Maternal Mortality: Statewide Efforts to Reduce Adverse Outcomes of Pregnancy and Childbirth

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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

Key Definitions

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.

Building U.S. Capacity to Review and Prevent Maternal Deaths. (2018) Report from nine maternal mortality review committees.

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

MMRIA MATERNAL MORTALITY REVIEW INFORMATION APP

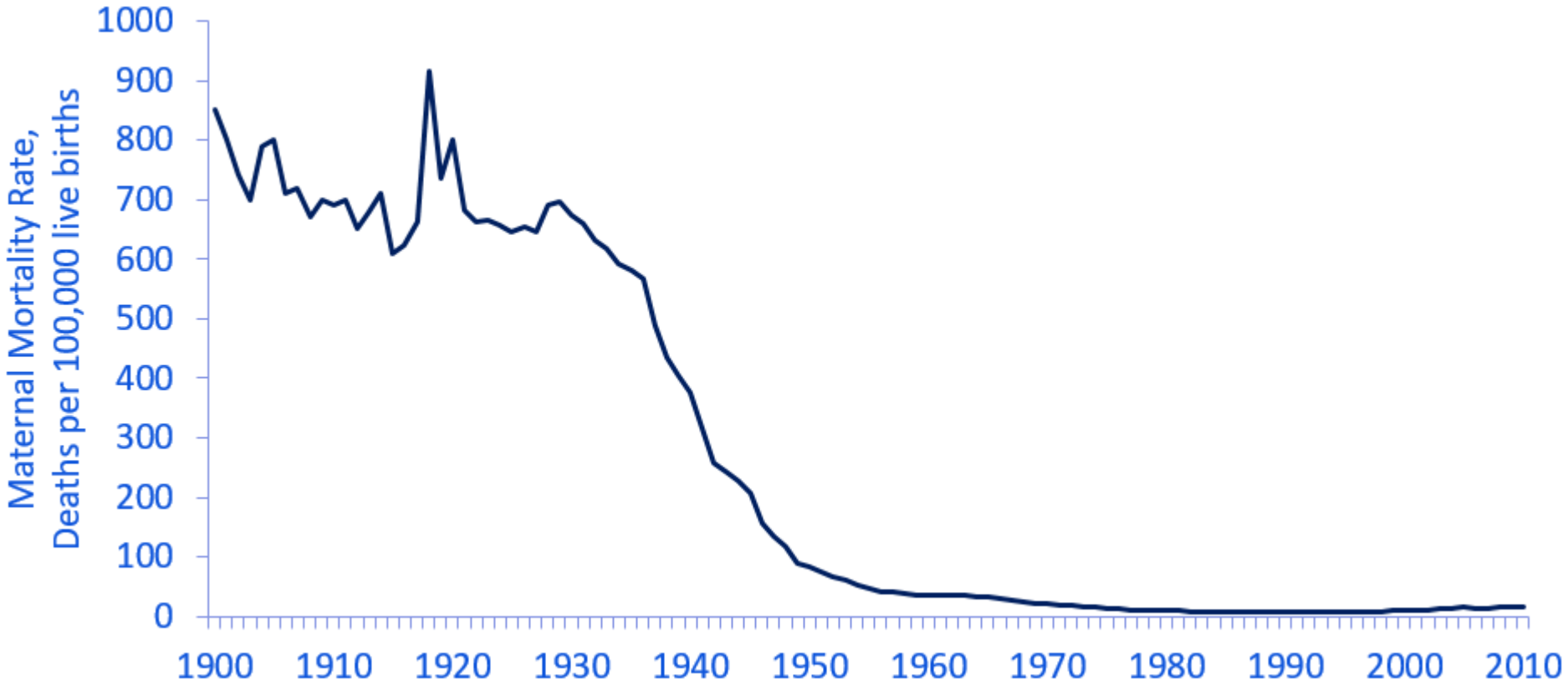
ERASE MM

REVIEW to ACTION WORKING TOGETHER TO PREVENT MATERNAL MORTALITY

[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



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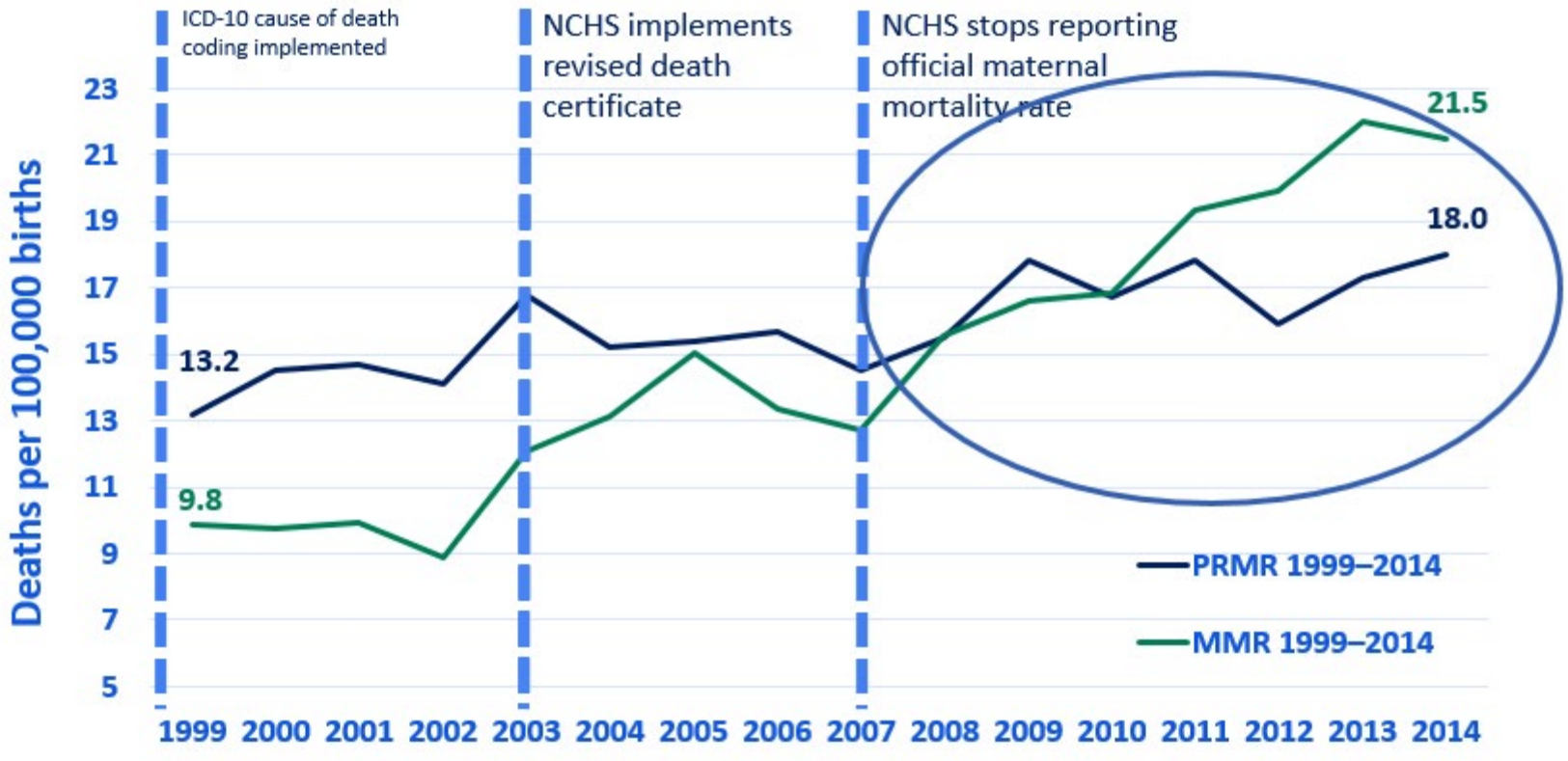
Measuring Maternal Deaths: NCHS & PMSS



PRMR: Pregnancy-related mortality ratio
MMR: Maternal mortality rate
http://www.cdc.gov/reproductivehealth/maternalinfanthealth/pmss.html

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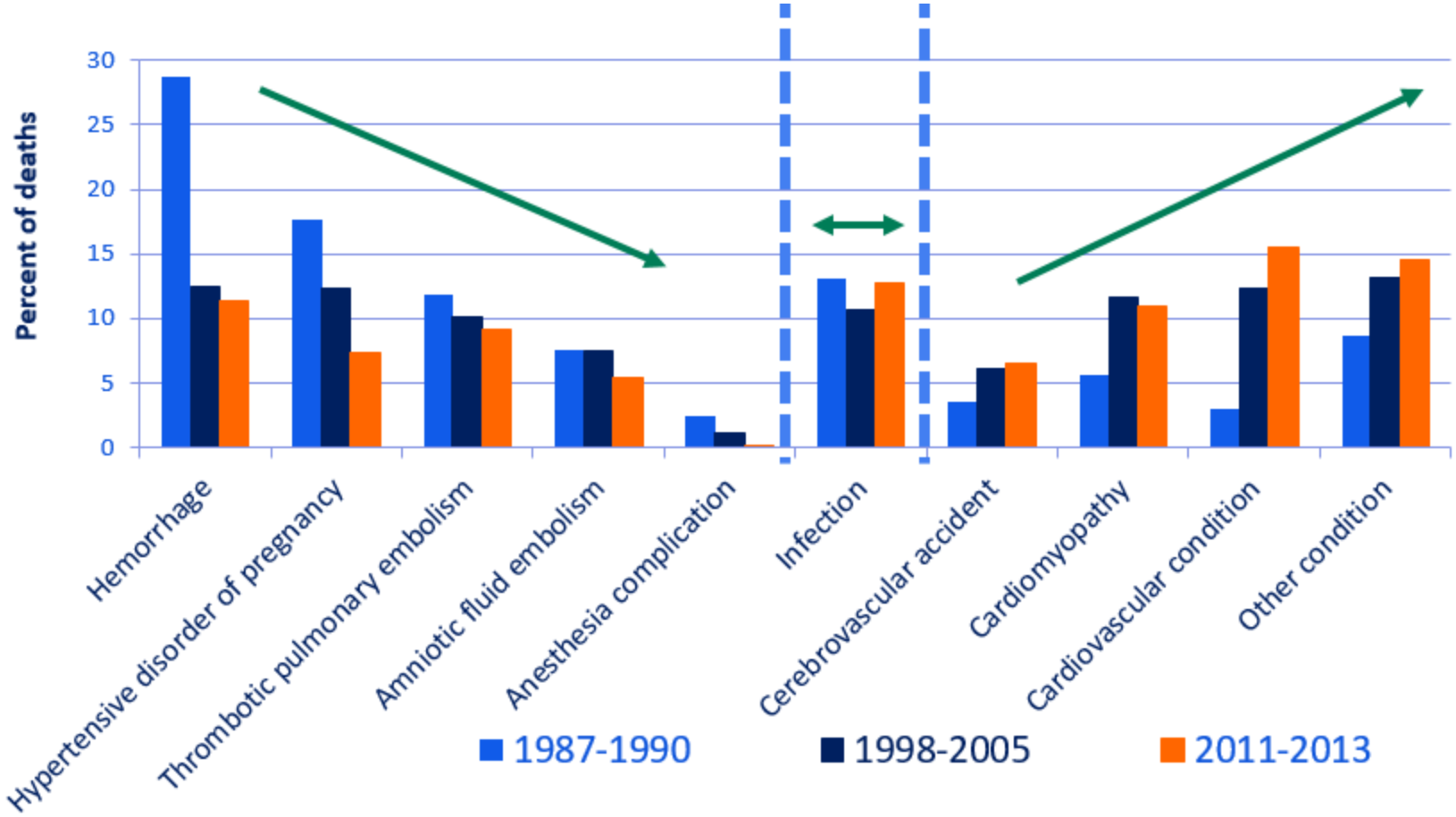
PMSS: Causes of Pregnancy-related Death



Creanga AA, et al. Obstet Gynecol 2015;125:5-12.

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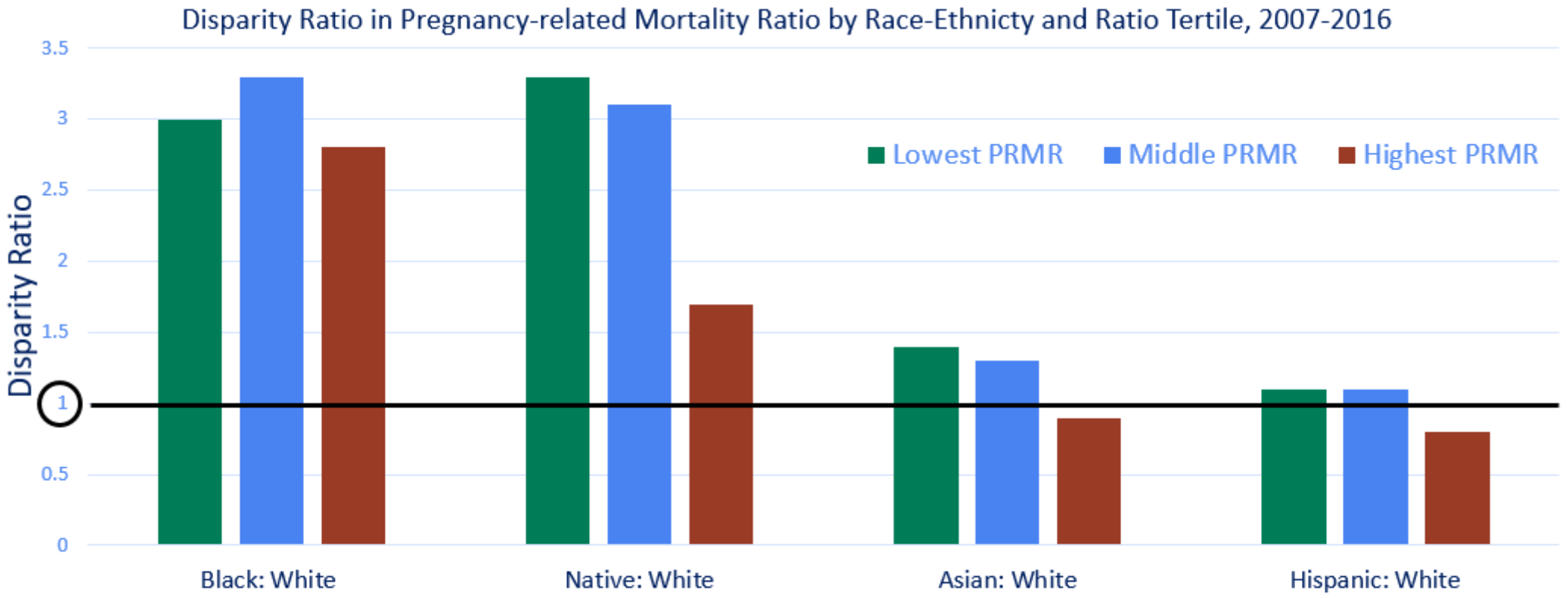
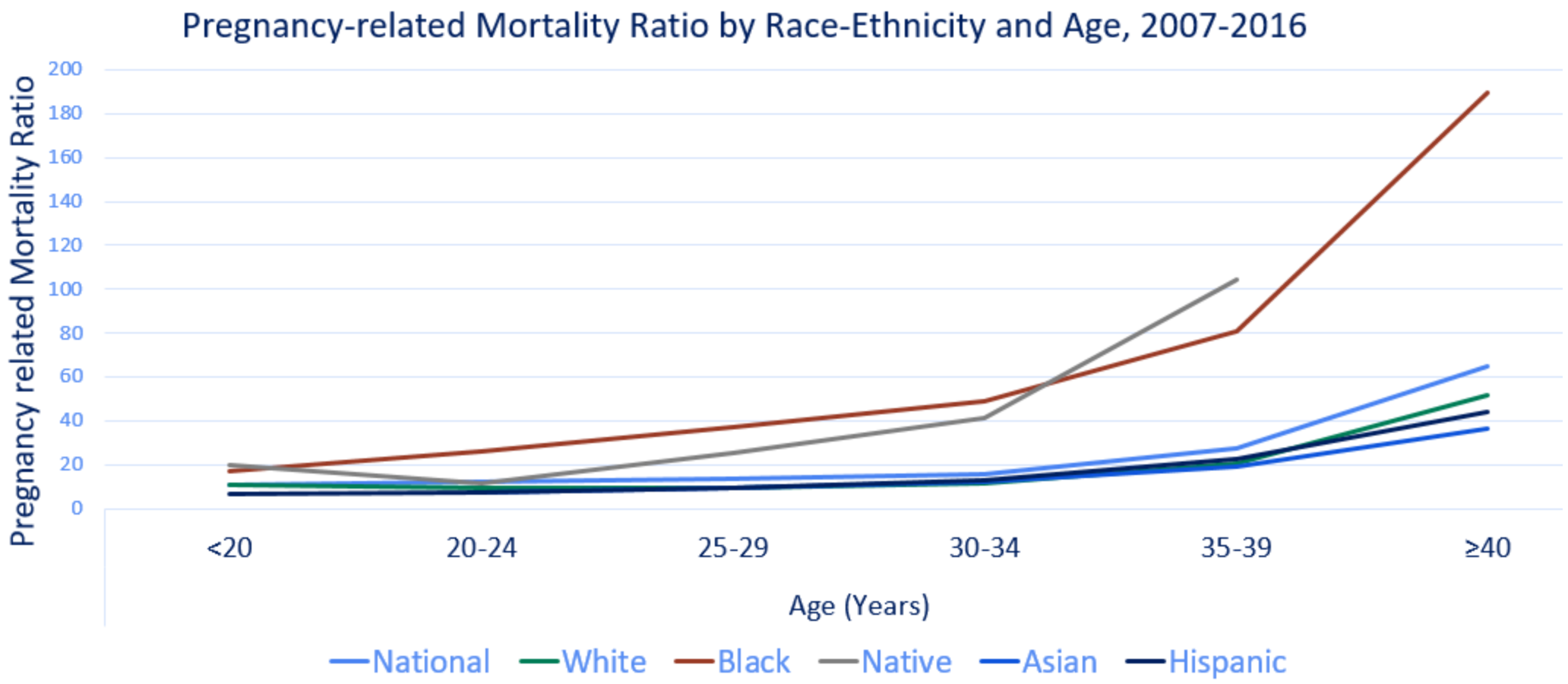
Disparity implies inequality often where a greater equality might be reasonably expected

PMSS: Disparity Ratio



Petersen EE, Davis NL, Goodman D, et al. Racial/Ethnic Disparities in Pregnancy-Related Deaths — United States, 2007–2016. MMWR Morb Mortal Wkly Rep 2019;68:762–765

PMSS: by Age Grouping



Petersen EE, Davis NL, Goodman D, et al. Racial/Ethnic Disparities in Pregnancy-Related Deaths — United States, 2007–2016. MMWR Morb Mortal Wkly Rep 2019;68:762–765

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)

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ERASE MM Enhancing Reviews and Surveillance to Eliminate Maternal Mortality

REVIEW to ACTION WORKING TOGETHER TO PREVENT MATERNAL MORTALITY

Preventing Maternal Deaths Committee reporting forms MMRIA

MMRIA

MATERNAL MORTALITY REVIEW COMMITTEE DECISIONS FORM v14

REVIEW DATE

RECORD ID #

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**
- ☐ **NOT PREGNANCY-RELATED OR -ASSOCIATED**
  (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 beneficial but was not essential to the review of the case)
- ☐ **SOMEWHAT COMPLETE**
  Major gaps (i.e. information that would have been crucial to the review of the case)
- ☐ **NOT COMPLETE**
  Minimal records available for review (i.e. death certificate and no additional records)
- ☐ **N/A**

DOES THE COMMITTEE AGREE WITH THE UNDERLYING CAUSE OF DEATH LISTED ON DEATH CERTIFICATE? ☐ YES ☐ NO

COMMITTEE DETERMINATION OF CAUSE(S) OF DEATH

TYPE	CAUSE (DESCRIPTIVE)
IMMEDIATE	
CONTRIBUTING	
UNDERLYING	
OTHER SIGNIFICANT	

IF PREGNANCY-RELATED, COMMITTEE DETERMINATION OF UNDERLYING CAUSE OF DEATH
Refer to page 3 for PMSS-MM cause of death list. If more than one is selected, list in order of importance beginning with the most compelling (1-2; no more than 2 may be selected in the system).

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/ STRANGULATION/ 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 DECEDENT**?

- ☐ NO RELATIONSHIP
- ☐ PARTNER
- ☐ EX-PARTNER
- ☐ OTHER RELATIVE
- ☐ OTHER ACQUAINTANCE
- ☐ OTHER, SPECIFY:
- ☐ UNKNOWN
- ☐ NOT APPLICABLE

PRISMA HEALTH

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.

WAS THIS DEATH PREVENTABLE? ☐ YES ☐ NO

CHANCE TO ALTER OUTCOME? ☐ GOOD CHANCE ☐ SOME CHANCE ☐ NO CHANCE ☐ UNABLE TO DETERMINE

CONTRIBUTING FACTORS WORKSHEET

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

CONTRIBUTING FACTOR LEVEL	CONTRIBUTING FACTOR AND DESCRIPTION OF ISSUE
PATIENT/FAMILY	
PROVIDER	
FACILITY	
SYSTEM	
COMMUNITY	

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?

RECOMMENDATIONS OF THE COMMITTEE	LEVEL OF PREVENTION (SEE BELOW)	LEVEL OF IMPACT (SEE BELOW)

CONTRIBUTING FACTOR KEY (DESCRIPTIONS ON PAGE 4)

- Delay
- Adherence
- Knowledge
- Cultural/religious
- Environmental
- Violence
- Mental health conditions
- Substance use disorder – alcohol, illicit/prescription drugs
- Tobacco use
- Chronic disease
- Childhood abuse/ trauma
- Access/financial
- Unstable housing
- Social support/ isolation
- Equipment/ technology
- Policies/procedures
- Communication
- Continuity of care/ care coordination
- Clinical skill/ quality of care
- Outreach
- Enforcement
- Referral
- Assessment
- Legal
- Other

PREVENTION LEVEL

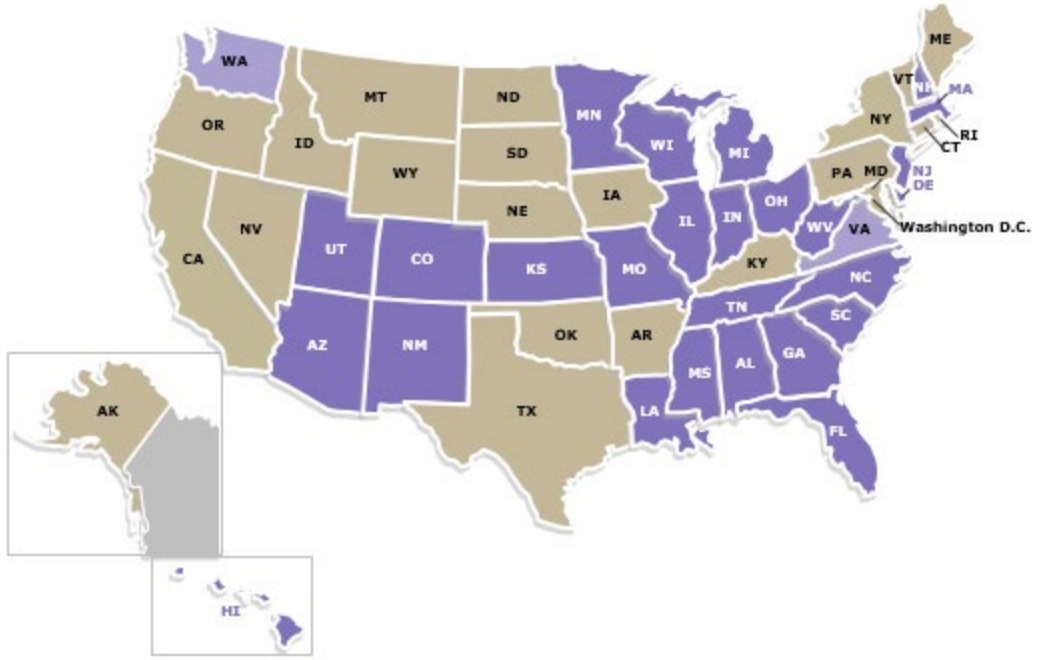
- **PRIMARY:** Prevents the contributing factor before it ever occurs
- **SECONDARY:** Reduces the impact of the contributing factor once it has occurred (i.e. treatment)
- **TERTIARY:** Reduces the impact or progression of an ongoing contributing factor once it has occurred (i.e. management of complications)

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:** Long-lasting protective intervention (improve readiness, recognition and response to obstetric emergencies/LARC)
- **EXTRA LARGE:** Change in context (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



MMRIA MATERNAL MORTALITY REVIEW INFORMATION APP

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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(!)

Kramer MR, Strahan AE, Preslar J, Zaharatos J, ST. Pierre A, Grant J, Davis NL, Goodman D, Callaghan W, Changing the conversation: Applying a health equity framework to maternal mortality reviews, *American Journal of Obstetrics and Gynecology* (2019), doi: https://doi.org/10.1016/j.ajog.2019.08.057

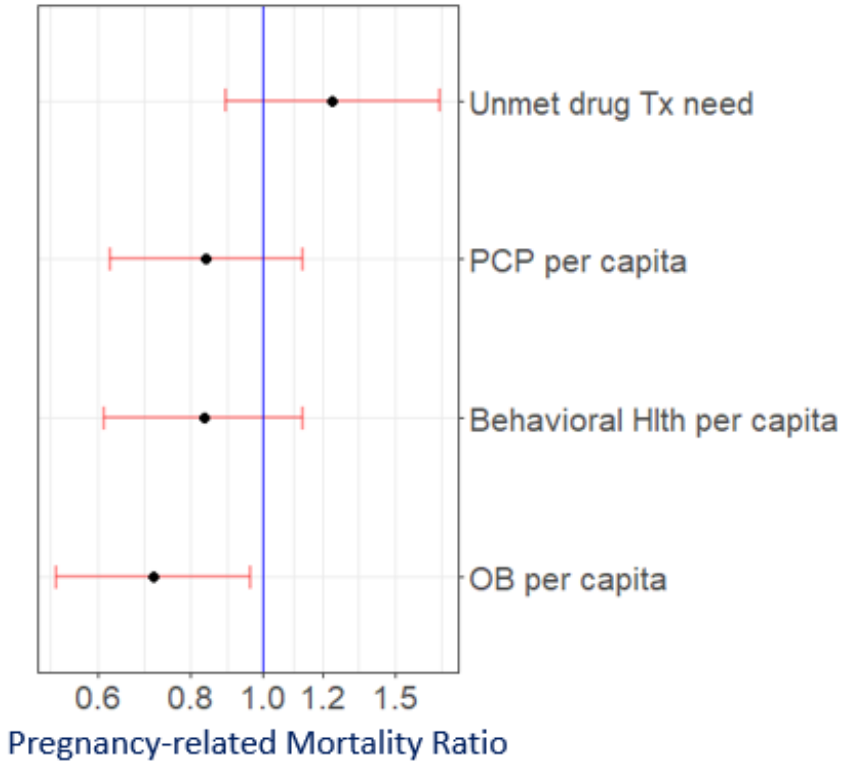
MMRCs Equity Framework

EQUALITY

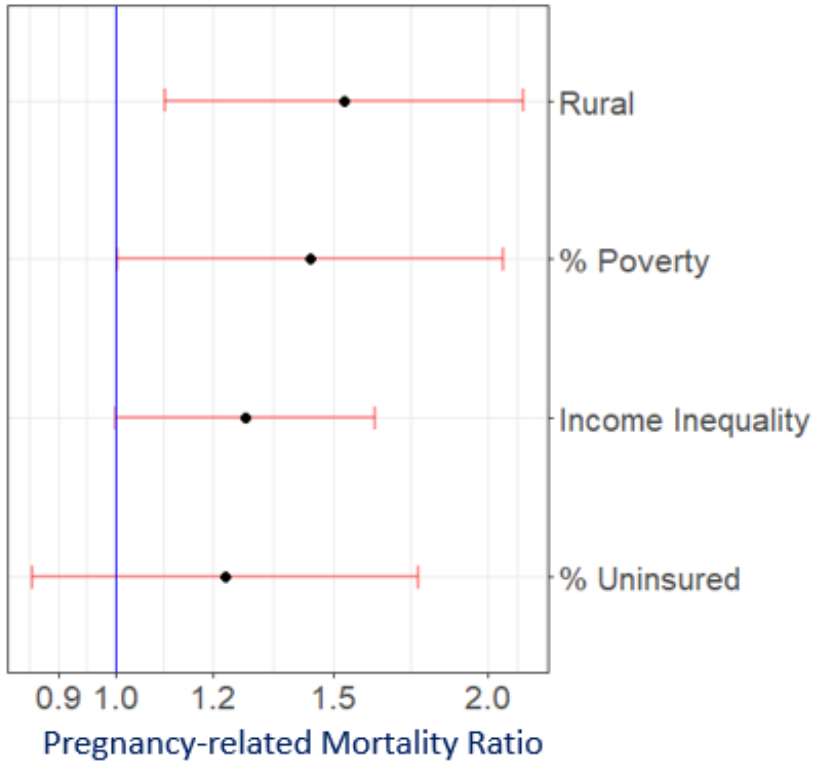
EQUITY

MMRCs: Equity Framework

Health Care Service Environ



Social Environ



MMRIA MATERNAL MORTALITY REVIEW INFORMATION APP

ERASE MM

REVIEW to ACTION WORKING TOGETHER TO PREVENT MATERNAL MORTALITY

PRISMA HEALTH

MMRIA: Preventability

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

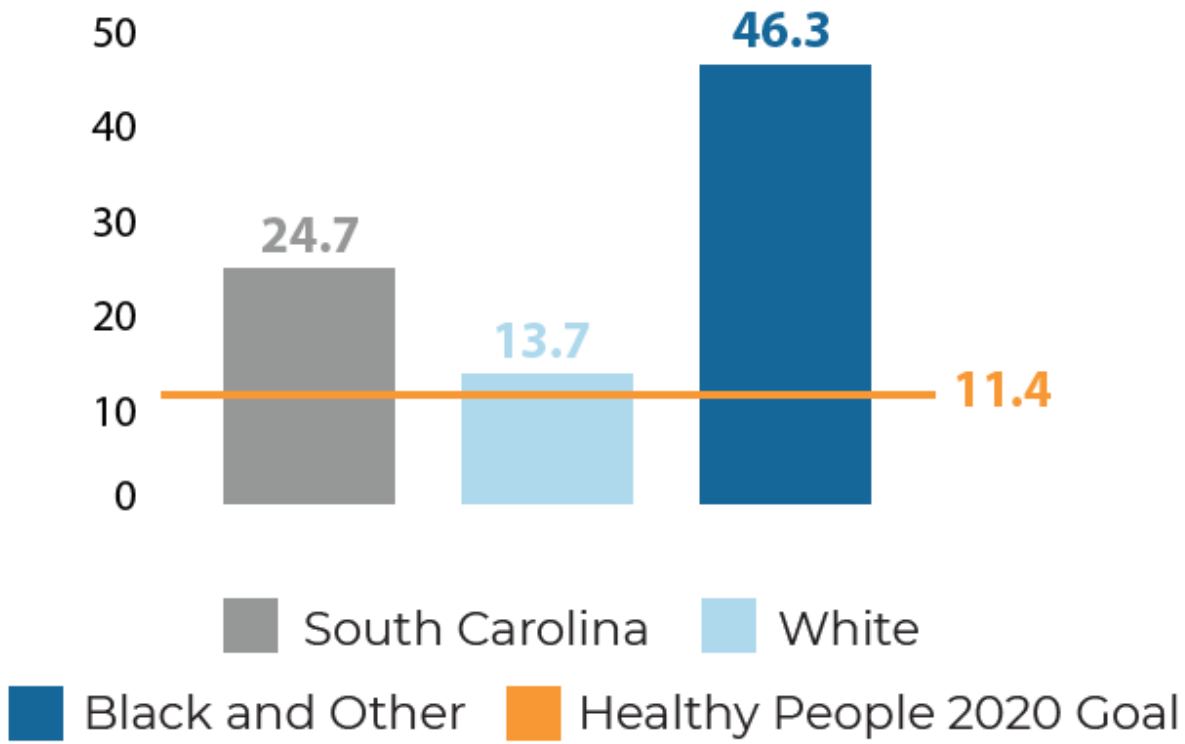
- ACOG
- MRM/OB each Regional Perinatal Center (RPC)
- SC Perinatal Association
- Coroner
- SC Hospital Association
- SC Department of Health and Human Services (DHHS)
- OB MD FQHC
- OB MD Level II hospital

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[2]

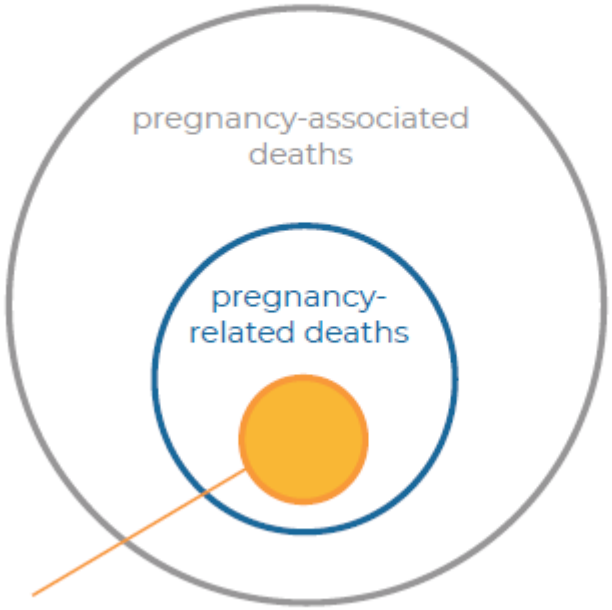
Rate per 100,000 live births



https://www.scstatehouse.gov/reports/DHEC/MMMR%202019%20Legislative%20Brief%20-%20Revised%2003182019.pdf

SC Maternal Morbidity and Mortality Review Committee (MMMRC)

Scope of Case Review



Primary Focus
preventable pregnancy-related deaths

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 nationally[3], 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

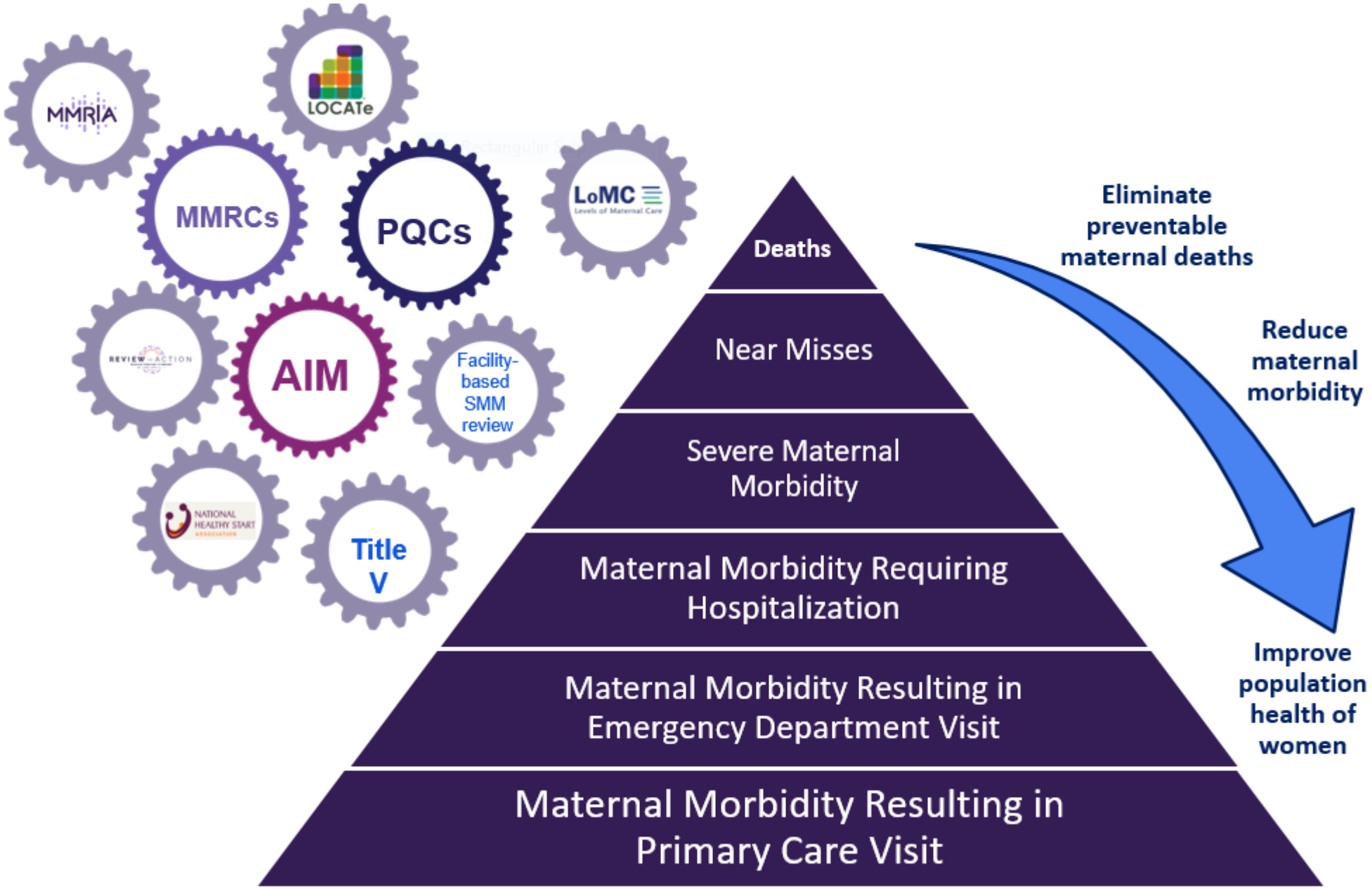
Annual Report to the SC General Assembly

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.


MMRIA
LOCATe
MMRCs
PQCs
LoMC
Levels of Maternal Care
REVIEW to ACTION
AIM
Facility-based SMM review
NATIONAL HEALTHY START ASSOCIATION
Title V
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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