Perinatal Oral Health Update: Clinical Guidelines & Best Practices

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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
I am comfortable performing a routine surgical extraction of #30 on a 19 y/o woman with controlled diabetes who is 39 weeks pregnant and Rx’ing Tylenol # 3 for analgesia post-operatively.

A. No problem
B. I have concerns
Impact of Maternal Oral Health on Families

Periodontitis & Pregnancy Outcomes
Disease Response to Bacterial Plaque

- Fatty acids
- FMLP
- LPS

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<tr>
<th>Low IL-10</th>
<th>TGF-β</th>
<th>IL-1ra</th>
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<tr>
<td>TNFα</td>
<td>IL-6</td>
<td>IFN-γ</td>
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<tr>
<td>IL-1β</td>
<td>PGE2</td>
<td>MMPs</td>
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<td>TIMPs</td>
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Meta-Analysis of Associations
(Matevosyan, 2011)

- 125 studies between 1998-2010
- Maternal periodontal disease remains associated with adverse perinatal outcomes (APO)
  - Preclampsia
  - Prematurity
Meta-Analysis of Clinical Intervention Trials

- Journal American Dental Association
  - 2010 Dec 141(12): 1423-1434
- British Medical Journal
  - 2010 Dec 29;341:c7017
- Journal of Clinical Periodontology
  - 2011 Oct 38(10):902-14

- No effect on adverse birth outcomes
Routine Dental Treatment Safe

• Intervention studies show routine dental treatment of periodontitis is safe during pregnancy

• Other routine dental care/procedures also safe (Michalowicz et al, 2008)
Microbiome- The Latest

• The ecological community of microorganisms that share our body space (Lederberg and McCray, 2001)

• Human body is inhabited by at least 10 times more bacteria than the number of human cells
Use new technology to sample and analyze the genome of microbes from five sites on the human body.

Determine whether there are associations between changes in the microbiome and health/disease.

5 year project.

Distribution by Body Site

- GI tract (29%)
- Oral (26%)
  - Human oral cavity is estimated to contain more than 750 bacterial species packed in biofilms (Jenkinson and Lamont, 2005; Paster et al., 2006)
- Skin (21%)
- Nasal (14%)
- Urogenital (9%)

Gram-negative Periodontitis

- *Porphyromonas gingivalis*- AD, APO, RA
- *Fusiform nucleatum*- AD, APO, RA, IBD/CRC
- *Tannerella forsythia*- AD, APO, RA
- *Treponema denticola*- APO
- *Campylobacter rectus*- APO
- *Prevotella intermedia*- AD, APO, RA
- *Prevotella nigrescens*- APO
- *A. actinomyctemcomitans*- AD

Gum Disease Worsens Rheumatoid Arthritis - Healthline
www.healthline.com › Healthline News › Healthline Networks
Sep 17, 2013 - A protein produced by gum disease bacteria is to blame for the connection between gum ills and rheumatoid arthritis.

Periodontal Disease and Rheumatoid Arthritis - Medscape
A number of epidemiologic studies have described associations between rheumatoid arthritis and periodontal disease. Recent clinical studies continue to ...

Colon Cancer Linked to Mouth Infection, Gum Disease? – ...
www.webmd.com/colorectal-cancer/.../colon-cancer-linked-to-... › WebMD
WEDNESDAY, Aug. 14 (HealthDay News) -- An infection from a common type of mouth bacteria can contribute to colorectal cancer, a new study suggests.

Gum Disease-Linked Mouth Bacteria May Cause Colorectal ...
www.medicaldaily.com/gum-disease-linked-mouth-bacteria-ma... by Nsikan Akpan - in 63 Google+ circles
Aug 14, 2013 - New research connects gum disease-causing mouth bacteria to tumor growth in the colon and reveals a possible drug candidate that may ...
Normal Perinatal Progression

- Normal parturition controlled by inflammatory signaling
- Amniotic fluid levels of prostaglandin and inflammatory cytokines rise until induces rupture of amniotic sac, uterine contraction, dilation and delivery
- Process can be modified by external stimuli-infection and inflammatory stressors
Etiology of Periodontitis

- Toxic products from bacteria in gingival crevice induce immune-system modulated processes that result in destruction of supporting bone
- An inflammatory process
Periodontitis & Pregnancy Mechanisms

• **Direct:** Periodontal bacteria & toxins cross the placental barrier colonize feto-placental unit, trigger infection and/or inflammatory response and pregnancy complications

• **Indirect:** Inflammatory cytokines and mediators produced at gingival level enter blood circulation and reach the feto-placental unit and enhance/stimulate inflammatory response *(Madianos et al, 2013)*
Periodontal Bacteria found in Amniotic Fluid

- *Porphyromonas gingivalis*
- *Fusiform nucleatum*
- *Aggregatibacter actinomycetemcomitans*
- *Bergeyella*

- Periodontal pathogens detected in amniotic/feto-placental tissues of women with normal pregnancies

- What factors determine whether translocation of these pathogens contributes to pregnancy complications?
Impact of Maternal Oral Health on Families

Dental Caries
Strep Mutans Transmission
Early Childhood Caries Disparities

% 3-5 y/o Untreated Decay

Data Source: NHANES, 2009-2010, NCHS/CDC.
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 2 for 1
- Stabilize periodontal & caries status
- Frequent contact with health care delivery system
- Higher interest in health
- May be only time have dental insurance coverage
Clinical Interventions
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
Malpractice Myth

- TDIC - ten states & 17,000 insured dentists
- Reports one claim in the past 15 years blaming adverse birth outcome on dental treatment
  - No evidence for claim
Guidelines Everywhere

• New York
• California
• Washington
• South Carolina
• American Academy of Pediatric Dentistry
2012 National Consensus Statement

Oral Health Care During Pregnancy: A National Consensus Statement
Summary of an Expert Workgroup Meeting

The American College of Obstetricians and Gynecologists

ADAA

U.S. Department of Health and Human Services
Health Resources and Services Administration
Maternal and Child Health Bureau
“Oral health is an important component of general health and should be maintained during pregnancy...women should be routinely counseled about...the safety and importance of oral health care during pregnancy.’
Guidance for Prenatal Care Health Professionals
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 when indicated

• 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, Cephalosporin, Clindamycin, Erythromycin-net estolate form (*Clitro and Tetracyline are not recommended during pregnancy*)

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

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

**Known Allergies:** ☐ NONE  
☐ YES  
**Drug(s)/Reactions(s):** ____________  

**Estimated delivery date:** ____________  

**Perinatal Care Provider (PCP) (print name):** ____________  
**CHN #:** ____________  
**Phone/ pager:** ____________  
**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 550-1639 FAX (648-7609 phone)  
- Southeast 822-3620 FAX (671-7066 phone)  
- SMHC 863-0900 FAX (626-2380 phone)  
- Native American 621-1429 FAX (621-8056 phone)  
- UOP 351-7187 FAX (929-6501 phone - initial visit is a “first come/first served” drop-in, at 8 am & 1 pm)  

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

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*Note: This form is used for perinatal oral health referrals at San Francisco General Hospital and Trauma Center and may require further information or documentation from the patient or referring provider.*
Role of Dental Provider

- Deliver comprehensive diagnostic, preventive, restorative, and emergency care
- Pregnancy not a reason to defer routine dental care or treatment of problems
- For healthy pregnancies, not necessary to have approval from the prenatal care provider for routine dental care
Pregnancy Gingivitis

- 80% of women
- 2nd-8th mo
- Preexisting gingivitis may predispose to pregnancy gingivitis

Photo: Dr. Robert Johnson, Univ of WA
Pregnancy Granuloma
(epulis or pregnancy tumor)

- Occurs in up to 5% of women
- Single tumor-like growth (up to 2 cm) in an area of gingivitis or recurrent irritation (usually maxillary buccal anterior)
- Usually regresses spontaneously after delivery

Photo: Dr. Robert Johnson, Univ of WA
Gastrointestinal: Impact on Oral Health

• At risk for acid-induced tooth erosion secondary to vomiting
• Diet may increase in refined carbohydrates, increasing risk for caries

Photo: Dr. Bea Gandera, Univ of WA
Consult Indicated

• Co-morbidities that may affect management - diabetes, pulmonary issues, heart or valvular disease, hypertension, bleeding disorders, or heparin-treated thrombophilia

• Nitrous oxide, IV sedation or general anesthesia needed for dental treatment
Dentist’s Concerns for Surgical Intervention/treatment

- X-rays
- Local anesthesia
- Medications
- Restorative materials
- Nitrous oxide
- 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%.
Is it Safe to Take X-rays?

- “No single diagnostic procedure results in a radiation dose significant enough to threaten the well-being of the developing embryo and fetus.”

- American College of Radiology
X-rays

- Use abdominal and thyroid shields
- ADA Guidelines-Number needed for complete clinical diagnosis (same as non-pregnant)
  - *Image Gently®*
- Standard of care
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

- Benefits vs. Risks
- “Old standbys” with long track records
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
FDA Classification

A - controlled studies in humans have demonstrated no fetal risks
   – very few such drugs - prenatal vitamins

B - animal studies indicate no fetal risks but no human studies OR adverse effects in animals but no well controlled human studies
   – PCN, cephalosporins, metronidazole, lidocaine, acetaminophen, CHX
FDA Classification

C - no adequate studies either human or animal OR adverse fetal effects in animals but no human data
  – codeine, morphine, meperidine, beta blockers, heparin, acyclovir, indomethacin, naproxen

D – evidence fetal risk but benefits outweigh risk
  – phenobarbital, phenytoin, valproic acid, lithium

X - proven fetal risk too great
  – isotretinoin and thalidomide
Local Anesthesia

- Standard lido w/ epi - Category B
- Articaine & mepivacaine - Category C
- Default to “old standbys”
Drugs in Pregnancy-Avoid

- NSAIDS (1\textsuperscript{st} & 3\textsuperscript{rd})
- Erythromycin estolate
- Tetracycline
- Aspirin (3\textsuperscript{rd})
Restorative Materials

• Amalgam
  – No evidence of harmful effect in population 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 effects of long-term exposures
Patient Comfort

- Head higher than feet
- Upper arch treatment early in pregnancy before lower arch
- Morning or afternoon appointment preference
- Breaks
Supine Hypotensive Syndrome

**Symptoms:**
- Sweating
- Nausea
- Weakness
- Sense of lack of air

**Signs:**
- Drop in blood pressure
- Bradycardia
- Possible loss of consciousness
Postural Considerations

- IVC/aortic impingement by weight of fetus
- 15-20% of pregnancies
- Can start in 2nd but max in 3rd trimester
- Turn on side to restore circulation
Self Management
Fluoride
Chlorhexidine

- Suppress *s. mutans* & periodontal pathogens
- Non-alcohol formulation
- 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
Patient Education Materials

- Literacy level
- Cultural appropriateness
- Keep materials brief
- Focus on how Mother’s oral health affects baby
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
Conclusion

• Pregnant women are experiencing a normal biological state and ethically deserve the same level of care as any other patient

• Evidence base shows appropriate dental care is necessary and safe
Our Goal