

Perinatal Oral Health



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NEW MEXICO HEALTH RESOURCES

2011 CLINICAL AND QUALITY CONFERENCE

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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
- Learn how to develop medical-dental integration in the HC setting that improves perinatal & infant oral health



Impact of Maternal Oral Health on Families

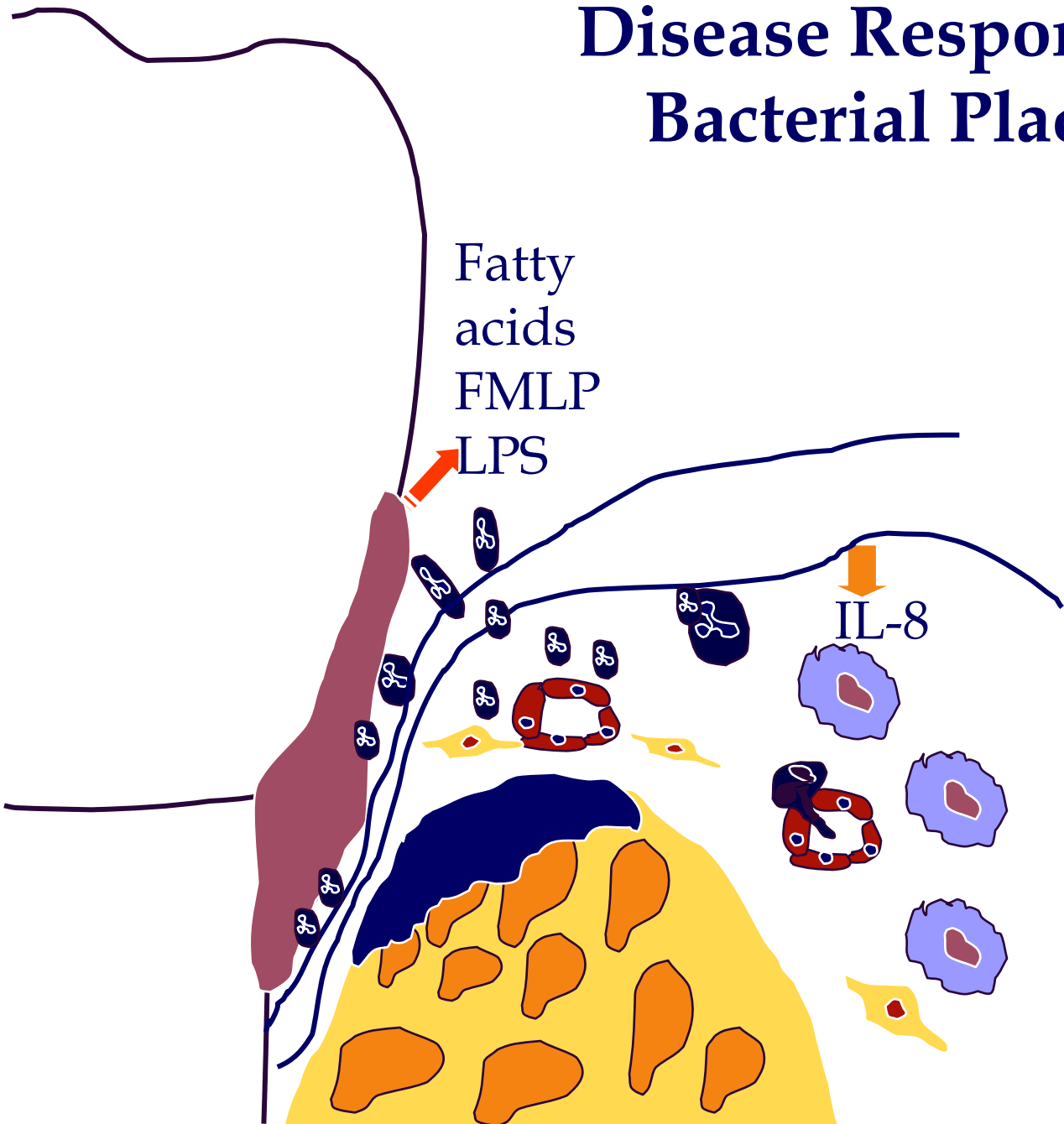
Periodontal Disease

- 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, anerobic

Clinical Presentation



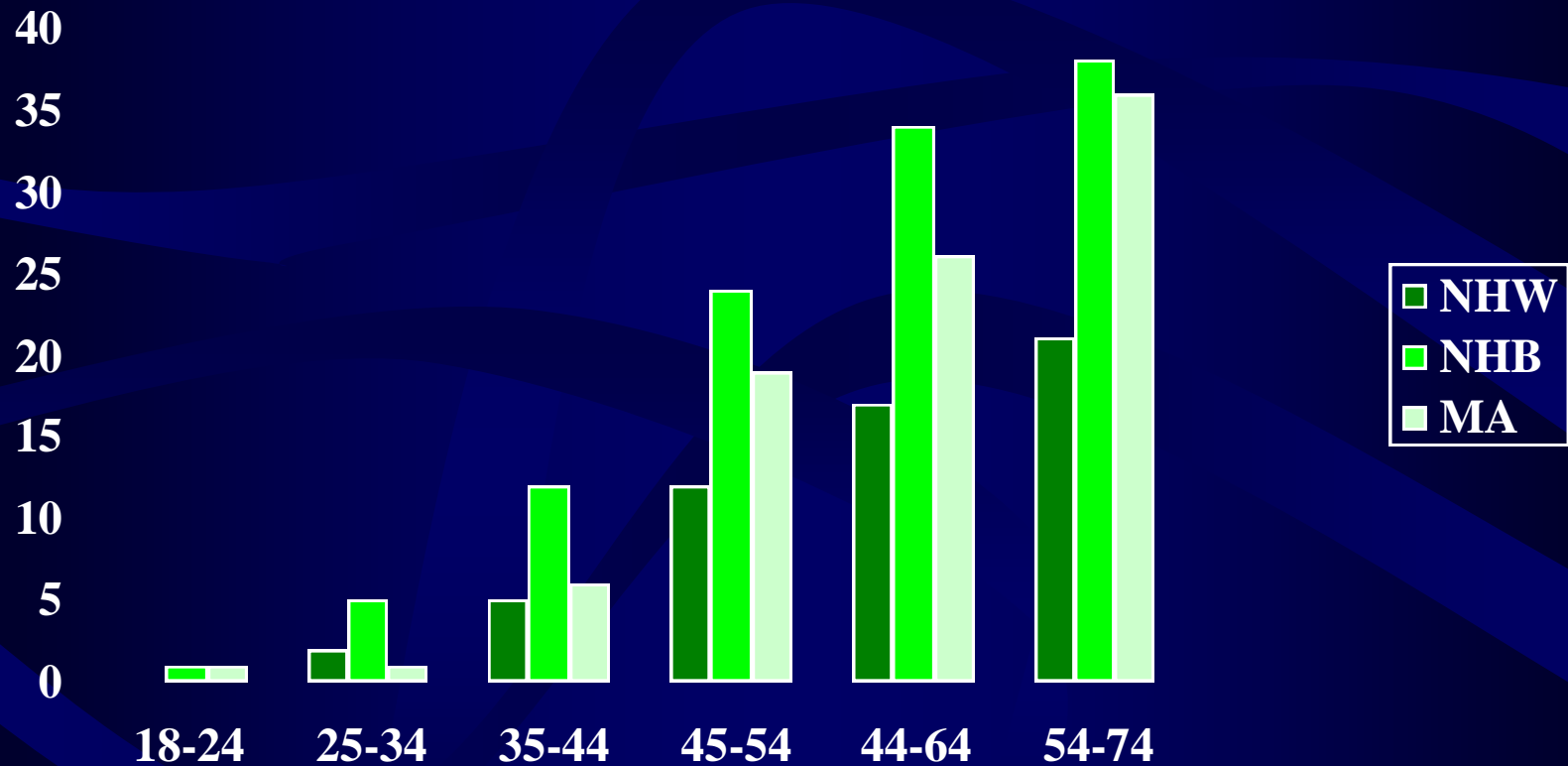
Disease Response to Bacterial Plaque



Low
IL-10
TGF-
b
IL-
1ra
TIMP
s

High
TNF α
IL-6
IL-1 β
IFN-g
PGE2
MMPs

Epi: Attachment loss > 6mm by race/ethnicity



Source: NHANES III (1989-94), US Population

Periodontitis & Pregnancy

- **Case control** (*Offenbacher et al 1996, 1998, Goepfert et al 2004*)
- **Prospective** (*Jeffcoat 2001, Lopez 2002, Offenbacher 2006, Pitiphat et al 2007, Saddki et al 2007*)
 - 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*)

OPT&



Results

- 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

- Uppal et al. : Effectiveness of Periodontal Disease Treatment...A Meta-analysis. J Am Dent Assoc December 2010 141(12): 1423-1434
 - No effect on adverse birth outcomes
- Han et al. Term Stillbirth Caused by Oral *Fusobacterium nucleatum*. Obstet Gynecol 2010;115:442–5.
 - *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

+

Strep Mutans

FORMS →



Acid



Acid + Healthy Tooth

FORMS →

Decay



Help Prevent Cavities By Brushing and Flossing Daily.

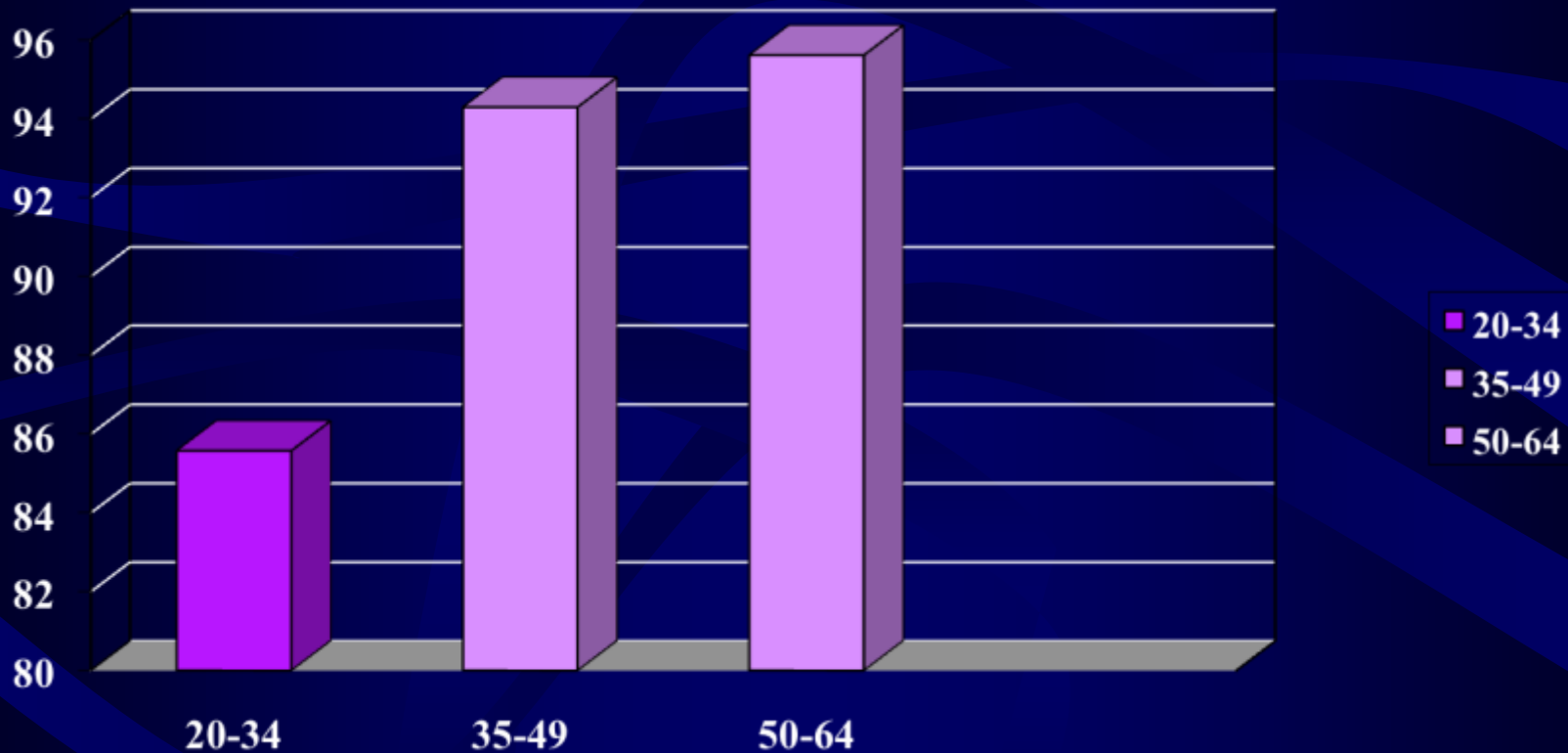
Acquisition of Caries Causing Bacteria

- **Maternal transmission** of *strep mutans* during normal activities (feeding etc.)
(Berkowitz et al 1981, 1985, 2003, 2006. Caufield et al 1993, 1995, 2000, 2003, 2005)
- 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

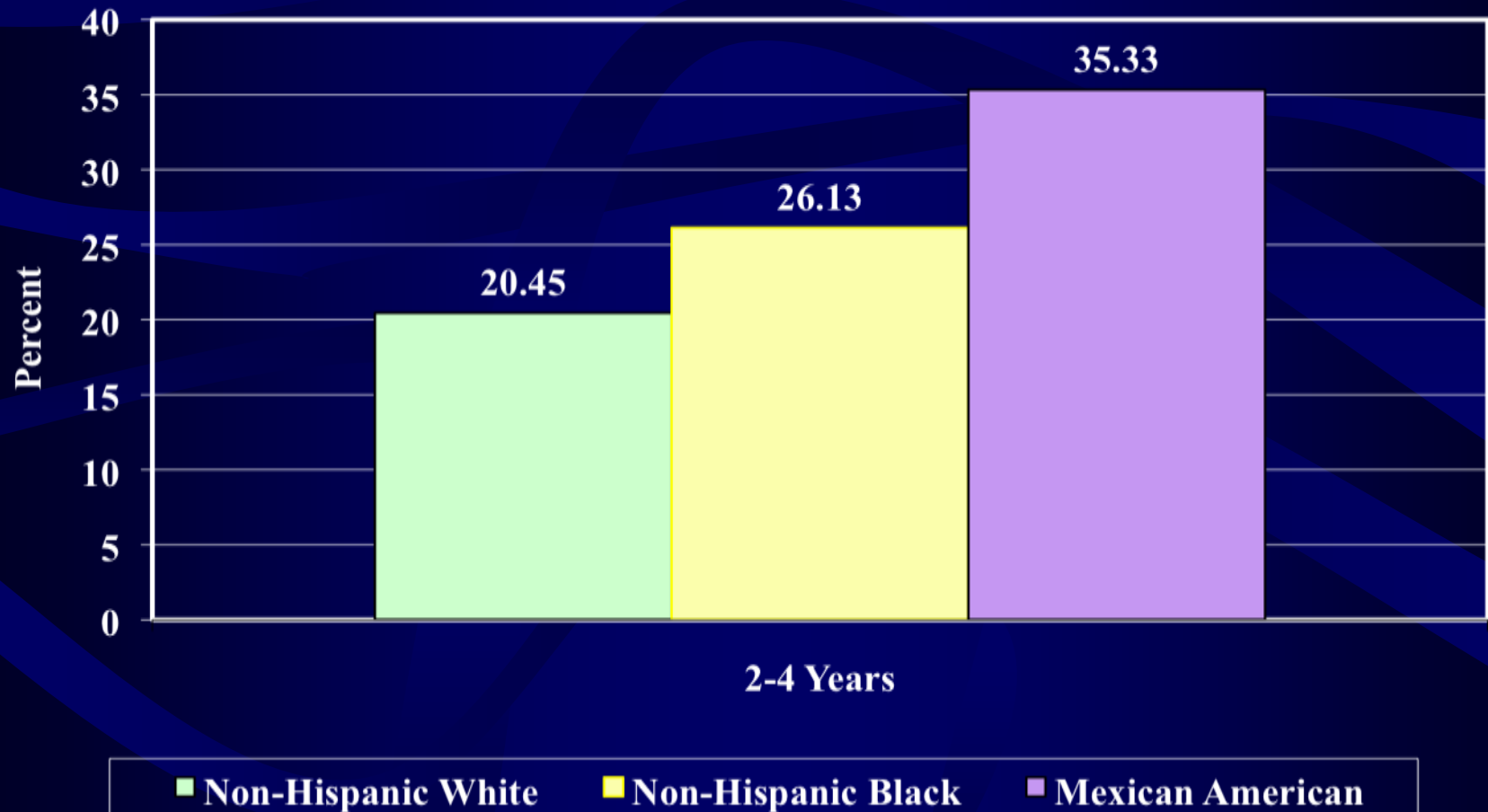


Early Childhood Caries

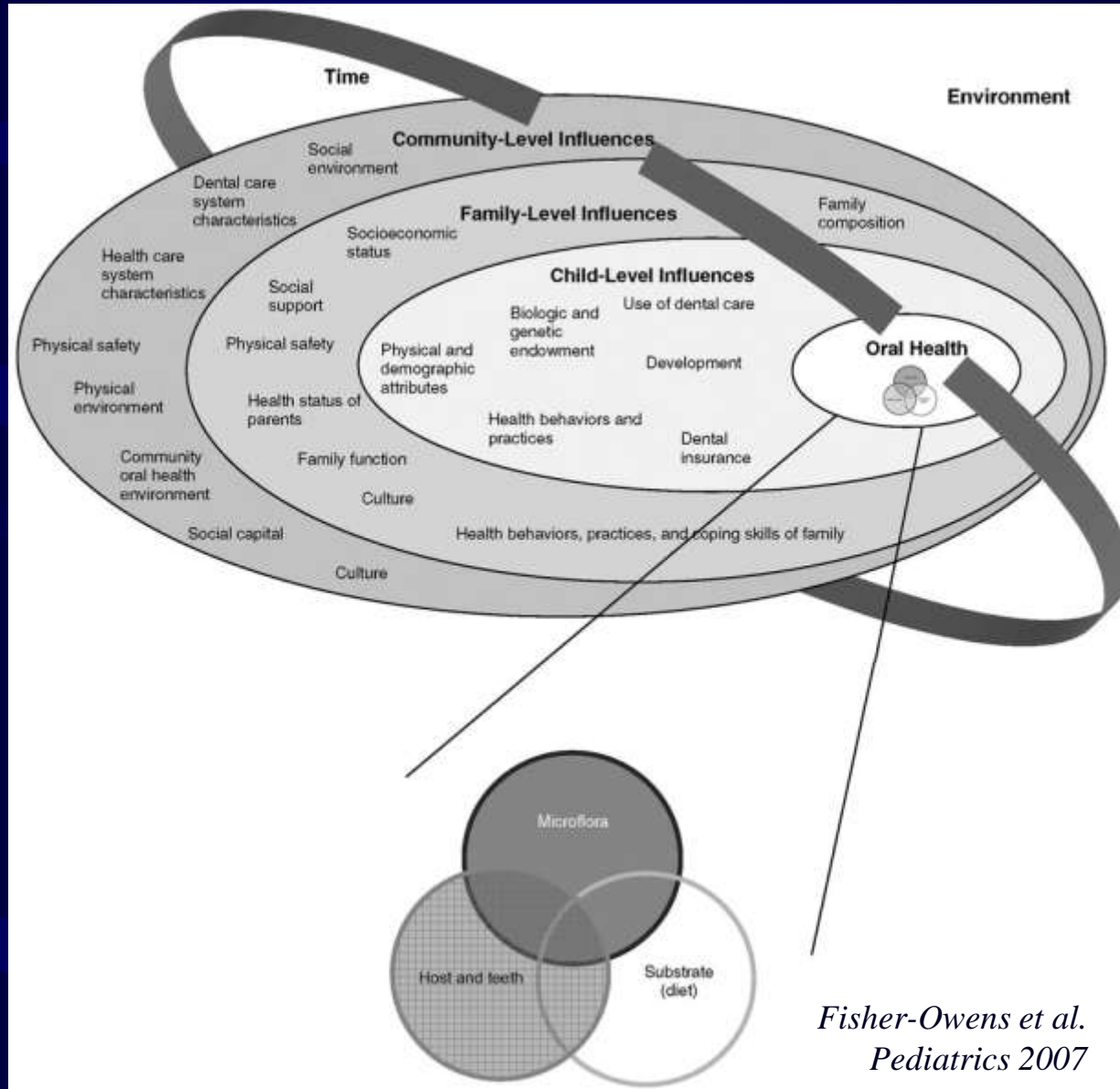
- Caries lesions in a child 0-5
- Loss of function
- Failure to thrive (*Elice and Fields 1990, Acs et al. 1999*)
- Unequal expenditure of resources for ER and hospital-based treatment (*Ettelbrick, Webb and Seale 2000, Griffen et al. 2000*)
- **Lifetime of caries** (*Weinstein 1998*)

Early Childhood Caries Disparities

% 2-4 y/o Untreated Decay



Influences on Children's Oral Health



*Fisher-Owens et al.
Pediatrics 2007*

Mom



Child



Maternal Influence

- Diet
- Level of home care
- Importance of primary teeth & oral health
- Genetic & transmissibility components

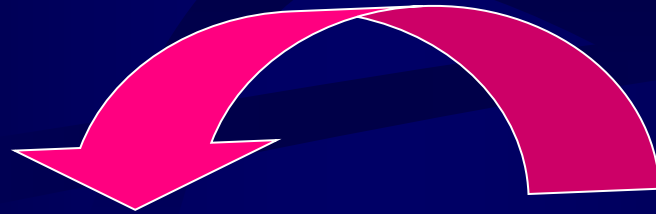
Pregnancy Presents an Opportunity

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

Opportunity...

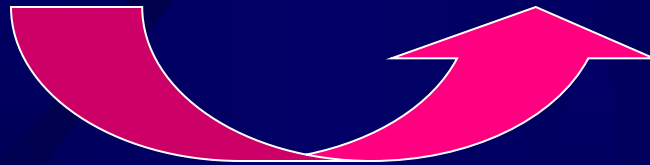
- At risk populations in contact with health care delivery system more frequently than usual
- Pregnant women may be interested in their oral health & open to health education messages
- May be only time have any type of dental insurance coverage

Medical- Dental Integration is Key!!!!



Perinatal educating
pregnant women

Dentists willing to treat
pregnant women





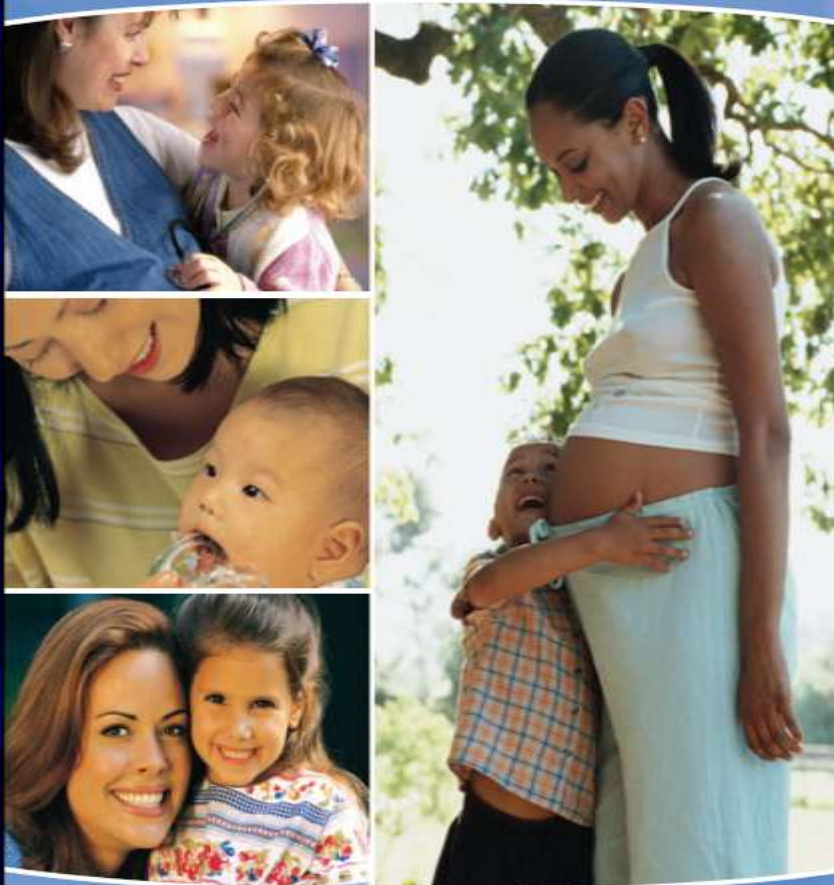
Clinical Interventions

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

Oral Health Care during
Pregnancy and Early Childhood
Practice Guidelines



New York State Department of Health
August 2006

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



Friday, March 23, 2001

To Whom It May Concern:

This letter is in support of a Dental Clinic for Medicaid patients and/or for other patients who can not afford dental care in the Owego area.

I am a family practice resident physician from the Guthrie Clinic in Sayre, PA. A patient of mine who was also pregnant was in need of urgent dental care. The urgency centered around her prior lack of routine dental preventive care - she had two cavities that had become infected and this resulted in a painful abscess. She was unable to get any urgent care in the area. My understanding was that the closest clinic was in Binghamton, NY. Because of the pain she was in, she treated herself with Tylenol. However, because the pain was so great she took 'excessive doses' resulting in toxicity to her and her baby.

At the time she was approximately 29 weeks pregnant. The baby died from liver toxicity from Tylenol ingestion. My patient, suffered acute liver failure and was flown to Pittsburgh expecting a liver transplant. Fortunately she recovered, did not need a transplant and has since had a normal healthy child. However, she still suffers from the trauma of losing her child and almost her life.

I personally feel that a dental clinic in the Owego area that was available to her could have prevented the death of her unborn child and prevented her acute illness and expense associated with that.

Thank you,

Sincerely,

A handwritten signature in black ink, appearing to read "John S. Burnett".

John S. Burnett, MD

“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

NAME
DOB
MBN
PCP

PRE/ PERINATAL ORAL HEALTH REFERRAL

Patient ID / Addressograph

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-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 #: _____
Phone/ pager: _____ PCP Fax #: _____
PCP Clinic: _____

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 & 1pm)

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: _____

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

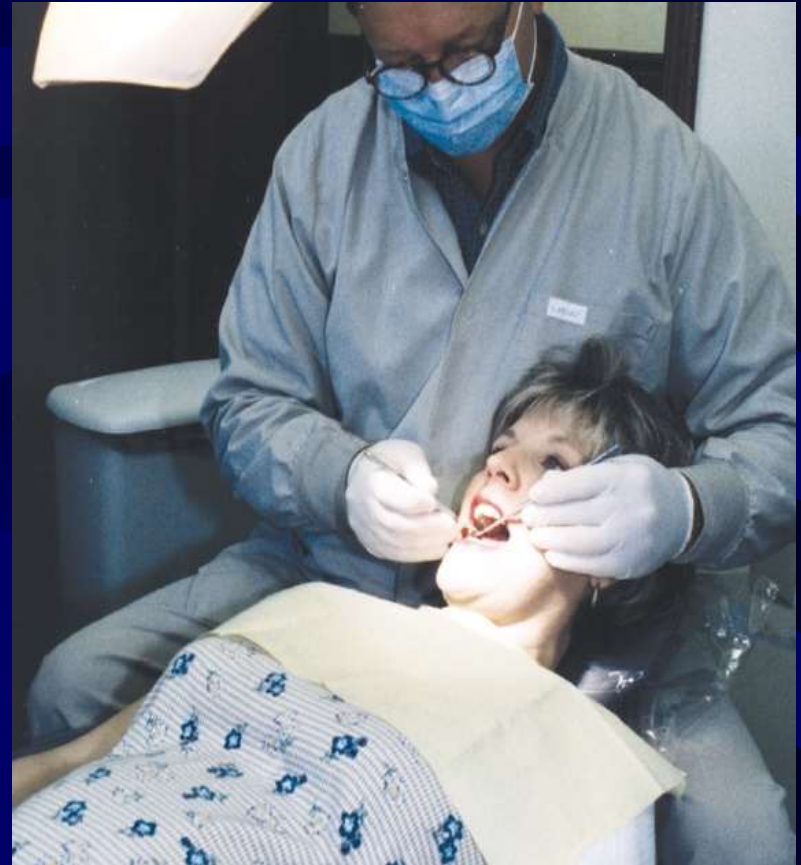
- Category C
 - Chlorhexidine rinse
 - Codeine

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 FI 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

Dental Services



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



COMMUNITY HEALTH NETWORK
SILVER AVENUE
FAMILY HEALTH CENTER

PERINATAL ORAL HEALTH

ACTION PLAN/ SELF MANAGEMENT GOALS

NAME

DOB

MRN

PCP

Patient ID / Addressograph

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

- http://www.cdafoundation.org/library/docs/news_030110a.htm
- [http://cda.org/publications/journal_of_the_california_dental_association/archive
& search](http://cda.org/publications/journal_of_the_california_dental_association/archive&search)
 - 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



