Maternal Mortality and Reproductive Health

Sindhu Srinivas, MD, MSCE
Professor of Obstetrics and Gynecology, Maternal Fetal Medicine
Vice Chair for Quality and Safety
University of Pennsylvania, Perelman School of Medicine
What is a **MATERNAL-FETAL MEDICINE (MFM) subspecialist**?

A physician who has advanced knowledge and training in medical, surgical, obstetrical, fetal, and genetic complications of pregnancy & their effects on both the woman and fetus.

**MFM Subspecialists** provide:

1. **Consultations**
2. **Co-management**
3. **Transfer of care**

for women with complex conditions before, during, and after pregnancy.

**MFM Subspecialists** provide peer and patient education:

AND

perform research on innovative approaches and treatments.

**MFM subspecialists** work with all obstetric providers including physician assistants, nurses, NPs, CNMs/CMs, family physicians, and obstetrician-gynecologists to manage **HIGH-RISK PREGNANCIES**.

---

What is a **HIGH-RISK PREGNANCY**?

- **SICK WOMEN get pregnant**
- **One that threatens the health or life of the woman or her fetus.**
- **PREGNANT WOMEN get sick**

**EXISTING CONDITIONS**, such as high blood pressure, obesity, diabetes, or being HIV-positive:

Rates of Gestational Diabetes (GDM) and pre-GDM have **DOUBLED** in the last 14 years.

Over the last 30 years, first trimester use of prescription medications has **increased** by more than 60%.

60% of women of reproductive age are obese or overweight.

**MULTIPLE GESTATION**

3.5% of all babies born are TWINS, TRIPLETS OR HIGHER-ORDER MULTIPLES.

The number of MULTIPLES is at an **ALL-TIME HIGH**, according to the National Center for Health Statistics.

**PROBLEMS WITH THE FETUS**

Birth defects affect one in every 33 babies born in the U.S. each year.

Birth defects are the leading cause of infant deaths, accounting for 20% of all infant deaths.

**COMPICATIONS** from previous pregnancies:

- e.g., preterm birth, preeclampsia, IUGR

**Society for Maternal-Fetal Medicine**

High-risk pregnancy experts
Causes of pregnancy-related death in the United States: 2016-2018

- Other cardiovascular conditions: 16.2%
- Infection or sepsis: 13.9%
- Cardiomyopathy: 12.5%
- Hemorrhage: 11%
- Thrombotic pulmonary or other embolism: 9.4%
- Cerebrovascular accidents: 7%
- Hypertensive disorders of pregnancy: 6.8%
- Amniotic fluid embolism: 5.7%
- Anesthesia complications: 0.2%
- Other noncardiovascular medical conditions: 11.4%

Source: Centers for Disease Control and Prevention, Pregnancy Mortality Surveillance System (Sept, 2022)
Black Women Face Three Times the Maternal Mortality Risk as White Women

Black mothers: 55

White mothers: 19

Hispanic mothers: 18

*Deaths per 100,000 live births


Source: The Century Foundation (Oct, 2021)
### Patient Factors
- Biologic factors, genetic predisposition, epigenetics, immune response, placental dysfunction
- Socio-demographics: age, education, poverty, insurance, marital status, employment, language, literacy, disability
- Knowledge, beliefs, health behaviors
- Psychosocial: stress, weathering, social support

### Community/ Neighborhood
- Community, social network
- Neighborhood: crime, poverty, built environment, housing
- Toxic exposures

### Clinician Factors
- Knowledge, experience, implicit bias, cultural humility, communication

### System Factors
- Access to high quality and behavioral care, transportation, structural racism, policy

---

**Pathways to Racial and Ethnic Disparities in Perinatal Morbidity & Mortality**

- **Preconception Care**
- **Antenatal Care**
- **Delivery & Hospital Care**
- **Postpartum Care**

**Outcomes Perinatal Morbidity & Mortality**: Health status: comorbidities (e.g. HTN, DM, obesity, depression); pregnancy complications

Policy Interventions for Preventing Maternal Deaths

• Establish a Maternal Mortality Review Committee
• Establish a Perinatal Quality Collaborative
• Extend Medicaid for a Full Year Postpartum
• Report Data Stratified by Race and Ethnicity
• Participate in the Alliance for Innovation on Maternal Health (AIM) Program

• Evolve payment models to sustain and scale innovative solutions
• Preserve Access to Contraception and Abortion Care
Heart Safe Motherhood

Catch rising blood pressure early
to keep patients safe at home
**Hospital of the University of Pennsylvania**

**Blood Pressure Clinic Attendance**

**STRATEGIES**
- Alternate staffing models
- Expanded office hours
- Appointments all days of the week
- Phone reminders
- Text reminders

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-black</td>
<td>55.6%</td>
<td>47.4%</td>
<td>33.9%</td>
<td>42.5%</td>
</tr>
<tr>
<td>Black</td>
<td>33.6%</td>
<td>24.6%</td>
<td>20.0%</td>
<td>24.1%</td>
</tr>
</tbody>
</table>
Heart Safe Motherhood

• At home postpartum blood pressure monitoring program that leverages technology

Results
• Increased BP measurement in 1st 10 days PP
• Reduced ED visits and readmissions
• Decreased disparities
• Increased postpartum visits

Implementation
• Penn Medicine (all 5 delivery hospitals)
• Philadelphia downtown delivery hospitals

Hirshberg et al. AJOG 2019 Sep;221(3):283-285
Heart Safe Motherhood – Achieving Health Equity

Policy Interventions for Preventing Maternal Deaths

• Establish a Maternal Mortality Review Committee
• Establish a Perinatal Quality Collaborative
• Extend Medicaid for a Full Year Postpartum
• Report Data Stratified by Race and Ethnicity
• Participate in the Alliance for Innovation on Maternal Health (AIM) Program

• Evolve payment models to sustain and scale innovative solutions
• Preserve Access to Contraception and Abortion Care
Maternal Health & Abortion

• Pregnancy is an inherently risky time in the pregnant person’s life.

• This is especially true those experiencing a high-risk pregnancy.

• Abortion is an essential medical care for patients who develop high-risk conditions during pregnancy or who have preexisting conditions that may be exacerbated during pregnancy.
## High-Risk Pregnancy & Abortion

**Examples of high-risk conditions that can develop during pregnancy**

- Infection in the uterus
- Early-onset preeclampsia (high blood pressure)
- Hemorrhage (bleeding)
- Cancer

**Examples of preexisting conditions that may increase risk during pregnancy include**

- Cystic fibrosis
- Cancer
- Tuberculosis
- Liver disease
- Sickle cell disease
- Cardiovascular disease
- Lupus
- Mental health conditions
Early Data from Texas Paints a Grim Picture

Maternal morbidity and fetal outcomes among pregnant women at 22 weeks’ gestation or less with complications in 2 Texas hospitals after legislation on abortion

Anjali Nambiar, MD • Shivani Patel, MD • Patricia Santiago-Munoz, MD • Catherine Y. Spong, MD • David B. Nelson, MD

Published: July 04, 2022 • DOI: https://doi.org/10.1016/j.ajog.2022.06.060

Source: American Journal of Obstetrics and Gynecology (July, 2022)
Maternal Health Exceptions in State Law are Vague
Among 2,504 patients with insurance and CV conditions, data shows an increase in abortion rates in states supportive of abortion compared to leaning supportive, middle-ground, leaning restrictive and restrictive.

*Unpublished data
Pregnancy-related deaths could rise 20% or more in states that outlaw abortion, experts say

Why doctors say the 'save the mother's life' exception of abortion bans is medically risky

With Roe Set to End, Many Women Worry About High-Risk Pregnancies

Fall of Roe could bring ‘catastrophic consequences’ to maternal, fetal health

I'm a high-risk OB-GYN: Abortion helps me save lives

THE DOBBS DECISION HAS UNLEASHED LEGAL CHAOS FOR DOCTORS AND PATIENTS
At least 17 states have abortion bans up to 20-weeks gestation currently or soon to be in effect: Alabama, Arizona, Arkansas, Florida, Georgia, Idaho, Kentucky, Louisiana, Mississippi, Missouri, North Carolina, Ohio, Oklahoma, South Dakota, Tennessee, Texas, and Utah.

11 of these states (Alabama, Arkansas, Idaho, Kentucky, Louisiana, Mississippi, Missouri, Oklahoma, South Dakota, Tennessee, and Texas) have total bans.

In 9 states, courts are determining if existing or new bans can take effect: Arizona, Iowa, Montana, North Dakota, South Carolina, Utah, West Virginia, Wisconsin, and Wyoming.
Abortion restrictions will also impact the workforce – and in turn, impact the quality of care available to all patients, whether they need an abortion or not.
Black Women Face Three Times the Maternal Mortality Risk as White Women

Black mothers: 55

White mothers: 19

Hispanic mothers: 18

*Deaths per 100,000 live births


Source: The Century Foundation (Oct, 2021)
Patient Factors
- Biologic factors, genetic predisposition, epigenetics, immune response, placental dysfunction
- Socio-demographics: age, education, poverty, insurance, marital status, employment, language, literacy, disability
- Knowledge, beliefs, health behaviors
- Psychosocial: stress, weathering, social support

Community/Neighborhood
- Community, social network
- Neighborhood: crime, poverty, built environment, housing
- Toxic exposures

Clinician Factors
- Knowledge, experience, implicit bias, cultural humility, communication

System Factors
- Access to high quality and behavioral care, transportation, structural racism, policy

Pathways to Racial and Ethnic Disparities in Perinatal Morbidity & Mortality

Health status: comorbidities (e.g. HTN, DM, obesity, depression); pregnancy complications

Conclusions

• Consider pregnancy in the context of health more broadly
• Develop and evaluate innovative care delivery models
• Evolve payment models to sustain and scale these solutions
• Preserve Access to Contraception and Abortion Care