to complete full examination, diagnosis and treatment plan
• Standard of care
Emergency Care

• Provide emergency/acute care at any time during pregnancy as indicated by oral condition
Nitrous Oxide

• Should be limited to situations where topical and local anesthetics are inadequate & care is essential
• Cost-benefit analysis
• Pregnant women require lower levels of nitrous oxide to achieve sedation
Local Anesthesia

• Local anesthetic with epinephrine when clinically indicated
Restorative Materials

• Amalgam
  – No evidence of harmful effect in population based studies and reviews (FDA 2009, CDC, NCI)
  – No additional risk if standard safe amalgam practices are used

• Resins
  – Short-term exposure associated with placement has not been shown to have health risk; data lacking on the effects of long-term exposures.
Drugs in Pregnancy - Physiological Considerations

• Changes in pulmonary, gastrointestinal and peripheral blood flow can alter drug absorption

• Hepatic changes can alter biotransformation of drugs by the liver and clearance
Drugs in Pregnancy

• Study of W. VA pregnant women (Glover et al. 2003)
  – Average 1.14 prescription drugs, excluding vitamins and iron
  – Average of 2.95 over-the-counter drugs
    • Tylenol, Tums, cough drops
  – Nearly half (45%) used herbal agents
    • Peppermint, cranberry
Drugs in Pregnancy - Not to Exceed Daily Doses

- Most are Category B (no adequate studies)
- Lidocaine
- Acetaminophen
- Pen, amox, clindamycin
- Nystatin

- Category C
  - Chlorhexidine rinse
  - Codeine
Drugs in Pregnancy - Avoid

- NSAIDS
- Erythromycin estolate
- Tetracycline
Patient Comfort

- Head higher than feet
- Upper arch treatment early in pregnancy before lower arch
- Morning or afternoon appointment preference
Postural Considerations

- 3rd trimester - Postural hypotensive syndrome
- IVC impingement by weight of fetus
- Turn on side to restore circulation
Chemotherapeutics

- Fluoride
- Chlorhexidine (CHX) - non-alcoholic version available
- Xylitol

- No over the counter mouth rinses with alcohol (Listerine 20% alcohol)
The Caries Balance

Pathological Factors
- Acid-producing bacteria
- Sub-normal saliva flow and/or function
- Frequent eating/drinking of fermentable carbohydrate

Protective Factors
- Saliva flow and components
- Fluoride, calcium, phosphate
- Antibacterials: - chlorhexidine, iodine?, xylitol, new?

Caries

No Caries
Fluoride

• OTC & Rx options
Chlorhexidine

- Suppress *s. mutans* & periodontal pathogens
- Italian 30 month study- delayed *s. mutans* colonization in children after intervention with mother during last 3 months of pregnancy *(Brambilla et al. JADA 1998)*
- Patients rinse prior to appointment
- After birth- 1 week of CHX followed by 3 weeks of OTC Fl rinse *(Spolsky et al. CDA Journal 2007)*
- Cost/insurance coverage
Xylitol

• Naturally occurring sugar derived from bark of birch tree
• Suppresses *S. mutans* (Hildebrandt 2000)
• Studies show decreases transmission *S. mutans* (Soderling et al, 2000)
• OTC products have variable levels- if not first ingredient not useful
• Only way to insure therapeutic dose is dispense
Self Management Goals Based on Risk Assessment

- Increasing & maintaining protective factors
- Reducing risk factors
Patient Education Materials

• Review for reading level and cultural appropriateness

• Be selective and keep materials brief. Include materials with larger print

• Coordinate patient education with national standards (i.e. Anticipatory Guidance) or organization's care guidelines
Oral Health During Pregnancy

What Every Expectant Mother Should Know For Her Health and Her Baby's
Motivational Interviewing

- Get mothers to talk…you listen
- Give choices (key, key, key)
- Acceptance facilitates change
- Pressure to change facilitates resistance
- Sensitivity to culture, SES
- Small steps
SELECT TWO GOALS

- Quit bad habits
- Brush twice a day with fluoride toothpaste
- No soda
- Rinse after morning sickness
- Less/no candy & junk food
- Floss nightly
- Complete dental treatment
- Chew Xylitol Gum/mints
- Use fluoride rinse/gel regularly
- Take Pre-Natal Vitamins daily
- Eat better
- Drink tap water
Resources Perinatal Oral Health


– September 2010 issue
Implementation Strategies
Oral Health Disparities
Collaborative (OHDC) Pilot

HHS/HRSA/BPHC
National Network Oral Health Access
http://www.nnoha.org/oralhealthcollab.html
Core Measures - Perinatal

1. % Pregnant women with comprehensive dental exam completed while pregnant
2. % Pregnant women with completed Phase I dental treatment plan within 6 months of exam
3. % Pregnant women with Self Management Goal (SMG) set while pregnant
Clinical Information Systems

- Develop database of pregnant women
- Clear tracking processes
- Integrated health record and scheduling system (ideally electronic)
Decision Support

- Education and training for medical and dental staff
- Develop referral process from medical for pregnant women
- Educate and train dental staff in clinical treatment of pregnant women
Delivery System Design

- Oral health considerations integrated into every appropriate medical visit
- Fast track pregnant women
- Utilize maximum expanded duties
Self Management (SM) Support

- Utilize effective SM techniques and tools
- Train team members on motivational interviewing, SM goal setting and follow-up
- Co-located patient education materials
Organization of Health Care

- Organizational commitment to see and treat pregnant women

- Co-location of services

- Integrated case management - patient navigator/liaison
Community

- Raise awareness of importance of perinatal oral health
- Partner with community organizations providing services to pregnant women
- Educate outside dental providers about oral health access and outcomes for pregnant women
Conclusion

• Pregnant women are experiencing a normal biological state and ethically deserve the same level of care as any other patient
• Lack of knowledge and anecdotal concerns influenced dental practice
• Evidence base shows appropriate dental care is necessary and safe
Conclusion

• Opportunity to collaborate with medical colleagues, women and their families to improve oral health in our communities

• Long-term commitment

• We have models that work
Our Goal