The Fourth Trimester: A new paradigm for preventing maternal mortality

October 9, 2018

Haywood Brown, MD, FACOG

Supporting communities to give every child a Healthy Start.

Healthy Start EPIC Center

Your presenter

Haywood L. Brown, MD, FACOG
Professor Obstetrics Gynecology
Vice President Diversity and Inclusion
Associate Dean
University of South Florida
Immediate Past President ACOG 2017-2018

Pretest

1) **True or False: Almost 25% of maternal deaths are due to unmet need for contraception**

2) **Ramification of lack of postpartum follow up include:**

a. Contributes to health disparities

b. Pregnancy spacing

c. Undiagnosed postpartum depression and anxiety disorders

d. All of the above

Understanding and Reducing Disparities in Maternal Mortality

Haywood L. Brown, MD, FACOG
Professor Obstetrics Gynecology
Vice President Diversity and Inclusion
Associate Dean
University of South Florida
Immediate Past President ACOG 2017-2018

USF UNIVERSITY OF SOUTH FLORIDA

Disclosures

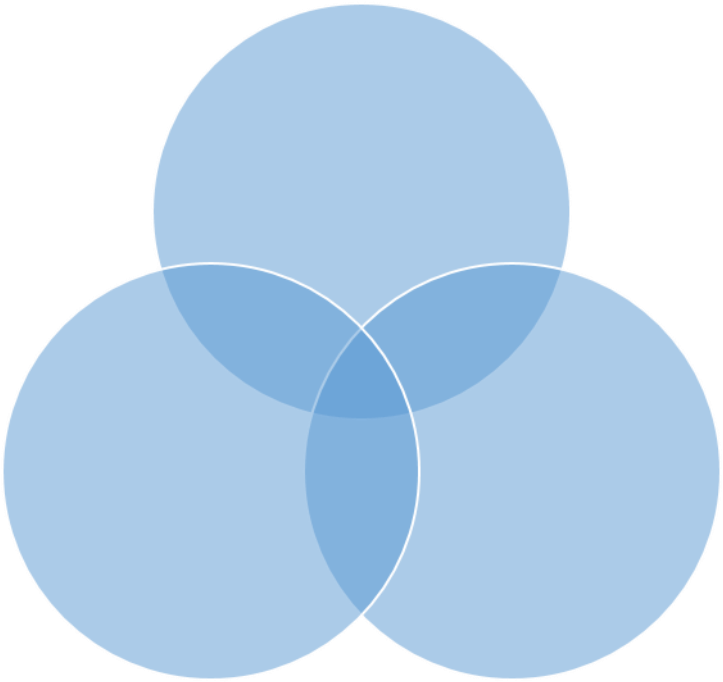
- None

Objectives

- At the conclusion of this presentation the participant should be able to:
- 1. Identify racial and ethnic disparity in maternal mortality and factors related to disparity
- 2. Discuss disparity in breast feeding rates and the potential impact on perinatal outcome and adult health in the next generation.
- 3. Explain how postpartum follow up can impact maternal morbidity mortality and long term health

USF UNIVERSITY OF SOUTH FLORIDA

Health Disparity in Women

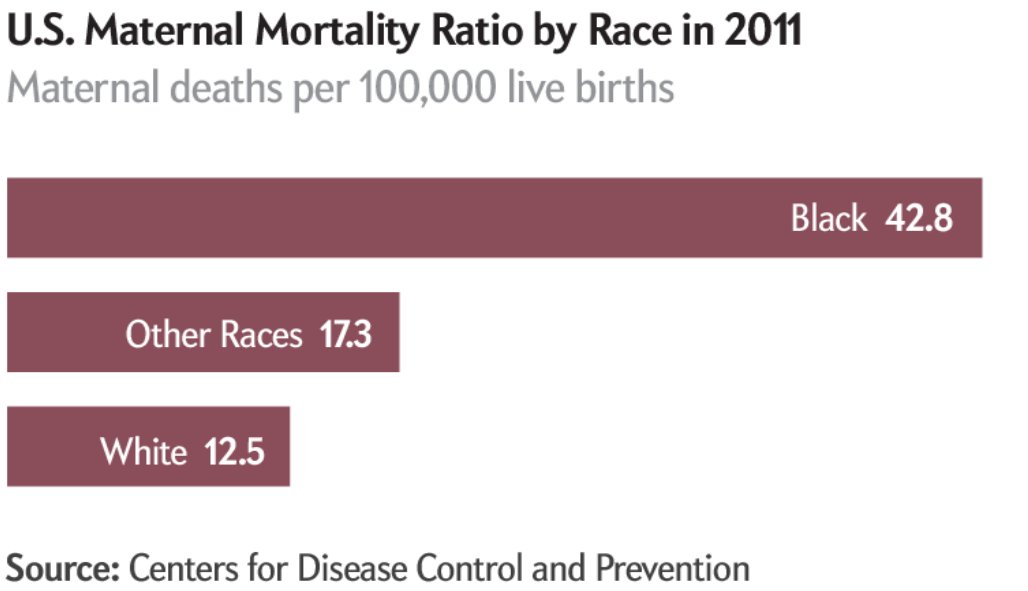


USF UNIVERSITY OF SOUTH FLORIDA

The problem of disparities in women's health are complex and involve multiple factors.

Disparities in perinatal health are well documented and represent a critical opportunity for improvement.

Maternal Mortality Among Black Women



USF UNIVERSITY OF SOUTH FLORIDA

Source: Centers for Disease Control and Prevention
Graphic: Tiffany Farrant-Gonzalez, Scientific American

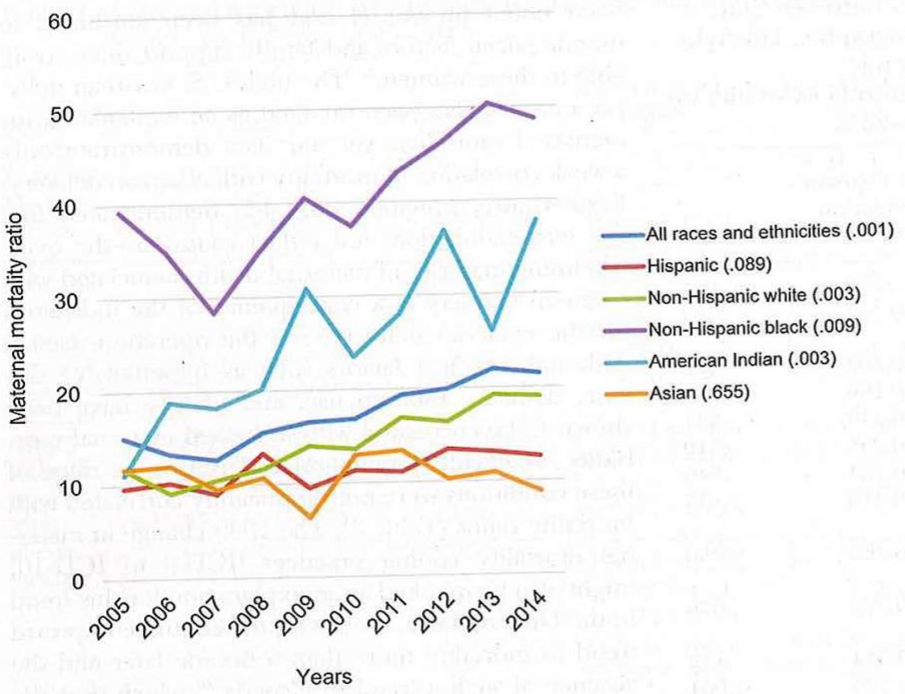
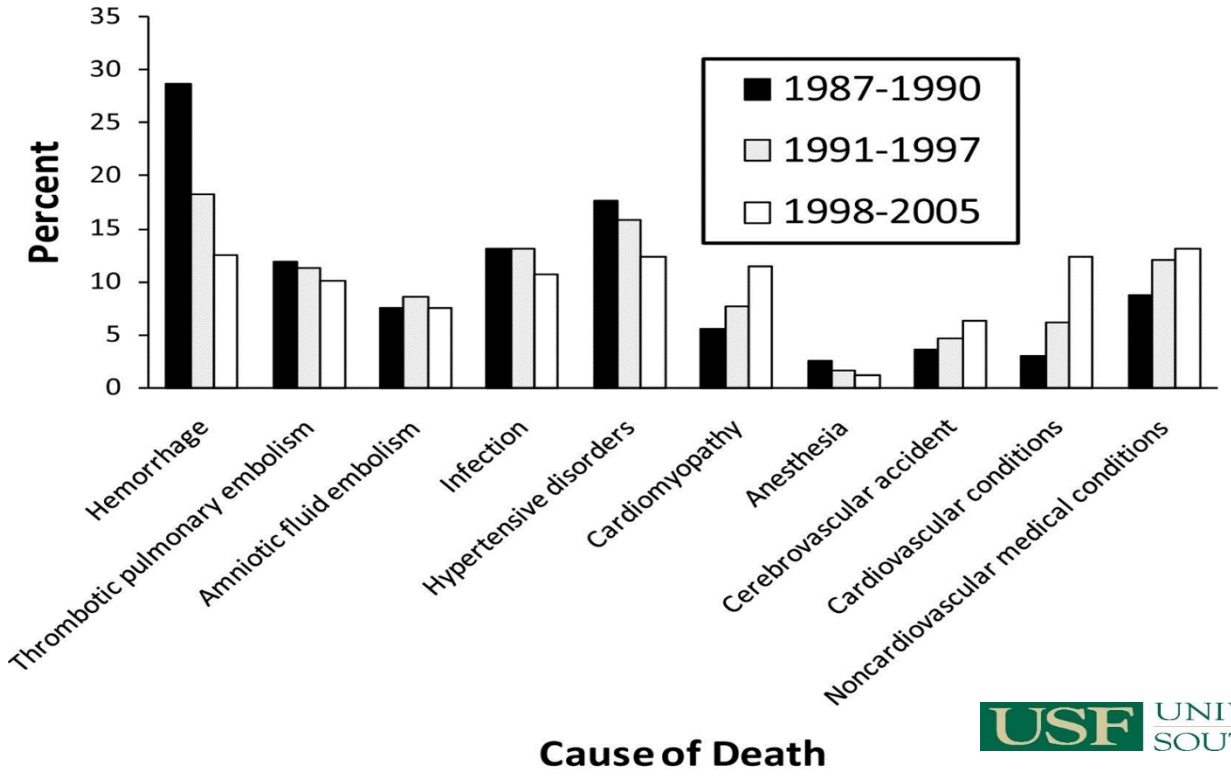


Fig. 1. Trends in maternal mortality ratio (maternal deaths/100,000 live births) by ethnic group and race: United States, 2005–2014. Numbers in parentheses represent *P* values for the Jonckheere-Terpstra test.

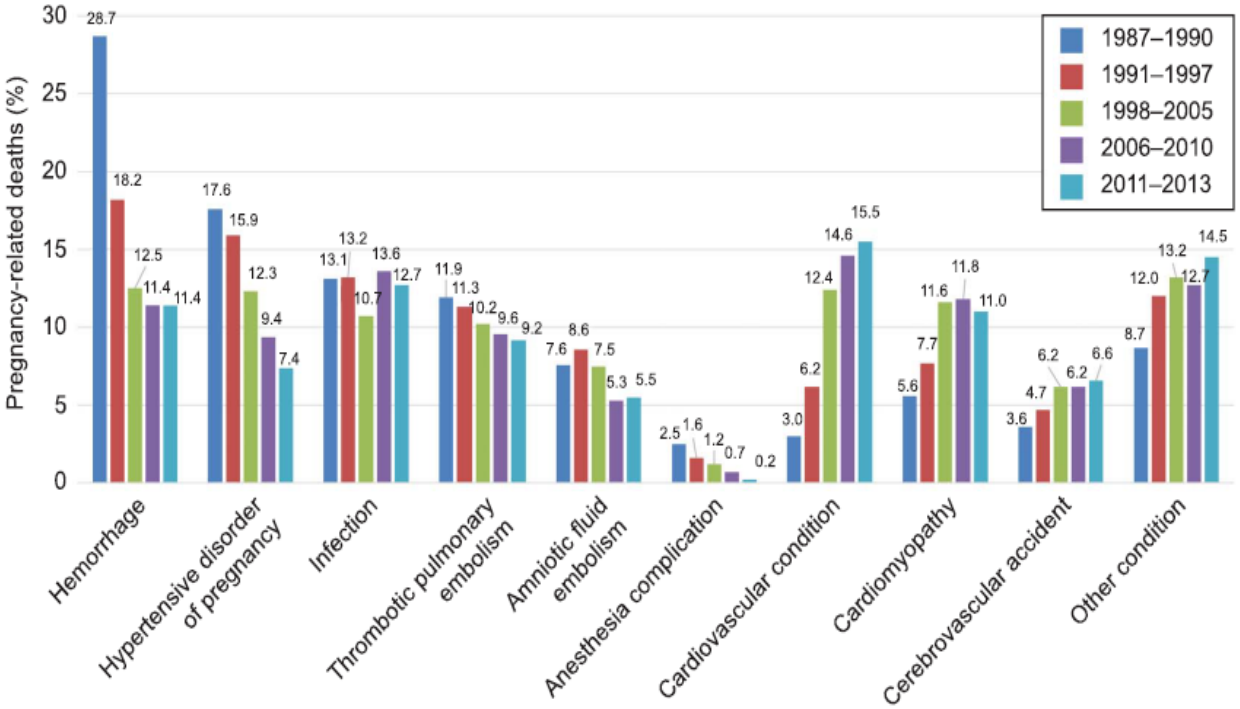
Moaddab. Trends in Maternal Mortality: 2005 to 2014. Obstet Gynecol 2016.

Maternal Mortality
Callaghan (O&G 2010)



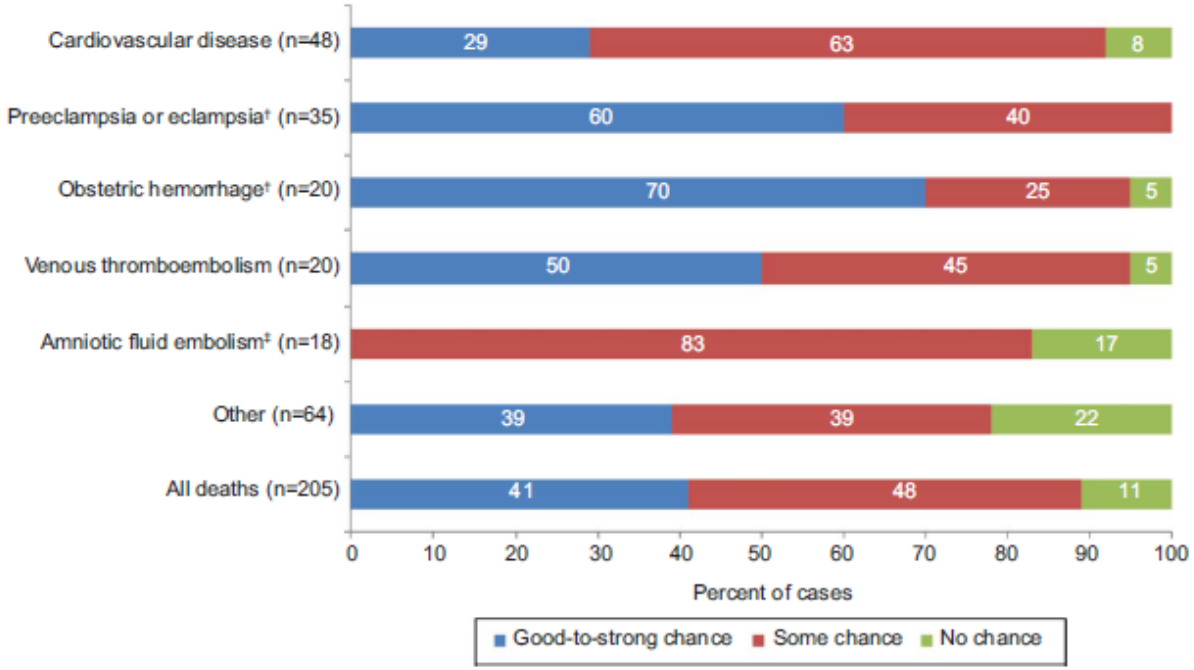
USF UNIVERSITY OF SOUTH FLORIDA

Pregnancy Related Death



USF UNIVERSITY OF SOUTH FLORIDA.

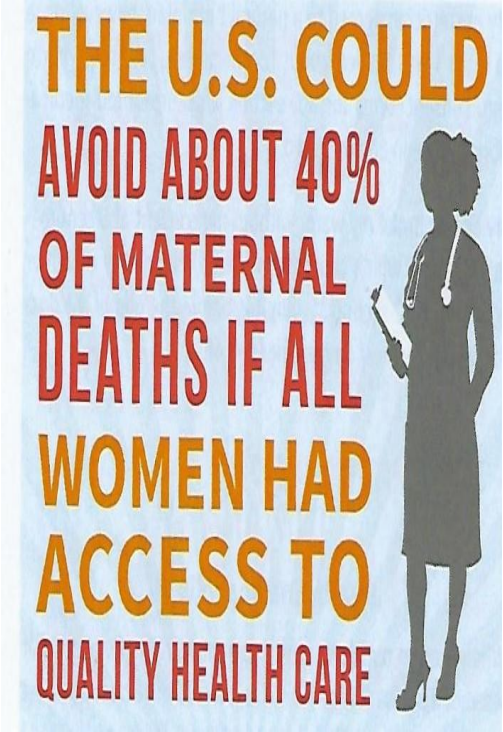
Maternal Mortality is Preventable



USF UNIVERSITY OF SOUTH FLORIDA

Main et al. Obstet Gynecol 2015;125(4):938-947

Vulnerable populations



DID YOU KNOW?

More U.S. women are dying from pregnancy or childbirth complications today than in recent history, maternal death rates have increased steadily over the past 20 years.

In a recent analysis by the CDC Foundation, nearly 60 percent of maternal deaths in the U.S. are preventable.

Every year in the United States, 700 to 900 women die from pregnancy or childbirth-related causes, and some 65,000 nearly die.

A report published in the September issue of the journal Obstetrics & Gynecology found that from 2000 to 2014, the maternal mortality rate for 48 states and Washington, D.C. increased 27% from close to 19 deaths per 100,000 live births to close to 24 deaths per 100,000 live births. In Texas, the rate doubled between 2010 to 2012.

According to the WHO, the maternal mortality rate in the U.S. has more than doubled in just the past ten years.

Texas now has the highest rate of maternal mortality in the developed world.

2015 report from the World Health Organization (WHO) pointed out that the U.S. has a higher maternal mortality rate than Iran, Libya and Turkey. The WHO determined that half of the U.S. deaths were preventable.

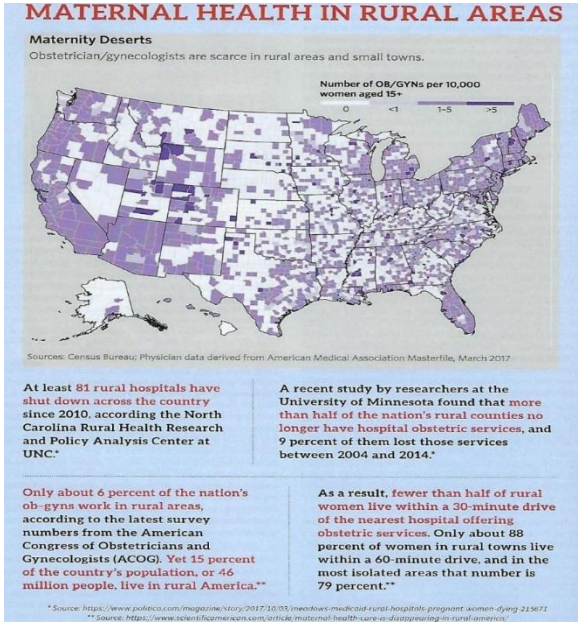
American women are more than 3x more likely than Canadian women to die in the maternal period.

Childbirth is the number-one reason for hospitalization in the United States.

So far, states like California have led the way, making remarkable progress in lowering the rate of women who die in childbirth. But in other states such as Texas and Louisiana, women – especially women of color – still die at exceptionally high rates.

USF UNIVERSITY OF SOUTH FLORIDA

Vulnerable Maternity Populations



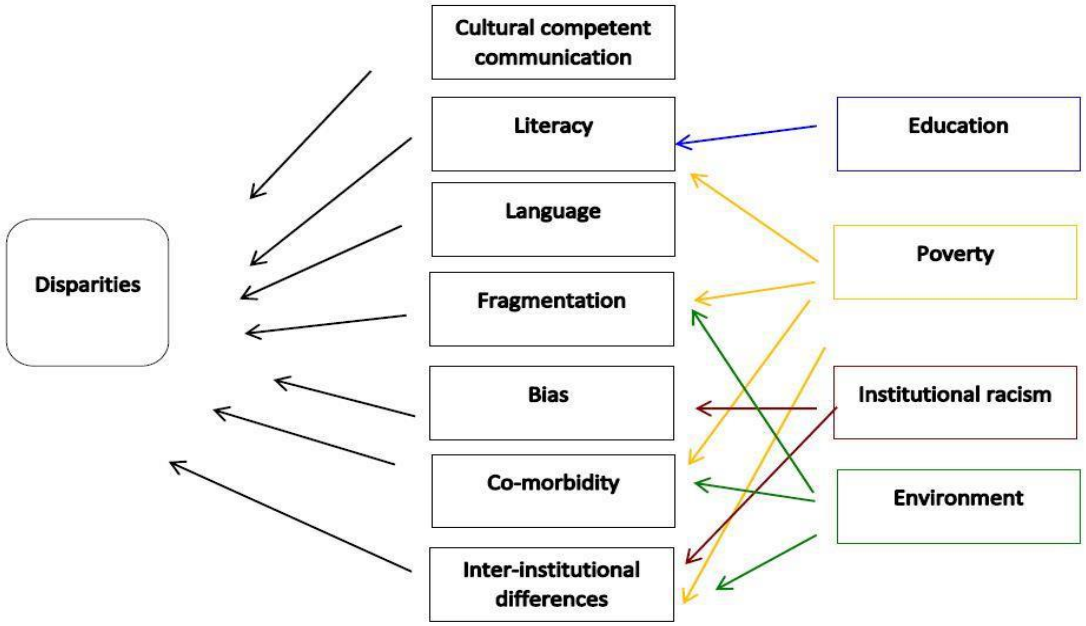
USF UNIVERSITY OF SOUTH FLORIDA

Almost 25% of maternal deaths are due to unmet need for contraception

Main barriers facing promotion of FP services

- Certain religious groups not practicing FP methods instill fear into other ethnic groups with regard to a possible ethnic imbalance in the future
- Lack of facilities in government institutions for sterilizations
- Resistance to introduction of newer contraceptive methods such as PPIUD

Understanding Racial Disparities: The Big Picture



USF UNIVERSITY OF SOUTH FLORIDA.

Source: Elisabeth Howell, MD, MPP. Reduction of Peripartum Disparities Bundle. 2017.

National Initiative to Reduce Maternal Mortality and Morbidity

COUNCIL ON PATIENT SAFETY IN WOMEN'S HEALTH CARE
safe health care for every woman

Multi-Disciplinary
Multi-Organization
"Stewardship"

OB Safety Bundles

- Obstetric Hemorrhage
- Severe Hypertension in Pregnancy
- Maternal VTE Prevention
- Safe Reduction of Primary Cesarean Births
- Patient, Family and Staff Support
- Reducing Disparities in Maternity Care

Implementation to National Scale

ALLIANCE FOR INNOVATION ON MATERNAL HEALTH AIM

Maternal Child Health Bureau

USF UNIVERSITY OF SOUTH FLORIDA

ACOG Presidential Initiatives

USF UNIVERSITY OF SOUTH FLORIDA

Severe Maternal Morbidity

- For every woman who dies, about 50 more suffer a severe complication or a near miss.
  - Link between maternal mortality, particularly preventable maternal deaths, and severe maternal morbidity
- Prevalence of delivery hospitalizations in which a woman suffered severe morbidity increased by 27% to affect approximately 34,000 women in the United States each year
  - from 6.4 per 1,000 delivery hospitalizations in 1998-1999 to 8.1 per 1,000 deliveries in 2004-2005
  - Vulnerable to maternal morbidity and mortality in subsequent pregnancy

Postpartum Care

- ACOG previously recommends that all women should attend a postpartum visit 4-6 weeks following a birth.
  - As many as 40% of women do not have postpartum follow up
  - Attendance lower for women with limited resources

USF UNIVERSITY OF SOUTH FLORIDA

Postpartum Visit

- Ramification of lack of postpartum follow-up
  - Contributes to health disparities
    - Prematurity, infant mortality
  - Pregnancy spacing
  - Early breast feeding discontinuation
  - Undiagnosed postpartum depression and anxiety disorders

USF UNIVERSITY OF SOUTH FLORIDA

Postpartum Visit

- Postpartum Care (The Fourth Trimester)
  - A time of adaption (rapid hormone changes)
    - Physical
    - Social
    - Psychological
  - Challenges
    - Fatigues,
    - breast feeding
    - learning to care for a newborn
    - Navigating preexisting health conditions

USF UNIVERSITY OF SOUTH FLORIDA

Postpartum Visit

- Hospital discharge planning and care coordination and health care navigation
  - Critical for those with preexisting health conditions
    - Hypertension, diabetes, substance abuse and other medical complications

Contraception High Risk Gravida

- Special Considerations
  - Chronic diseases
    - Hypertension, diabetes, obesity
  - Contraindications to estrogen
    - Coagulation disorder, history of or high risk for thromboembolism
  - Age and Parity
    - Patient reliability (adolescence, pregnancy spacing)

Contraception High Risk Gravida

- Special Considerations
  - Chronic diseases
    - Hypertension, diabetes, obesity
  - Contraindications to estrogen
    - Coagulation disorder, history of or high risk for thromboembolism
  - Age and Parity
    - Patient reliability (adolescence, pregnancy spacing)

Post-placental IUD insertion

- Increased expulsion rate (24%) compared to 6-8 week postpartum (4.4%)
- One study showed that with immediate postplacental insertion (<10 minutes after placental delivery), expulsion rates lower (~11%)
- Expulsion rates decline precipitously after 4 weeks.

USF UNIVERSITY OF SOUTH FLORIDA

Nexplanon

- Implant injected under skin in arm
- Progesterone only method – MOST EFFECTIVE METHOD
- Immediate vs. 6 week delayed study ongoing at Duke
- Side effects: irregular bleeding, headaches, dizziness, weight gain, acne

USF UNIVERSITY OF SOUTH FLORIDA

Screening for Depression

A Self-Care Screening Survey for Depression Awareness

A) During the past month have you **often** been bothered by:

1) little interest or pleasure in doing things

2) feeling down, depressed, or hopeless?

B) If you answered yes to either 1 or 2 above complete the questionnaire on the opposite side of this sheet.

USF UNIVERSITY OF SOUTH FLORIDA

Postpartum Depression

System Recommendation

- Ensure that all pregnant and postpartum women are screened at least once
- Optimize detection, referral and treatment
- Educate providers on risk factors and screening tools
- Pre-conceptional discussion of impact of pregnancy for those with pre-existing mental disorders

USF UNIVERSITY OF SOUTH FLORIDA

Association of Depression and Pregnancy Related Health Behaviors

- Depression is associated with cigarette smoking, drug abuse, and concurrent medication use
- Depressive symptoms may lead to poor weight gain during pregnancy, poor prenatal care, self-neglect, and *suicide*

USF UNIVERSITY OF SOUTH FLORIDA

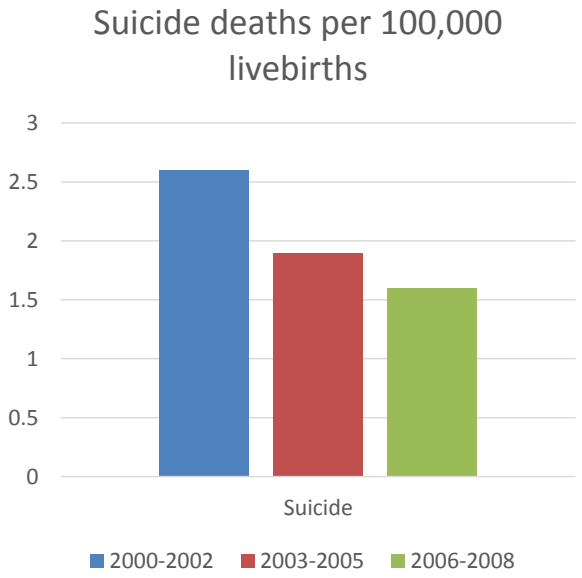
Opiate Addiction Pregnancy

- Opiate addiction has become major health epidemic in adults and pregnancy
- Pregnancy poses significant challenges in medical and behavioral care and follow up
- NAS is a leading cause of admission to neonatal ICU
- Labor and delivery management requires special considerations for pain management
- Early postpartum follow up and long term follow up critical to prevention of maternal mortality

USF UNIVERSITY OF SOUTH FLORIDA

Mortality Reduction - Suicide

Decline in deaths from suicide following introduction of national guidelines which make recommendations for the prediction, detection and treatment of mental disorders in women during pregnancy and the postnatal period (up to 1 year after delivery).

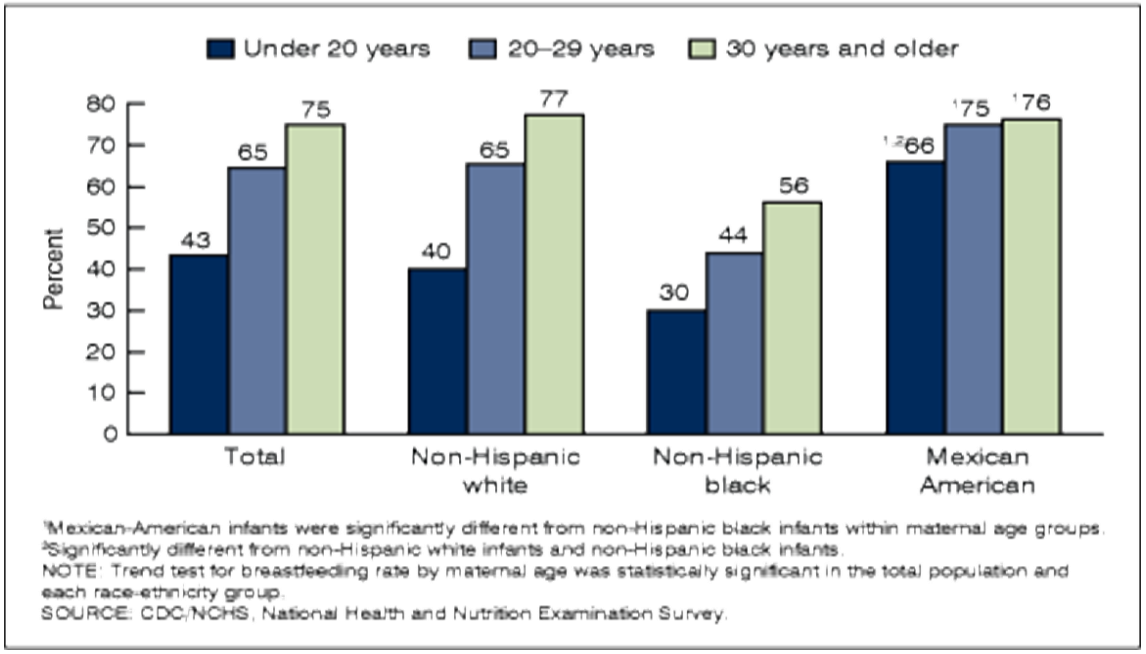


USF UNIVERSITY OF SOUTH FLORIDA

Lewis G. Semin Perinatol 2012;36:19-26

Breast Feeding

Figure 4. Percentage of infants who were ever breastfed by maternal age and race-ethnicity: United States, 1999–2006



[1]Mexican-American infants were significantly different from non-Hispanic black infants within maternal age groups.
[2]Significantly different from non-Hispanic white infants and non-Hispanic black infants.
NOTE: Trend test for breastfeeding rate by maternal age was statistically significant in the total population and each race-ethnicity group.
SOURCE: CDC/NCHS, National Health and Nutrition Examination Survey.

USF UNIVERSITY OF SOUTH FLORIDA.

Breastfeeding Disparities

- Rates of exclusive breast feeding between 3-6 months time are lowest among black infants and infants of mothers who were young, unmarried, had lower incomes, were less educated, or who were living in rural areas

USF UNIVERSITY OF SOUTH FLORIDA

Long Term Health Impact: Less Obesity

Li.R et al. Do infants fed from bottles lack self regulation of milk intake compared with directly breastfed infants? Pediatrics 2010. 125(6)

USF UNIVERSITY OF SOUTH FLORIDA

Effect of Lactation on CVD Risk of Postmenopausal Women in the WHI

Schwarz et al. *Obstet Gynecol 2009;113:974–82*

Mo of Lactation	Hypertension	Diabetes	Hyperlipidemia
Adjusted for sociodemographic, family history, and lifestyle variables*			
Never	Referent	–	–
1–6	0.95 (0.92–0.98)	0.92 (0.85–0.99)	0.93 (0.89–0.97)
7–12	0.88 (0.84–0.91)	0.87 (0.78–0.97)	0.87 (0.82–0.93)
13–23	0.89 (0.84–0.93)	0.74 (0.65–0.84)	0.81 (0.76–0.87)
24+	0.87 (0.82–0.93)	0.89 (0.77–1.02)	0.80 (0.74–0.87)
P for trend	<.001	<.001	<.001
Adjusted for above plus body mass index†			
Never	Referent	–	–
1–6	0.95 (0.92–0.98)	0.91 (0.84–0.99)	0.93 (0.89–0.97)
7–12	0.88 (0.84–0.92)	0.87 (0.78–0.97)	0.88 (0.83–0.94)
13–23	0.89 (0.84–0.93)	0.75 (0.66–0.85)	0.81 (0.76–0.87)
24+	0.87 (0.82–0.92)	0.88 (0.76–1.01)	0.80 (0.73–0.87)
P for trend	<.001	<.001	<.001

Data are odds ratio (95% confidence interval) unless otherwise specified.

* Specifically, age, race, parity, age at menopause, education, income, family history (of diabetes mellitus, myocardial infarction, or stroke), physical activity, energy, cholesterol, fat, fiber, and sodium intakes, tobacco history, hormone therapy use, aspirin use, multivitamin use.

† Adjusted for three categories of body mass index: less than 25, 25 to less than 30, and 30 or higher.

Preeclampsia

Women with a history of preeclampsia have roughly 4-fold higher incidence of hypertension and 2-fold elevated risks of heart disease, stroke, and venous thromboembolism

McDonald SD, Malinowski A, Zhou Q, et al. Cardiovascular sequelae of preeclampsia/eclampsia: a systematic review and meta-analyses. Am Heart J. 2008;156(5):918–930.

ACOG Hypertension in Pregnancy

With recurrent pre-eclampsia, preterm delivery or fetal growth restriction

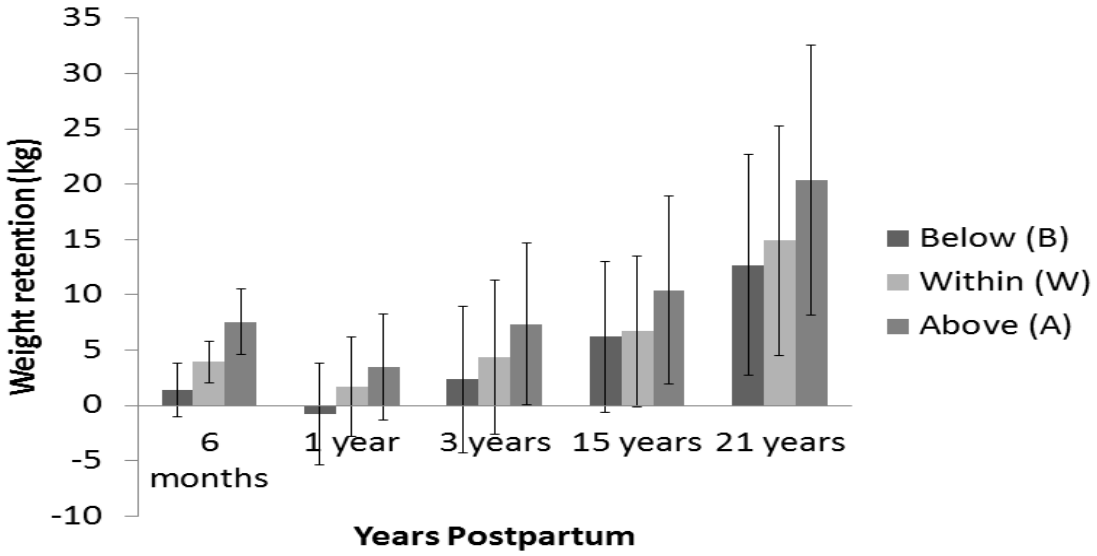
- the cardiovascular risk LATER in life is COMPARABLE to obesity or smoking
- ACOG recommends annual blood pressure, fasting glucose, lipids and BMI

Pregnancy and Future Health

- For the mother
  - Gestational weight gain → Obesity →
  - Gestational diabetes → Type II DM
  - Adverse pregnancy outcomes

USF UNIVERSITY OF SOUTH FLORIDA

The more you gain, the more you retain



Nehring et al. Nov 2011;94:1225-1231

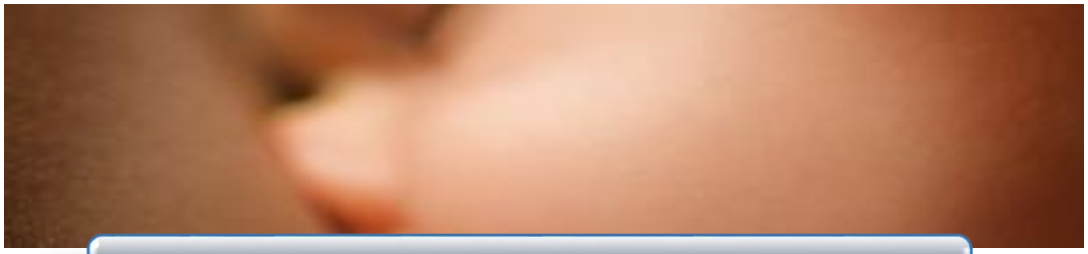
USF UNIVERSITY OF SOUTH FLORIDA

Weight Gain Associations

- Increased risk of hyperlipidemia, diabetes, hypertension, cardiovascular disease and mortality
- Increased risk of cancer
- Overweight and obese offspring

CSolomon and J Hanson. Obesity and mortality: a review of the epidemiologic data. *Am J Cliii Nutr* 1997;66(suppl):1044S-50S

USF UNIVERSITY OF SOUTH FLORIDA



Long Term Health Impact: Diabetes

- 30% reduction in the incidence of Type 1 DM for infant exclusively BF for at least 3 months
- 40% reduction in the incidence of Type 2 DM
  - May reflect long term positive effect of breastfeeding on weight control & Self regulation

Type 2 DM

- It is estimated that up to 70% of women with GDM will develop diabetes within 22–28 years after pregnancy (England 2009, O'Sullivan 1982, Kim 2002).
- Progression to type 2 diabetes may be influenced by race/ethnicity and the incidence of obesity.
- 60% of Latin-American women with GDM may develop type 2 diabetes by 5 years after the index pregnancy (Kjos 1995).

USF UNIVERSITY OF SOUTH FLORIDA

Postpartum Glucose Screening:

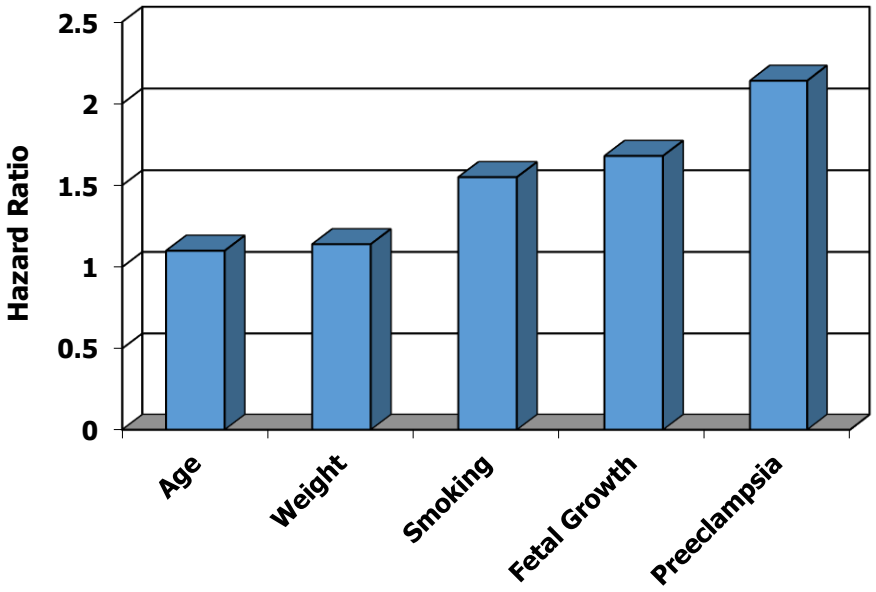
Lack of screening follow up for Gestational Diabetes

- ACOG recommends screening women with GDM 4-12 week postpartum for diabetes and pre-diabetes in line with postpartum visit
  - OGTT 4-12 weeks postpartum rather than A1c (ADA)
- Eggleston et al. Obstet gynecol 2016;128:159
  - 447,556 women across 50 states (59% white) 7.2% had GDM and 75% no f/u screen within 1 year
- McCloskey et al. J Wom Health 2014;23:327
  - Women with GDM only 23.4 % received any kind of glucose test by 6 months postpartum
  - Those seeing FM less likely to be tested.

USF UNIVERSITY OF SOUTH FLORIDA

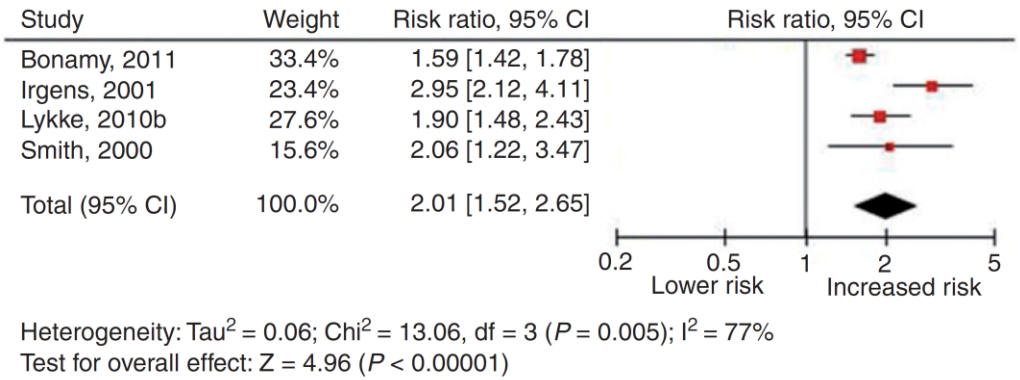
Risk Factors and CVD Death

Mongraw-Chaffin et al. *Hypertension* 2010;56:166-171



USF UNIVERSITY OF SOUTH FLORIDA

Preterm Delivery and Overall Cardiovascular Disease Later in Life



Heida et al. *Eur J Prev Cadiol* 2016;23:1863-79

USF UNIVERSITY OF SOUTH FLORIDA

Postpartum Care

- Components of the postpartum plan
  - The visit
    - Timing and date and location
    - First follow up visit at 2-4 weeks
  - Infant feeding plan
  - Reproductive life plan
  - Pregnancy complications
  - Mental health and substance abuse
  - Postpartum problems
  - Chronic health conditions
  - Achieving healthier weight

Telemedicine for prenatal & postpartum follow up

- Summary
  - Innovation in health care delivery through telemedicine/tele-heath is evolving at a rapid speed
  - Tele- consultation for inpatient and outpatient management is rapidly becoming a modality to improve access and the quality of care in rural and urban setting for all specialties including Obstetrics and Gynecology
    - innovations in providing prenatal and postpartum follow up
  - Obstacles to implementation:
    - available technology in many rural settings, cost & reimbursement and liability concerns

USF UNIVERSITY OF SOUTH FLORIDA

Postpartum Follow up

- Candidates for early postpartum follow up
  - Hypertensive disorder
    - No later than 7-10 days
  - Those at risk for postpartum depression
    - Screen no later than 2 weeks
  - Cesarean delivery
  - Lactation challenges
  - Perineal wound injury and complications
  - Chronic conditions
    - Seizures, heart disease, rheumatoid disorders
  - Near miss morbidity

USF UNIVERSITY OF SOUTH FLORIDA

Health Policy Implications

- Coverage beyond 6 wks for women with pregnancy complications
- Seamless handover of care
- Disseminate to providers, public and payors
- Monitor and incentivize compliance
- Fund research to improve lifelong health in women

USF UNIVERSITY OF SOUTH FLORIDA

Conclusions
What's Needed

- Re-design the Post Partum Visit
- Look at a six month "visit" for all women with complications: Video, telephone, health promotion
- IOM and ACOG guidelines on weight gain and weight loss need to be followed
- Recreate the Guidelines of our colleagues in Internal Medicine, Cardiology, Family Practice to recognize pregnancy risk factors and like to maternal morbidity, mortality and long term cardiovascular health
- Include pregnancy risk factors in PMH

USF UNIVERSITY OF SOUTH FLORIDA

Questions?

USF UNIVERSITY OF SOUTH FLORIDA

Post-test

1) **True or False: Almost 25% of maternal deaths are due to unmet need for contraception**

2) Ramifications of lack of postpartum follow up include:

a. Contributes to health disparities

b. Pregnancy spacing

c. Undiagnosed postpartum depression and anxiety disorders

d. All of the above

Next Steps and Reminders

Discussion Groups:

- *Certified Lactation Counselors: October 11 2:30pm*
- *Fatherhood and Male Involvement Coordinators: October 16 and November 20: 1-2:30pm*

EPIC Center website:

http://www.healthystartepic.org

Includes all recorded webinars, transcripts, and slide presentations