Black Box Warning: Entry into motherhood is unsafe for women of color
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Objectives
• Discuss the epidemiology of maternal mortality and black maternal mortality
• Discuss the root causes of maternal mortality
• Present a call to action to address black maternal mortality reduction

Case review
• 29 year old AA G6 P2032 @ 29 weeks presented as a maternal transport with hypertensive emergency. She has a history of peripartum cardiomyopathy in her last pregnancy 4 years ago. She also has a history of CKD with a baseline Creatinine of 2.9. She described a 2 weeks history of progressive orthopnea which has worsened over the past 24 hours. Her BP on presentation is 253/125 mmHg. Her O2 sat is 93%. A bedside echocardiogram estimates an ejection fraction of 30%. Her initial labs reveal elevated Cr, 5, a BNP of 3,500 and an elevated troponin at 0.3. She was transferred to the ICU for hemodynamic monitoring and stabilization prior to her delivery for superimposed preeclampsia the next day.
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Epidemiology of maternal mortality

• United States
• Tennessee

United States maternal mortality compared to other developed nations
Maternal mortality versus Black maternal mortality

Tennessee maternal mortality

- Tennessee Maternal Mortality
- Review of 2017 Maternal Deaths
  - 78 deaths reported
  - 85% considered preventable
  - 56% occurred >42 days
  - Lower educational level associated with 2 fold increase in maternal death
  - Racial disparities not demonstrated in risk of maternal death in 2017


Causes of maternal mortality in Tennessee in 2017

- Top three causes of pregnancy related death
  - Embolism
  - Cardiovascular causes
  - Hemorrhage

- Top three causes of unrelated death
  - Overdose
  - Motor vehicle accident
  - Violence
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Causes of overall maternal mortality in the United States

Pregnancy Complications

- Severe Obesity (>120 kg kg.)
  - Maternal mortality OR (95% CI) = 1.8-3.2 (1.8-3.2)
  - Severe Hypertension OR (95% CI) = 1.8-3.2 (1.8-3.2)
  - Labor Induction OR (95% CI) = 1.8-3.2 (1.8-3.2)
  - Cesarean Delivery OR (95% CI) = 1.8-3.2 (1.8-3.2)
  - Wound Infection OR (95% CI) = 1.8-3.2 (1.8-3.2)
  - Anesthesia Complication OR (95% CI) = 1.8-3.2 (1.8-3.2)

Robinson Obstet Gynecol 2005
Race and adverse pregnancy outcomes

- Gestational diabetes
- Placenta abruption
- Preeclampsia (higher in blacks)
- Preterm birth (higher in blacks)
- Fetal growth restriction (higher in blacks)
Adverse pregnancy outcomes translate to increased long-term cardiovascular disease

Short term effects
- Preterm birth
- Preeclampsia
- Fetal growth restriction/IUFD
- Placental abruption
- Gestational diabetes

Long-term effects
- Cardiovascular disease
- Preterm birth
- Preeclampsia
- Fetal growth restriction
- Placental abruption
- Gestational diabetes

Preeclampsia and Coronary artery disease share common features

Race and adverse pregnancy outcomes

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Any Preterm Birth</th>
<th>Iatrogenic Preterm Birth</th>
<th>Spontaneous Preterm Birth</th>
<th>Hypertensive Disorders of Pregnancy</th>
<th>SGA for gestational age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non Hispanic white</td>
<td>864/5,721 (15.0)</td>
<td>184/5,720 (3.2)</td>
<td>274/5,720 (4.8)</td>
<td>490/5,702 (8.6)</td>
<td>13.4/5,712 (13.4)</td>
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<tr>
<td>Non Hispanic black</td>
<td>161/1,307 (12.3)</td>
<td>83/1,306 (6.4)</td>
<td>218/1,304 (16.7)</td>
<td>223/1,296 (17.2)</td>
<td>16.7/1,298 (13.2)</td>
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<tr>
<td>Hispanic</td>
<td>128/1,586 (8.1)</td>
<td>51/1,584 (3.2)</td>
<td>75/1,584 (4.7)</td>
<td>167/1,579 (10.6)</td>
<td>185/1,580 (11.7)</td>
</tr>
<tr>
<td>Asian</td>
<td>24/379 (6.3)</td>
<td>8/379 (2.1)</td>
<td>16/379 (4.2)</td>
<td>32/378 (8.5)</td>
<td>62/379 (16.4)</td>
</tr>
<tr>
<td>Other</td>
<td>47/477 (9.9)</td>
<td>18/477 (3.8)</td>
<td>29/477 (6.1)</td>
<td>63/476 (13.2)</td>
<td>57/474 (12.0)</td>
</tr>
</tbody>
</table>

Grobman et al. Obstet & Gynecology 2018
Other causes of SMM?

What people say is the problem in black maternal mortality

• Lack of education
• Low socioeconomic status
• Limited prenatal care
• Psychological stress
Socioeconomic status


- Compared to Whites, Hispanic women had lower odds for preterm birth (odds ratio, 0.66; 95% CI, 0.54-0.80) and African-American women had greater odds for preeclampsia (odds ratio, 1.30; 95% CI, 1.07-1.58) and small-for-gestational-age infants (odds ratio, 1.74; 95% CI, 1.29-2.36).

- With the use of African-American women as the reference, Hispanic women were less likely than African-American women to experience any adverse pregnancy event, with the exception of gestational diabetes mellitus.


Early access to prenatal care

- A total of 35,529 pregnancies with early access to prenatal care were reviewed for this analysis (11-13 weeks).

- The study population was 5% black, 22% Hispanic, 68% white, and 5% other.

- All minority races experienced higher rates of intrauterine growth restriction, preeclampsia, preterm premature rupture of membranes, gestational diabetes, placenta previa, preterm birth, very preterm birth, cesarean delivery, light vaginal bleeding, and heavy vaginal bleeding compared with the white population.

- The adjusted odds ratio were: black 3.5 (2.5-4.9), Hispanic 1.5 (1.2-2.1), and other 1.9 (1.3-2.8).


Psychosocial stress

- 9,470 women (60.4% non-Hispanic white, 13.8% non-Hispanic black, 16.7% Hispanic, 4.0% Asian, and 5.0% other).

- Non-Hispanic black women were significantly more likely to experience any preterm birth, hypertensive disease of pregnancy, and SGA birth than were non-Hispanic white women.

- Non-Hispanic black women continued to be at greater risk of any preterm birth and SGA birth compared with non-Hispanic white women.

The Elephant in the room

• Provider racial bias
• Patient mistrust in the medical system
• Structural racism

Lister et al. M. Journal of Gynecology and Women’s Health. 2019

The elephant in the room

Evidence of racial bias by providers

• Tuskegee Syphilis study
  • Thomas et al. Am J Public Health 1991

• Cross sectional study of pediatric patients with appendicitis.
  • When stratified by pain score and adjusted for ethnicity, black patients with moderate pain were less likely to receive any analgesia than white patients. (20.7% of black patients vs 43.1% of white patients)

Perceived racism, by patients

- 29 black pregnant women underwent focused questionnaires
- Describe differential treatment by staff based on their insurance status
- Describe a lower quality of prenatal care based on racism from providers.
- Furthermore, they describe their interactions with their doctors or supporting staff as prejudiced

Roman et al. Maternal and Child Health

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Call to action
It is time to act

- Patient
- Provider
- Policy

Optimize patient’s health before and after pregnancy

- Reduction in obesity
- Reduction in diabetes
- Reduction in hypertension
- Identification of patients that suffer from perinatal complications for prevention of long-term cardiovascular disease

Lister et al. W. Journal of Gynecology and Women’s Health 2019
Using social determinants of health to individualize health care

- Black women are disproportionately subject to
  - Unsafe housing
  - Lack of affordable transportation
  - Lack of insurance
  - Lack of partner support as black men are more likely to be incarcerated

ALIVE Program

- Alternative
- Lifestyle
- Interventions
- Vulnerable
- Ethnic groups

NEW START principles

- Nutrition
- Exercise
- Water
  - Sunshine
  - Temperance
  - Air
  - Rest
  - Trust in a higher power
Evidence of NEW START in non-pregnant populations

- 323 underwent a 4 week lifestyle program
- 106 had long term follow up (4 years)
- Positive effects of cardiovascular markers and decreased BMI were improved


Solution to perception of racism

- In a qualitative study of 22 African American Women, the qualities important to effective communication were
  - (a) demonstrating quality patient-provider communication
  - (b) providing continuity of care
  - (c) treating the women with respect
  - (d) delivering compassionate care

Expand inter-conception maternity coverage

- Identification of cardiovascular risk factors after mother has experienced adverse pregnancy event.
- Harness the immediate post-partum period as a conduit to get the at-risk woman to long-term care with primary care physician.
- Expand maternity coverage past the immediate post-partum period to at risk women.
- Utilization of the Cardio-Obstetrics model
Case # Resolution

- A "pre-brief" was convened prior to c-section and involved multidisciplinary team planning with OB anesthesia, cardiac anesthesia, blood bank, MFM nursing and NICU team.
- Patient underwent cesarean delivery under general anesthesia in main OR (not on L&D floor) with minimal blood loss.
- She decompensated after surgery attributed to cardiogenic shock related to autotransfusion following delivery of baby.
- Cardiac anesthesia and OB anesthesia initiated epinephrine, milrinone and norepinephrine and transported her to CVICU.
- Patient was extubated POD1 and was discharged on POD3. She was given close follow up with Nephrology and Cardiology following her delivery.

Parting words...

“Women’s rights are human rights and human's rights are women’s rights”
  - Hillary Clinton, 1995

“Maternal health is public health and public health is maternal health”
  - Rolanda Lister, MD

Questions