Disclosures

Chair of the SC Maternal Mortality and Morbidity Review Committee (MMMRC)

SC ACOG Section Chair

Thanks to Dave Goodman, CDC and to Amy Crockett, SC BOI Clinical Lead
A pregnancy-associated death is the death of a woman (during pregnancy or within one year of pregnancy) that is **temporally related to pregnancy**.

A pregnancy-related death is a subset of pregnancy-associated deaths that is **related to or are aggravated by pregnancy**.
The Maternal Mortality Rate\(^1\) is reported as # of maternal deaths per 100,000 live births

The Pregnancy-Related Mortality Ratio\(^2\) is reported as # of pregnancy-related deaths per 100,000 live births

\(^1\)Deaths occurring during pregnancy or within 42 days of delivery. Maternal deaths are identified by ICD-10 codes as listed on the death certificate.

\(^2\) Deaths occurring during pregnancy or within one year of pregnancy. Pregnancy-related deaths are identified by the pregnancy checkbox and/or death certificate linked to fetal deaths or birth certificate.
Measuring Maternal Deaths

Maternal Mortality Rate, Deaths per 100,000 live births

Measuring Maternal Deaths: NCHS & PMSS

PRMR: Pregnancy-related mortality ratio
MMR: Maternal mortality rate

http://www.cdc.gov/reproductivehealth/maternalinfanthealth/pmss.html
PMSS: Causes of Pregnancy-related Death

Disparity implies inequality often where a greater equality might be reasonably expected.
PMSS: Disparity Ratio

Disparity Ratio in Pregnancy-related Mortality Ratio by Race-Ethnicity and Ratio Tertile, 2007-2016

- **Black: White**
- **Native: White**
- **Asian: White**
- **Hispanic: White**

Legend:
- **Lowest PRMR**
- **Middle PRMR**
- **Highest PRMR**

PMSS: by Age Grouping

Pregnancy-related Mortality Ratio by Race-Ethnicity and Age, 2007-2016

Preventing Maternal Deaths: Maternal Mortality Review Committees (MMRCs)
Preventing Maternal Deaths: Maternal Mortality Review Committees (MMRCs)

MMRCs have 3 components that the other systems (NCHS and PMSS) don’t have:

1. Robust DATA system dedicated to maternal mortality with multi-level data from multiple sources (including non-traditional sources)

2. A multidisciplinary committee of EXPERTS to review each death, through clinical and non-clinical lens, with a focus on prevention (population level)

3. PH STAFF (usually a state department of public health team) to gather and manage the data, establish and guide the committee, communicate with stakeholders, and conduct and disseminate research and surveillance. (AKA, put it all together)
Preventing Maternal Deaths
Committee reporting forms
MMRIA
<table>
<thead>
<tr>
<th>COMMITTEE DETERMINATION OF CAUSE(S) OF DEATH</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TYPE</strong></td>
</tr>
<tr>
<td>IMMEDIATE</td>
</tr>
<tr>
<td>CONTRIBUTING</td>
</tr>
<tr>
<td>UNDERLYING</td>
</tr>
<tr>
<td>OTHER SIGNIFICANT</td>
</tr>
</tbody>
</table>

**PREGNANCY-RELATEDNESS: SELECT ONE**
- [ ] PREGNANCY-RELATED
  - The death of a woman during pregnancy or within one year of the end of pregnancy from a pregnancy complication, a chain of events initiated by pregnancy, or the aggravation of an unrelated condition by the physiologic effects of pregnancy
- [ ] PREGNANCY-ASSOCIATED, BUT NOT RELATED
  - The death of a woman during pregnancy or within one year of the end of pregnancy from a cause that is not related to pregnancy
- [ ] UNABLE TO DETERMINE IF PREGNANCY-RELATED OR PREGNANCY-ASSOCIATED, BUT NOT RELATED
  - (i.e. false positive, woman was not pregnant within one year of her death)

**ESTIMATE THE DEGREE OF RELEVANT INFORMATION (RECORDS) AVAILABLE FOR THIS CASE:**
- [ ] COMPLETE
  - All records necessary for adequate review of the case were available
- [ ] MOSTLY COMPLETE
  - Minor gaps (i.e. information that would have been crucial to the review of the case)
- [ ] SOMEWHAT COMPLETE
  - Minimal records available for review (i.e. death certificate and no additional records)
- [ ] NOT COMPLETE
  - N/A
- [ ] N/A

**DID OBESITY CONTRIBUTE TO THE DEATH?**
- [ ] YES
- [ ] PROBABLY
- [ ] NO
- [ ] UNKNOWN

**DID MENTAL HEALTH CONDITIONS CONTRIBUTE TO THE DEATH?**
- [ ] YES
- [ ] PROBABLY
- [ ] NO
- [ ] UNKNOWN

**DID SUBSTANCE USE DISORDER CONTRIBUTE TO THE DEATH?**
- [ ] YES
- [ ] PROBABLY
- [ ] NO
- [ ] UNKNOWN

**WAS THIS DEATH A SUICIDE?**
- [ ] YES
- [ ] PROBABLY
- [ ] NO
- [ ] UNKNOWN

**WAS THIS DEATH A HOMICIDE?**
- [ ] YES
- [ ] PROBABLY
- [ ] NO
- [ ] UNKNOWN

**IF HOMICIDE, SUICIDE, OR ACCIDENTAL DEATH, LIST THE MEANS OF FATAL INJURY:**
- [ ] FIREARM
- [ ] SHARP INSTRUMENT
- [ ] BLUNT INSTRUMENT
- [ ] POISONING/OVERDOSE
- [ ] HANGING/SUFFOCATION
- [ ] FALL
- [ ] PUNCHING/KICKING/BEATING
- [ ] EXPLOSIVE
- [ ] DROWNING
- [ ] FIRE OR BURNS
- [ ] MOTOR VEHICLE
- [ ] INTENTIONAL NEGLECT
- [ ] OTHER, SPECIFY:
  - [ ] UNKNOWN
  - [ ] NOT APPLICABLE

**IF HOMICIDE, WHAT WAS THE RELATIONSHIP OF THE PERPETRATOR TO THE DECEDEENT?**
- [ ] NO RELATIONSHIP
- [ ] PARTNER
- [ ] EX-PARTNER
- [ ] OTHER RELATIVE
- [ ] OTHER ACQUAINTANCE
- [ ] OTHER, SPECIFY:
  - [ ] UNKNOWN
  - [ ] NOT APPLICABLE
### COMMITTEE DETERMINATION OF PREVENTABILITY

A death is considered preventable if the committee determines that there was at least some chance of the death being averted by one or more reasonable changes to patient, family, provider, facility, system and/or community factors.

<table>
<thead>
<tr>
<th>WAS THIS DEATH PREVENTABLE?</th>
<th>□ YES</th>
<th>□ NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHANCE TO ALTER OUTCOME?</td>
<td>□ GOOD CHANCE</td>
<td>□ SOME CHANCE</td>
</tr>
</tbody>
</table>

### CONTRIBUTING FACTORS WORKSHEET

What were the factors that contributed to this death? Multiple contributing factors may be present at each level.

<table>
<thead>
<tr>
<th>CONTRIBUTING FACTOR LEVEL</th>
<th>CONTRIBUTING FACTOR AND DESCRIPTION OF ISSUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PATIENT/FAMILY</td>
<td></td>
</tr>
<tr>
<td>PROVIDER</td>
<td></td>
</tr>
<tr>
<td>FACILITY</td>
<td></td>
</tr>
<tr>
<td>SYSTEM</td>
<td></td>
</tr>
<tr>
<td>COMMUNITY</td>
<td></td>
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</tbody>
</table>

### RECOMMENDATIONS OF THE COMMITTEE

If there was at least some chance that the death could have been averted, what were the specific and feasible actions that, if implemented or altered, might have changed the course of events?

### LEVEL OF PREVENTION

<table>
<thead>
<tr>
<th>RECOMMENDATIONS OF THE COMMITTEE</th>
<th>LEVEL OF PREVENTION (SEE BELOW)</th>
<th>LEVEL OF IMPACT (SEE BELOW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PREVENTION LEVEL</td>
<td></td>
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</tr>
<tr>
<td>PRIMARY: Prevents the contributing factor before it occurs</td>
<td></td>
<td></td>
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<tr>
<td>SECONDARY: Reduces the impact of the contributing factor once it has occurred (i.e., treatment)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TERTIARY: Reduces the impact or progression of an ongoing contributing factor once it has occurred (i.e., management of complications)</td>
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### EXPECTED IMPACT LEVEL

| SMALL: Education/counseling (community- and/or provider-based health promotion and education activities) | |
| MEDIUM: Clinical intervention and coordination of care across continuum of well-woman visits through obstetrics (protocols, prescriptions) | |
| LARGE: Implementing protective intervention (improve readiness, recognition and response to obstetric emergencies/LAIFC) | |
| EXTRA LARGE: Health system investment (promote environments that support healthy living/ensure available and accessible services) | |
| GIANT: Address social determinants of health (poverty, inequality, etc.) | |
Maternal Mortality Review Information Application (MMRIA)

A common language for reviews to work together
MMRCs: Equity Framework

Understanding community contributing factors requires a shift in thinking

1. We can link MMRIA data to community context
2. Assigning contributing role of community in individual cases is challenging
3. Community factors may be more evident in aggregate data
4. Adaptation, implementation, and evaluation of a Health Equity Toolkit in process(!)

MMRCs Equity Framework
MMRCs: Equity Framework

Health Care Service Environ

Social Environ

Pregnancy-related Mortality Ratio

Unmet drug Tx need
PCP per capita
Behavioral Hlth per capita
OB per capita

Rural
% Poverty
Income Inequality
% Uninsured

Pregnancy-related Mortality Ratio
Definition
A death is considered preventable if the committee determines there was at least some chance of the death being averted by one or more reasonable changes to patient, family, provider, facility, system and/or community factors.

Why
MMRCs determine preventability to prioritize interventions with the greatest opportunity for impact.
Committee established by statute – 2016
Meets quarterly
Voluntary reporting
Annual report to the legislature

https://www.scstatehouse.gov/reports/DHEC/MMMR%202019%20Legislative%20Brief%20-%20Revised%2003182019.pdf
SC Maternal Morbidity and Mortality Review Committee (MMMRC)

Multidisciplinary
Actively practicing
Based on ACOG and CDC recommendations
Three- to four-year terms
75% attendance requirements
Renewable once
SC Maternal Morbidity and Mortality Review Committee (MMMRC)

3 YEARS

• ACOG
• MRM/OB each Regional Perinatal Center (RPC)
• SC Perinatal Association
• Coroner
• SC Hospital Association
• SC Department of Health and Human Services (DHHS)
• OB MD FQHC
• OB MD Level II hospital

4 YEARS

• OB Anesthesia
• Cardiology
• Domestic Violence
• Midwife
• Law Enforcement
• Alcohol and Drug Abuse
• Regional Systems Developers (RSDs)
• Family Medicine
• Psychiatry/Behavioral Medicine
South Carolina Pregnancy-Related Death by Race, 2013-2017

Rate per 100,000 live births

- South Carolina: 24.7
- White: 13.7
- Black and Other: 46.3
- Healthy People 2020 Goal: 11.4

https://www.scstatehouse.gov/reports/DHEC/MMMR%202019%20Legislative%20Brief%20-%20Revised%2003182019.pdf
SC Maternal Morbidity and Mortality Review Committee (MMMRC)

**MMMR Committee Findings**
During the 2016-2018 review period, 13 of the 15 maternal deaths reviewed in South Carolina were determined to be pregnancy-related. One death was determined to be pregnancy-associated but not related to pregnancy, and the other could not be determined. Among the 13 pregnancy-related deaths, 54% were determined to be preventable.

54%

As reported nationally⁹, the findings from South Carolina’s MMMR Committee show that the common causes of maternal death include cardiovascular and coronary conditions, hemorrhage, infection, and embolism.

https://www.scstatehouse.gov/reports/DHEC/MMMR%202019%20Legislative%20Brief%20-%20Revised%2003182019.pdf
SC Maternal Morbidity and Mortality Review Committee (MMMRC)

SC MMMRC ACCOMPLISHMENTS

SC uses the MMRIA reporting format

CDC-developed
Assist with identifying social determinants
Includes community factors
SC Maternal Morbidity and Mortality Review Committee (MMMRC)

SC MMMRC ACCOMPLISHMENTS

Annual Report to the South Carolina Birth Outcomes Initiative (SC BOI) each Spring

Annual Report to the SC General Assembly

https://www.scstatehouse.gov/reports/DHEC/MMMR%202019%20Legislative%20Brief%20-%20Revised%2003182019.pdf
Moving from Thought to Action: State Level South Carolina SimCoach
Moving from Thought to Action: Local Level
GHS Postpartum Hemorrhage Cart

A standardized PPH cart that contains all equipment needed for any staff in any setting within the Women’s Hospital.
Deaths
Near Misses
Severe Maternal Morbidity
Maternal Morbidity Requiring Hospitalization
Maternal Morbidity Resulting in Emergency Department Visit
Maternal Morbidity Resulting in Primary Care Visit

Eliminate preventable maternal deaths
Reduce maternal morbidity
Improve population health of women
Thanks

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