Enhancing Reviews and Surveillance to Eliminate Maternal Mortality (ERASE MM) Orientation

Maternal Mortality Prevention Team
Maternal Infant Health Branch
CDC Division of Reproductive Health




MMRIA MATERNAL MORTALITY REVIEW INFORMATION APP

ERASE MM

REVIEW to ACTION WORKING TOGETHER TO PREVENT MATERNAL MORTALITY

Objectives

- Provide an overview of existing data and ERASE Maternal Mortality program (brief data, importance of standardization)
- Practice improving maternal mortality data through comprehensive case review
- Describe actionable recommendations
- Present examples of data to action

We are here because…

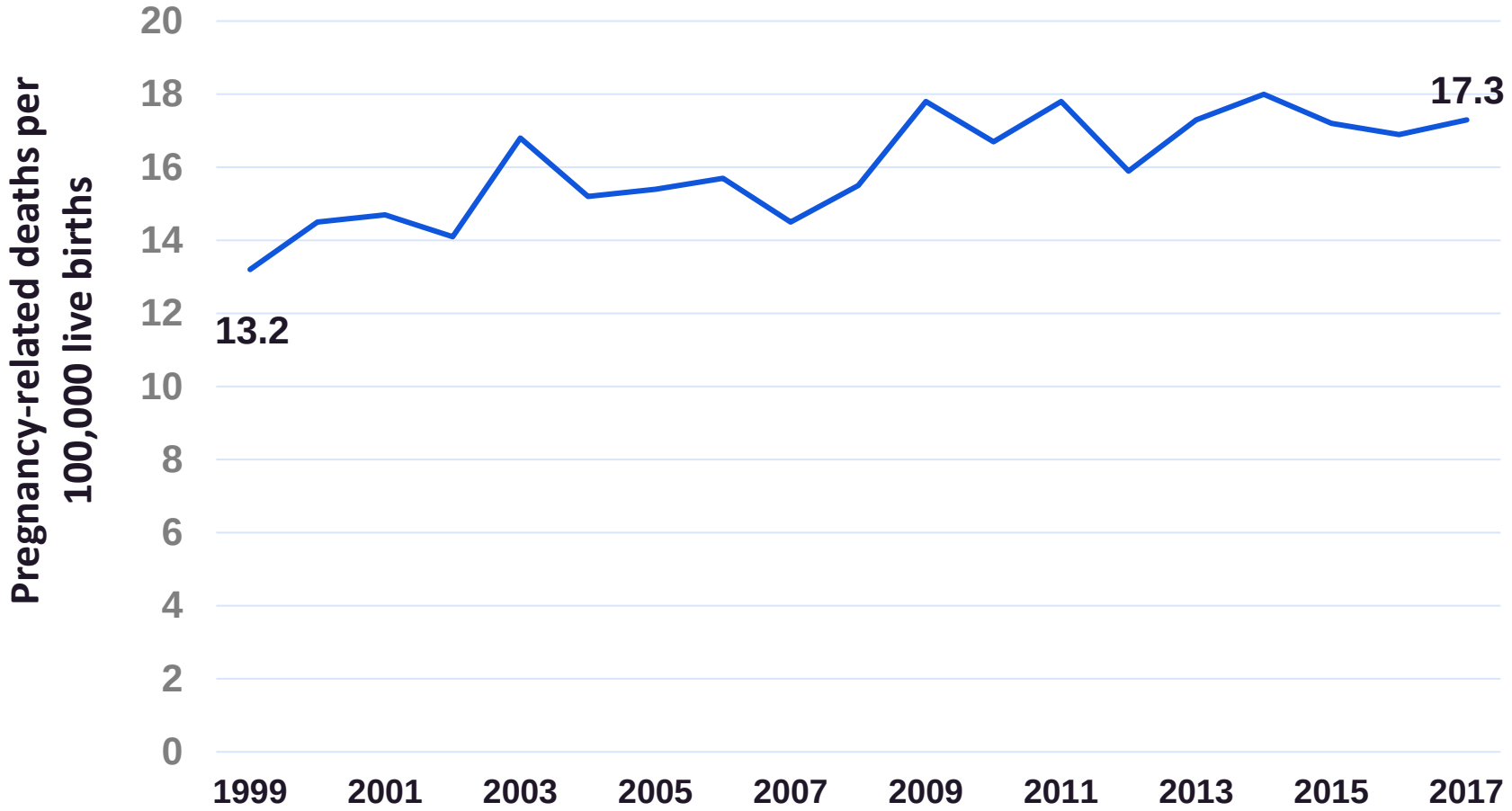
Every Maternal Death is a Tragedy

700

Each year in the U.S., about 700 women die as a result of pregnancy complications

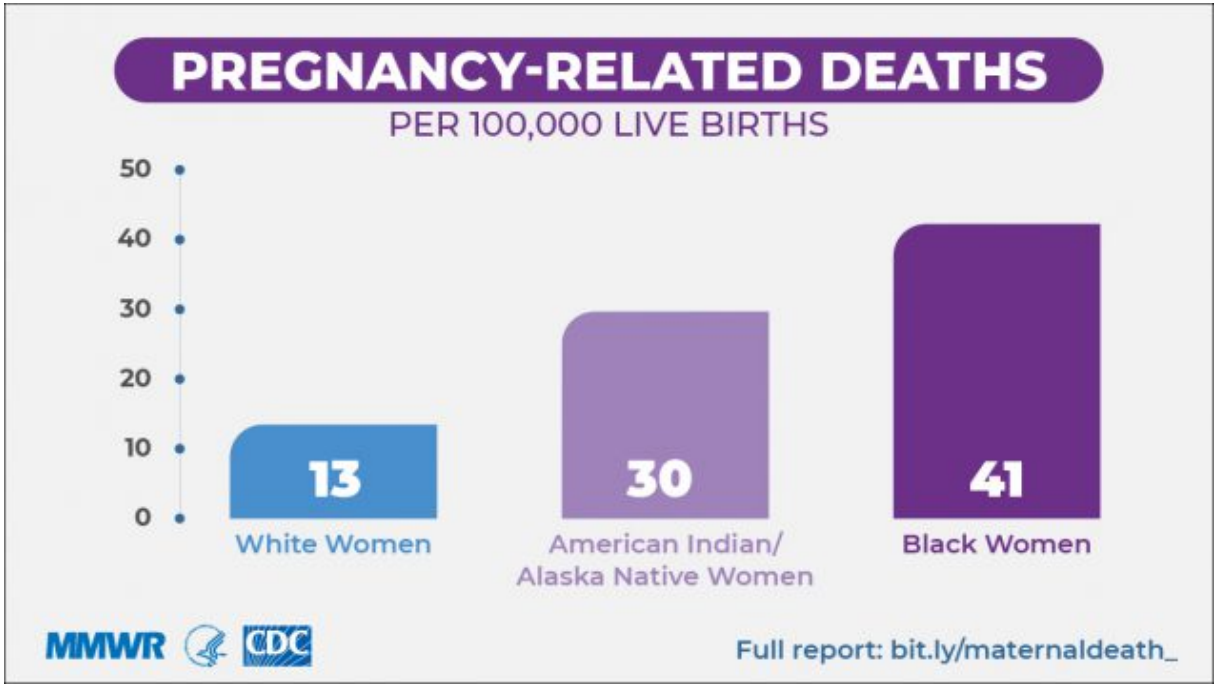
Sourced from:https://www.cdc.gov/reproductivehealth/maternal-mortality/pregnancy-mortality-surveillance-system.htm

Pregnancy-Related Mortality in the U.S., PMSS* 1999-2017



*CDC Pregnancy Mortality Surveillance System

Native American/Alaska Native and Black Women are 2 to 3 times more likely to die of pregnancy-related causes than White women



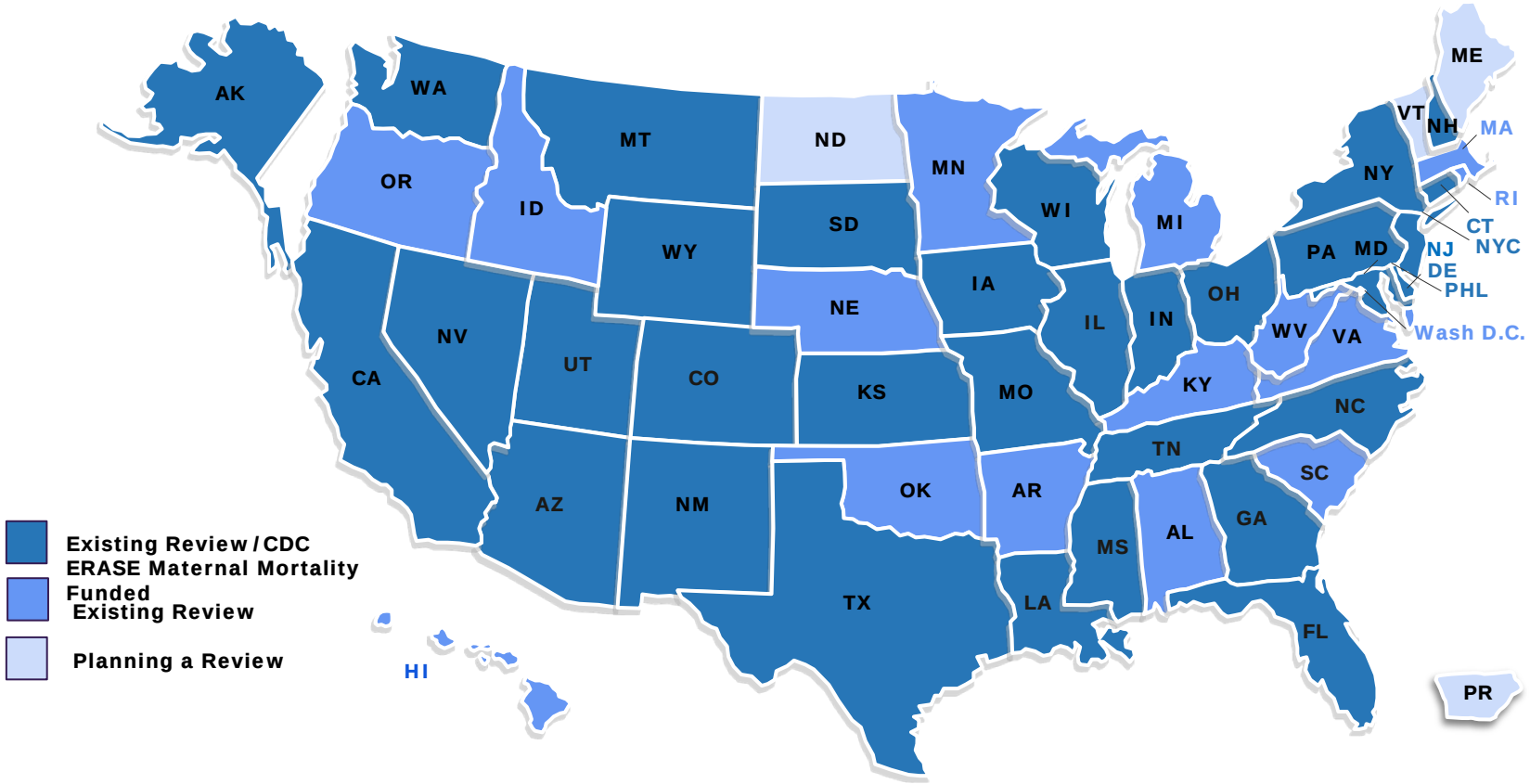
Sourced from:https://www.cdc.gov/reproductivehealth/maternal-mortality/pregnancy-mortality-surveillance-system.htm, and Petersen, EE et al. Racial/Ethnic Disparities in Pregnancy-Related Deaths-United States, 2007 - 2016

The data we have

	National (CDC) – National Vital Statistics System (NVSS)	National (CDC) – Pregnancy Mortality Surveillance System (PMSS)	State and Local Maternal Mortality Review Committees (MMRCs)
Data Source	Death certificates	Death certificates linked to fetal death and birth certificates	Death certificates linked to fetal death and birth certificates, medical records, social service records, autopsy, informant interviews, etc.
Time Frame	During pregnancy – 42 days	During pregnancy – 1 year	During pregnancy – 1 year
Source of Classification	ICD-10 codes	Medical epidemiologists	Multidisciplinary committees
Terms	Maternal death	Pregnancy associated, (Associated and) Pregnancy related, (Associated but) Not pregnancy related	Pregnancy associated, (Associated and) Pregnancy related, (Associated but) Not pregnancy related
Measure	Maternal Mortality Rate - # of Maternal Deaths per 100,000 live births	Pregnancy Related Mortality Ratio - # of Pregnancy Related Deaths per 100,000 live births	Pregnancy Related Mortality Ratio - # of Pregnancy Related Deaths per 100,000 live births
Purpose	Show national trends and provide a basis for international comparison	Analyze clinical factors associated with deaths, publish information that may lead to prevention strategies	Understand medical and non-medical contributors to deaths, prioritize interventions that effectively reduce maternal deaths

St. Pierre A, Zaharatos J, Goodman D, Callaghan WM. Challenges and opportunities in identifying, reviewing, and preventing maternal deaths. *Obstet Gynecol*. 2018;131(1):138–142.

Existing Maternal Mortality Review Committees (MMRCs)

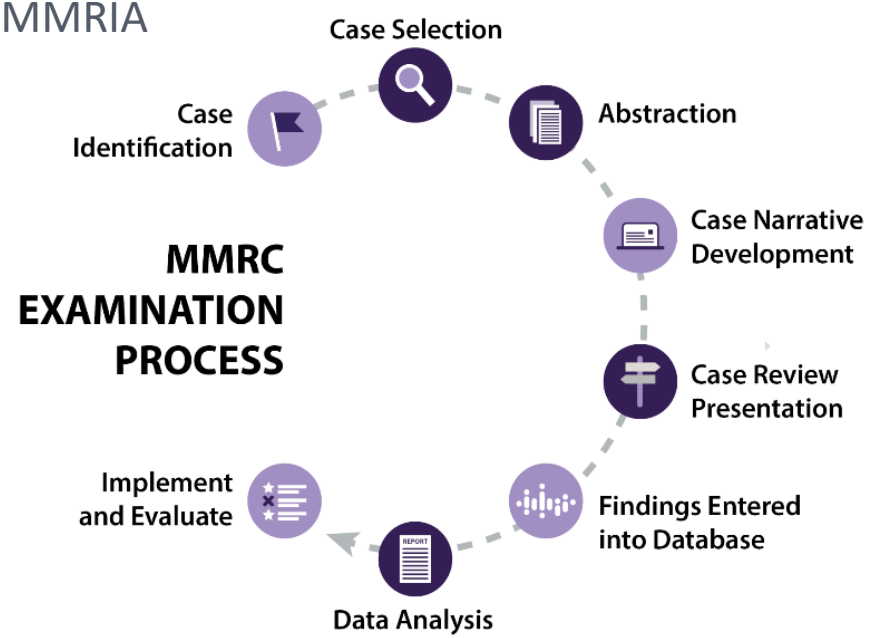


Updated 07/27/2021

Purpose of ERASE MM

Through the ERASE MM initiative CDC supports agencies to

- Identify pregnancy-associated deaths
- Abstract clinical and non-clinical data into MMRIA
- Conduct multidisciplinary reviews
- Enter committee decisions into MMRIA
- Improve data quality and timeliness
- Analyze data
- Share findings
- Inform prevention strategies



Purpose of ERASE MM

Through the ERASE MM initiative CDC supports agencies to:

- Identify pregnancy-associated deaths
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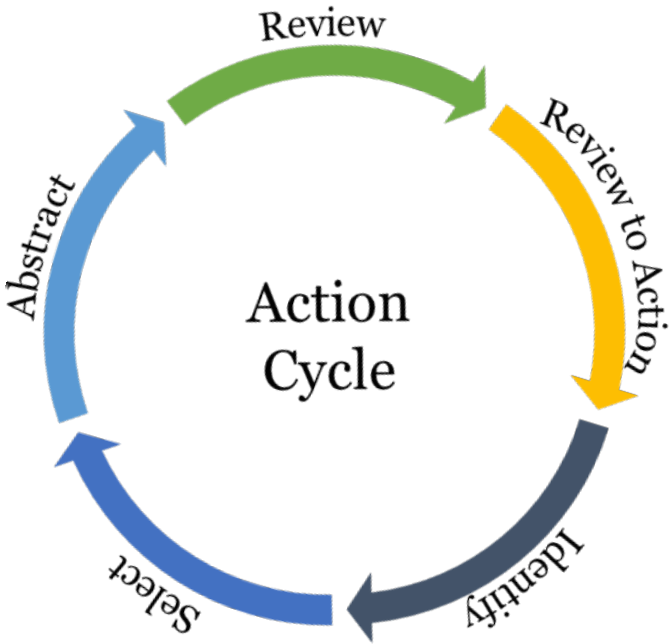
- Improve data quality and timeliness
- Analyze data
- Share findings
- Inform prevention strategies

This activity supports a nationwide approach to collecting and sharing data on maternal deaths

Improving Maternal Mortality Data

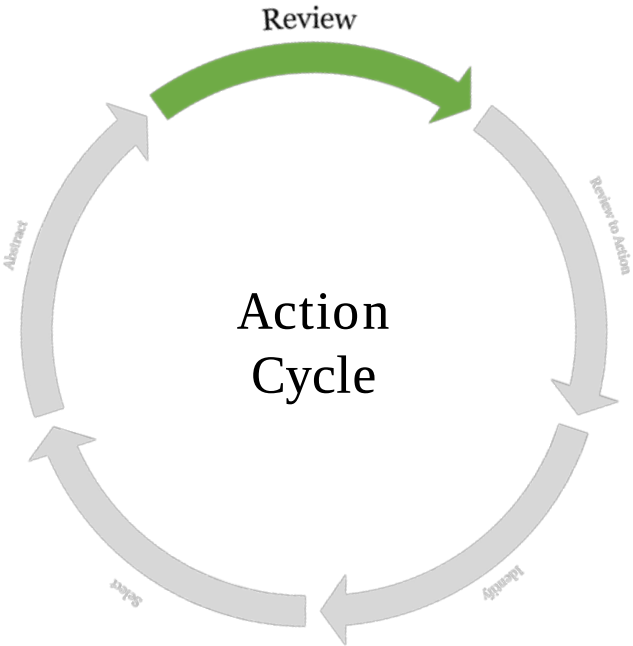
Maternal Mortality Review Committees (MMRCs): The Gold Standard for State Based Data on Maternal Mortality

- Part of an ongoing quality improvement cycle
- Incorporates multidisciplinary expertise, typically staffed by/hosted by public health agency
- Leads to understanding of the drivers of a maternal death and determination of what interventions will have the most impact at patient, provider, facility, system and community level to prevent future deaths



Guiding Questions for Review Committees

- Was the death pregnancy-related?
- What was the underlying cause of death?
- Was the death preventable?
- What are the contributing factors to the death?
- What specific and feasible actions might have changed the course of events?



Sourced from: Review to Action (https://reviewtoaction.org/)

Review


Present *selected* cases to the MMRC using the case narrative
MMRC discusses and makes key decisions about each death
Enter key decisions into MMRIA

Review


Present *selected* cases to the MMRC using the case narrative
MMRC discusses and makes key decisions about each death
Enter key decisions into MMRIA

Review: Present selected cases

Present *selected* cases to the MMRC using the case narrative

MMRIA MOCK CASE: CARDIOMYOPATHY CASE NARRATIVE

She died with cause of death listed on the death certificate as cardiogenic shock secondary to due to non-ST elevated myocardial infarction (NSTEMI), six weeks after delivery. Medical histo developing heart failure and asthma after her delivery in 2005. Pre-pregnancy body mass inde medical history was significant for having a brother who passed away from cardiac disease at

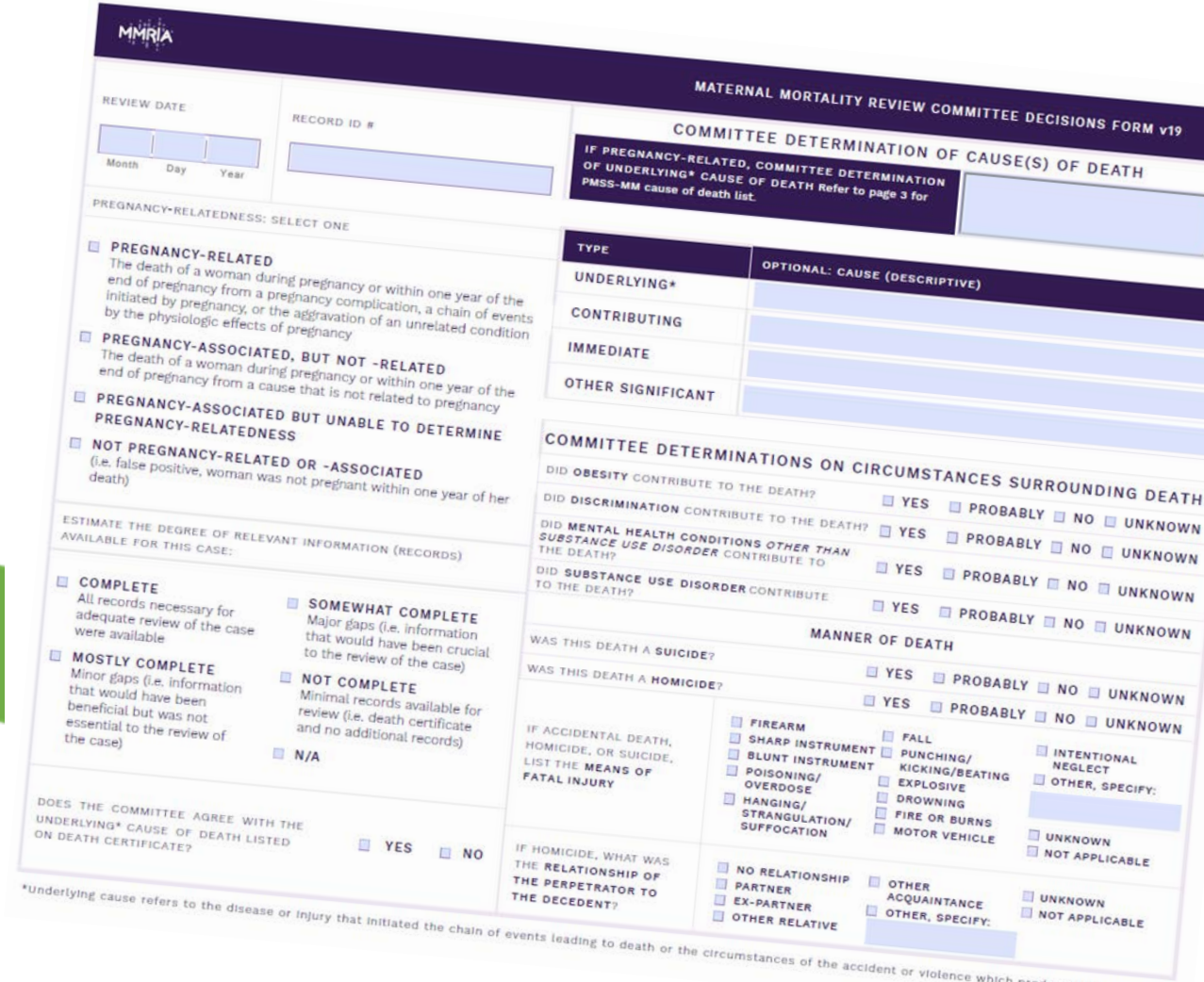
Entry into prenatal care was at 36 weeks with four visits at a hospital clinic with an obstetricia significant for late entry into care and anemia. There were no referrals made during the prena pregnancy was her 6th pregnancy. She had a past OB history of 4 preterm births and one first pregnancy. There were no noted health events prior to delivery. She presented to hospital at induction/augmentation of labor. On admission, she requested that her sister adopt infant an

Review


Present *selected* cases to the MMRC using the case narrative
MMRC discusses and makes key decisions about each death
Enter key decisions into MMRIA

Review: Discuss and decide

MMRC discusses and makes key decisions about each death



MMRIA

MATERNAL MORTALITY REVIEW COMMITTEE DECISIONS FORM v19

REVIEW DATE
Month Day Year

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
- PREGNANCY-ASSOCIATED BUT UNABLE TO DETERMINE PREGNANCY-RELATEDNESS
- 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

IF PREGNANCY-RELATED, COMMITTEE DETERMINATION OF UNDERLYING* CAUSE OF DEATH Refer to page 3 for PMSS-MM cause of death list.

TYPE	OPTIONAL: CAUSE (DESCRIPTIVE)
UNDERLYING*	
CONTRIBUTING	
IMMEDIATE	
OTHER SIGNIFICANT	

COMMITTEE DETERMINATIONS ON CIRCUMSTANCES SURROUNDING DEATH

DID OBESITY CONTRIBUTE TO THE DEATH? YES PROBABLY NO UNKNOWN

DID DISCRIMINATION CONTRIBUTE TO THE DEATH? YES PROBABLY NO UNKNOWN

DID MENTAL HEALTH CONDITIONS OTHER THAN SUBSTANCE USE DISORDER CONTRIBUTE TO THE DEATH? YES PROBABLY NO UNKNOWN

DID SUBSTANCE USE DISORDER CONTRIBUTE TO THE DEATH? YES PROBABLY NO UNKNOWN

MANNER OF DEATH

WAS THIS DEATH A SUICIDE? YES PROBABLY NO UNKNOWN

WAS THIS DEATH A HOMICIDE? YES PROBABLY NO UNKNOWN

IF ACCIDENTAL DEATH, HOMICIDE, OR SUICIDE, 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?

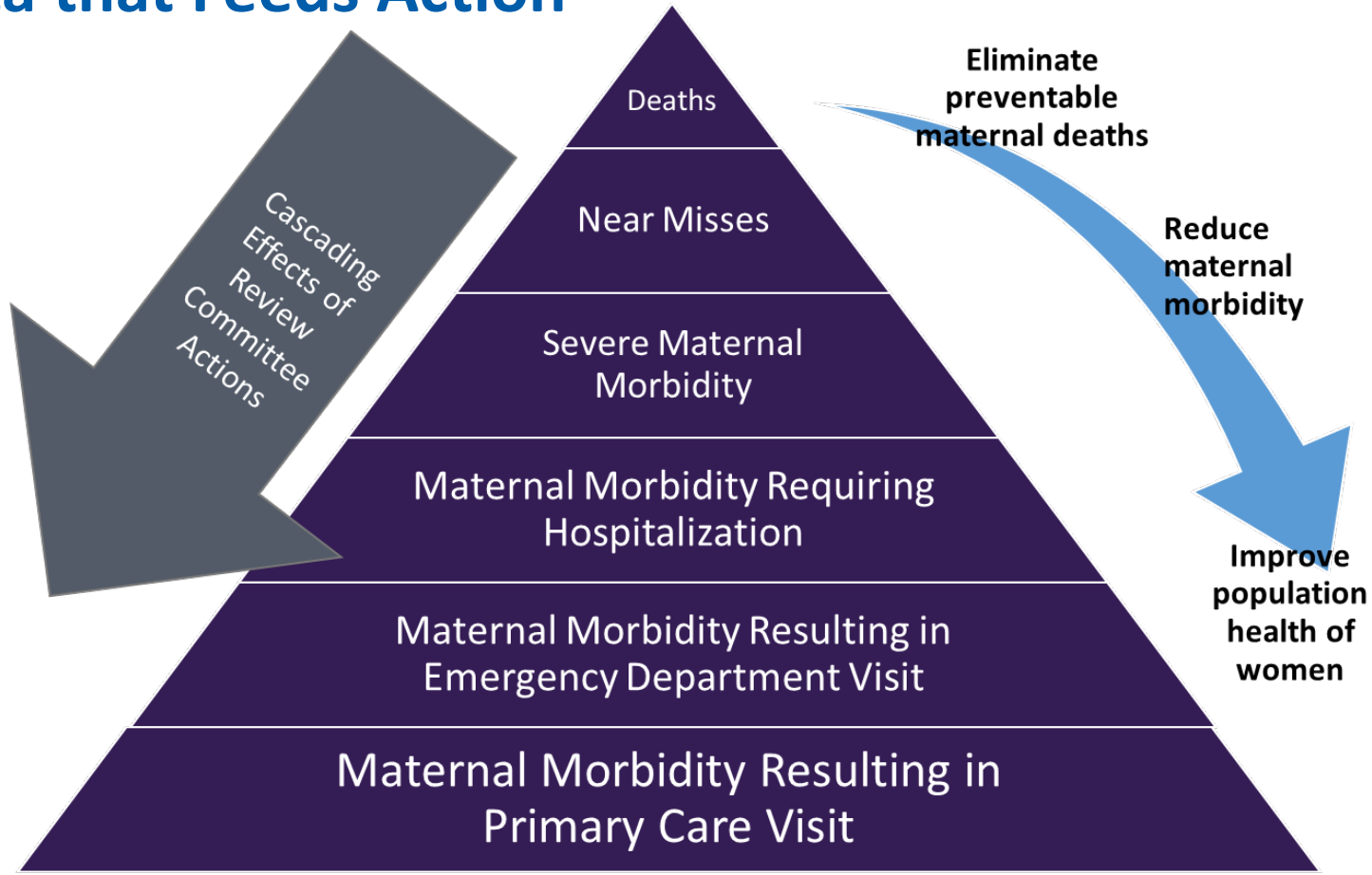
- NO RELATIONSHIP
- PARTNER
- EX-PARTNER
- OTHER RELATIVE
- OTHER ACQUAINTANCE
- OTHER, SPECIFY:
- UNKNOWN
- NOT APPLICABLE

*Underlying cause refers to the disease or injury that initiated the chain of events leading to death or the circumstances of the accident or violence which produced the fatal injury

MMRIA Committee Decisions Form
What does it provide?

- A synthesis of various forms from MMRCs around the U.S.
- A common language for MMRCs
- A way to collect data that feeds ACTION!

Data that Feeds Action



What does the form NOT provide?

- A perfect way to cleanly capture every possible cause, manner and contributor to every possible maternal death

…and never will

Case Narrative – refer to attachments for full narrative

She died with cause of death listed on the death certificate as cardiogenic shock secondary to peripartum cardiomyopathy due to non-ST elevated myocardial infarction (NSTEMI), six weeks after delivery. Medical history was significant for developing heart failure and asthma after her delivery in 2005. Pre-pregnancy body mass index (BMI) was 33.8. Her family medical history was significant for having a brother who passed away from cardiac disease at age 19.

Entry into prenatal care was at 36 weeks with four visits at a hospital clinic with an obstetrician (OB). Prenatal history was significant for late entry into care and anemia. There were no referrals made during the prenatal period. The sentinel pregnancy was her 6th. She had a past OB history of 4 preterm births. There were no noted health events prior to delivery.

She presented to hospital at 38.3 weeks' gestation for induction/augmentation of labor. On admission, she requested that her sister adopt infant and a social service consult was made. Delivery was by an OB, method was spontaneous vaginal delivery with epidural anesthesia. No obstetric complications noted. Infant was 38 weeks' gestation and weighed 7 lbs., 2 oz., Apgar scores were 9 and 9. Day after delivery, she developed dry cough, chest x-ray (CXR) was negative. Social service consult completed for adoption request but due to potential for lengthy paternity legal issues, adoption plans were to be formalized after discharge. Mother and infant were discharged to home.

She had an early postpartum visit at 2 weeks. At visit, she complained of being tired and still having pain. Edema noted in lower extremities, and she was encouraged to ambulate more and quit smoking. Advised to continue with Motrin every 6 hours for pain and to call if pain does not go away. Two days later, she presented to emergency department (ED) (same as delivery facility) with complaints of right-sided chest pain and shortness of breath x 2 hours. Studies negative for pulmonary embolus. CXR and CT scan noted cardiomegaly consistent with postpartum state. EKG noted sinus tachycardia. Pain relieved with narcotics, and she was discharged home with instructions to follow up with her primary care physician. Three weeks later, she presented to a different ED c/o shortness of breath and chest pain. She was diagnosed with NSTEMI and cardiogenic shock and admitted to ICU. Seven hours after admission, she was transferred out to higher level cardiac care. Cardiac catheterization was completed. Cardiac support given but she died seven days after admission. The case was not referred to the medical examiner and no autopsy was performed.

Six key questions of MMRCs

1. Was the death pregnancy-related?
2. What was the underlying cause of death?
3. Was the death preventable?
4. What factors contributed to the death?
5. What are recommendations that address the contributing factors?
6. What are the expected impacts if those recommendations were acted on?

Pregnancy-Relatedness

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
- ☐ **PREGNANCY-ASSOCIATED BUT UNABLE TO DETERMINE PREGNANCY-RELATEDNESS**
- ☐ **NOT PREGNANCY-RELATED OR -ASSOCIATED**
  (i.e. false positive, woman was not pregnant within one year of her death)

Pregnancy-Relatedness

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
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- ☐ **PREGNANCY-ASSOCIATED BUT UNABLE TO DETERMINE PREGNANCY-RELATEDNESS**
- ☐ **NOT PREGNANCY-RELATED OR -ASSOCIATED**
  (i.e. false positive, woman was not pregnant within one year of her death)

If she had not been pregnant would she have died?

MMRIA

MATERNAL MORTALITY REVIEW COMMITTEE DECISIONS FORM v21 1

REVIEW DATE

Month/Day/Year

RECORD ID #

COMMITTEE DETERMINATION OF CAUSE(S) OF DEATH

IF PREGNANCY-RELATED, COMMITTEE DETERMINATION OF UNDERLYING* CAUSE OF DEATH
Refer to page 3 for PMSS-MM cause of death list.

80.1 - Postpartum/Peripartum Cardion

1

PREGNANCY-RELATEDNESS: SELECT ONE

- [x] **PREGNANCY-RELATED**
  A death 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**
  A death during pregnancy or within one year of the end of pregnancy from a cause that is not related to pregnancy
- [ ] **PREGNANCY-ASSOCIATED BUT UNABLE TO DETERMINE PREGNANCY-RELATEDNESS**

TYPE	OPTIONAL: CAUSE (DESCRIPTIVE)
UNDERLYING*	Peripartum cardiomyopathy
CONTRIBUTING	
IMMEDIATE	
OTHER SIGNIFICANT	

ESTIMATE THE DEGREE OF RELEVANT INFORMATION (RECORDS) AVAILABLE FOR THIS CASE:

- [ ] **COMPLETE**
  All records necessary for adequate review of the case were available
- [x] **SOMEWHAT COMPLETE**
  Major gaps (i.e, information that would have been crucial to the review of the case)
- [ ] **MOSTLY COMPLETE**
  Minor gaps (i.e, information that would have been beneficial but was not essential 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? [x] YES [ ] NO

COMMITTEE DETERMINATIONS ON CIRCUMSTANCES SURROUNDING DEATH

	YES	PROBABLY	NO	UNKNOWN
DID **OBESITY** CONTRIBUTE TO THE DEATH?	[ ]	[x]	[ ]	[ ]
DID **DISCRIMINATION**** CONTRIBUTE TO THE DEATH?	[ ]	[ ]	[ ]	[ ]
DID **MENTAL HEALTH CONDITIONS** *OTHER THAN SUBSTANCE USE DISORDER* CONTRIBUTE TO THE DEATH?	[ ]	[ ]	[x]	[ ]
DID **SUBSTANCE USE DISORDER** CONTRIBUTE TO THE DEATH?	[ ]	[ ]	[x]	[ ]

MANNER OF DEATH

	YES	PROBABLY	NO	UNKNOWN
WAS THIS DEATH A SUICIDE?	[ ]	[ ]	[x]	[ ]
WAS THIS DEATH A HOMICIDE?	[ ]	[ ]	[x]	[ ]

IF ACCIDENTAL DEATH, HOMICIDE, OR SUICIDE, 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
- [ ] ACQUAINTANCE
- [ ] OTHER, SPECIFY:
- [ ] UNKNOWN
- [ ] NOT APPLICABLE

*Underlying cause refers to the disease or injury that initiated the chain of events leading to death or the circumstances of the accident or violence which produced the fatal injury.
**Encompasses Discrimination, Interpersonal Racism, and Structural Racism as described on page 4.

Why?

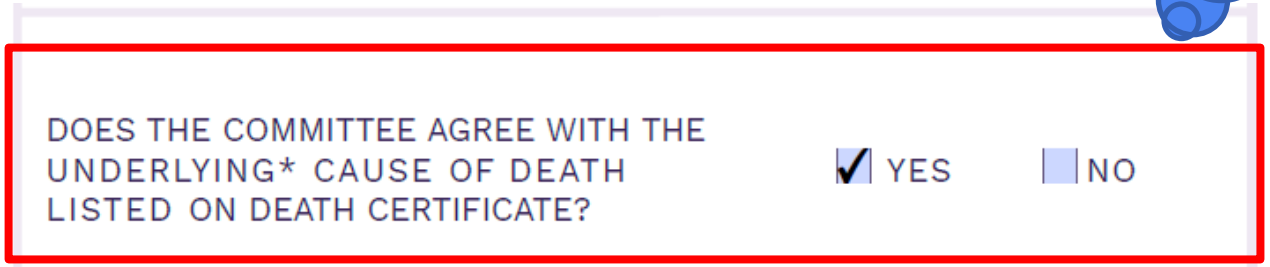
Aggregate at end of year(s) of review; consider whether you need better access to records and use this data to communicate that to relevant stakeholders

ESTIMATE THE DEGREE OF RELEVANT INFORMATION (RECORDS) AVAILABLE FOR THIS CASE:

- ☐ COMPLETE
  All records necessary for adequate review of the case were available
- ☑ SOMEWHAT COMPLETE
  Major gaps (i.e, information that would have been crucial to the review of the case)
- ☐ MOSTLY COMPLETE
  Minor gaps (i.e, information that would have been beneficial but was not essential to the review of the case)
- ☐ NOT COMPLETE
  Minimal records available for review (i.e, death certificate and no additional records)
- ☐ N/A

Why?

Highlight differences in committee findings vs. death certificate findings



Underlying Cause of Death

The disease or injury which initiated the train of events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury

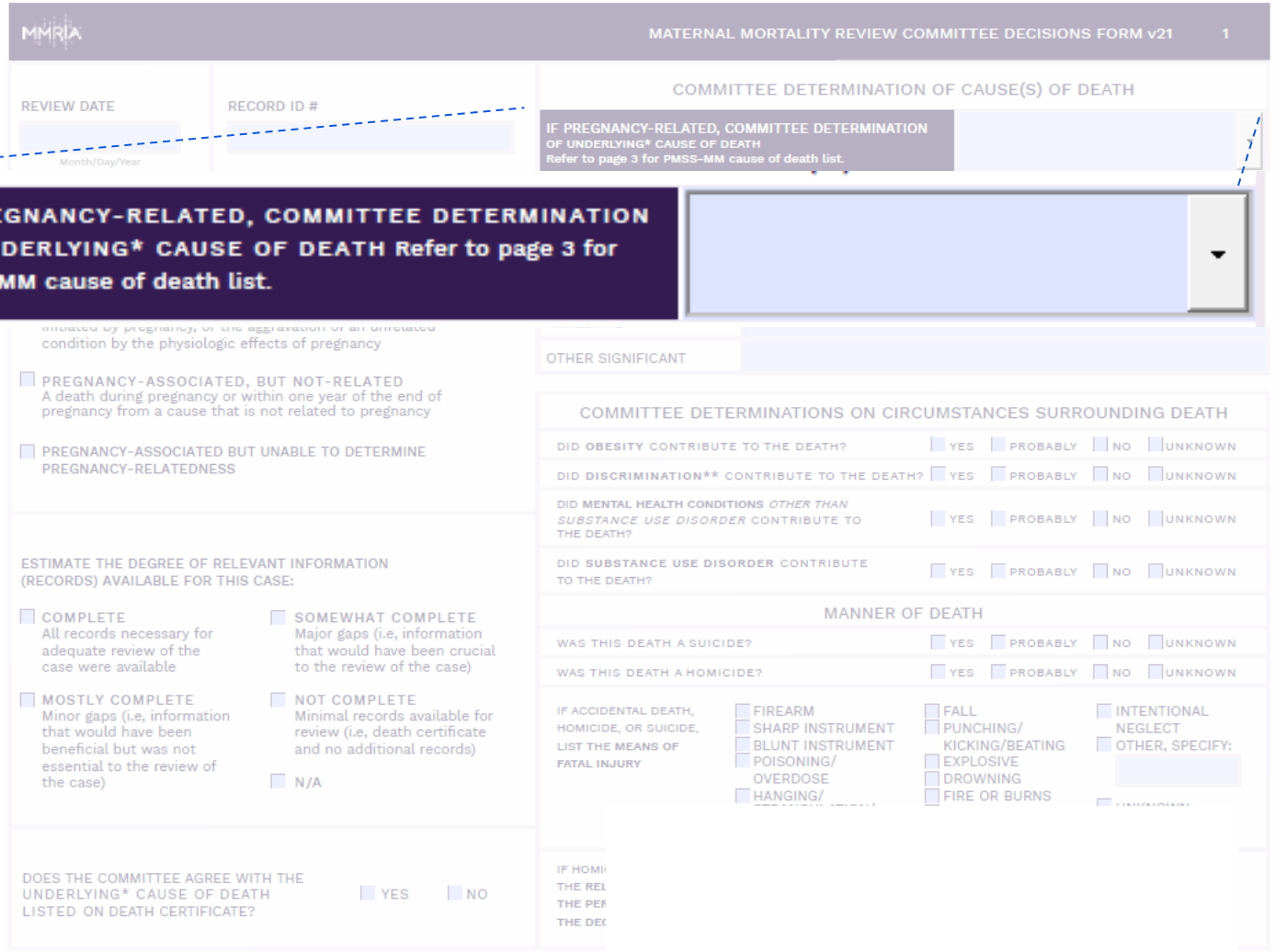
CAUSE OF DEATH (See instructions and examples)

32. **PART I.** Enter the chain of events--diseases, injuries, or complications--that directly caused the death. DO NOT enter terminal events such as cardiac arrest, respiratory arrest, or ventricular fibrillation without showing the etiology. DO NOT ABBREVIATE. Enter only one cause on a line. Add additional lines if necessary.

IMMEDIATE CAUSE (Final disease or condition ---------> resulting in death)	a.	Multisystem Organ Failure
		Due to (or as a consequence of):
Sequentially list conditions, if any, leading to the cause listed on line a. Enter the **UNDERLYING CAUSE** (disease or injury that initiated the events resulting in death) **LAST**	b.	Disseminated Intravascular Coagulopathy
		Due to (or as a consequence of):
	c.	Postpartum Hemorrhage/ Status Post Cesarean Section
		Due to (or as a consequence of):
	d.	

Underlying Cause

the disease or injury which initiated the train of events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury



IF PREGNANCY-RELATED, COMMITTEE DETERMINATION OF UNDERLYING CAUSE OF DEATH* PMSS-MM

* PREGNANCY-RELATED DEATH: DEATH 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.

Hemorrhage (Excludes Aneurysms or CVA)
10.1 - Hemorrhage – Uterine Rupture
10.2 - Placental Abruption
10.3 - Placenta Previa
10.4 - Ruptured Ectopic Pregnancy
10.5 - Hemorrhage – Uterine Atony/Postpartum Hemorrhage
10.6 - Placenta Accreta/Increta/Percreta
10.7 - Hemorrhage due to Retained Placenta
10.10 - Hemorrhage – Laceration/Intra-Abdominal Bleeding
10.9 - Other Hemorrhage/NOS

Infection
20.1 - Postpartum Genital Tract (e.g,, of the Uterus/ Pelvis/Perineum/Necrotizing Fasciitis)
20.2 - Sepsis/Septic Shock
20.4 - Chorioamnionitis/Antepartum Infection
20.6 - Urinary Tract Infection
20.7 - Influenza
20.8 - COVID-19
20.10 - Pneumonia
20.11 - Other Non-Pelvic Infection (e.g,, TB, Meningitis, HIV)
20.9 - Other Infection/NOS

Embolism - Thrombotic (Non-Cerebral)
30.1 - Embolism – Thrombotic (Non-Cerebral)
30.9 - Other Embolism (Excludes Amniotic Fluid Embolism)/NOS

Amniotic Fluid Embolism
31.1 - Embolism - Amniotic Fluid

Hypertensive Disorders of Pregnancy
40.1 - Preeclampsia
50.1 - Eclampsia
60.1 - Chronic Hypertension with Superimposed Preeclampsia

Anesthesia Complications
70.1 - Anesthesia Complications

Cardiomyopathy
80.1 - Postpartum/Peripartum Cardiomyopathy
80.2 - Hypertrophic Cardiomyopathy
80.9 - Other Cardiomyopathy/NOS

Hematologic
82.1 - Sickle Cell Anemia
82.9 - Other Hematologic Conditions including Thrombophilias/TTP/HUS/NOS

Collagen Vascular/Autoimmune Diseases
83.1 - Systemic Lupus Erythematosus (SLE)
83.9 - Other Collagen Vascular Diseases/NOS

Conditions Unique to Pregnancy
85.1 - Conditions Unique to Pregnancy (e.g, Gestational Diabetes, Hyperemesis, Liver Disease of Pregnancy)

Injury
88.1 - Intentional (Homicide)
88.2 - Unintentional
88.9 - Unknown Intent/NOS

Cancer
89.1 - Gestational Trophoblastic Disease (GTD)
89.3 - Malignant Melanoma
89.9 - Other Malignancy/NOS

Cardiovascular Conditions
90.1 - Coronary Artery Disease/Myocardial Infarction (MI)/Atherosclerotic Cardiovascular Disease
90.2 - Pulmonary Hypertension
90.3 - Valvular Heart Disease Congenital and Acquired
90.4 - Vascular Aneurysm/Dissection (Non-Cerebral)
90.5 - Hypertensive Cardiovascular Disease
90.6 - Marfan Syndrome
90.7 - Conduction Defects/Arrhythmias
90.8 - Vascular Malformations Outside Head and Coronary Arteries
90.9 - Other Cardiovascular Disease, including CHF, Cardiomegaly, Cardiac Hypertrophy, Cardiac Fibrosis, Non-Acute Myocarditis/NOS

Pulmonary Conditions (Excludes ARDS-Adult Respiratory Distress Syndrome)
91.1 - Chronic Lung Disease
91.2 - Cystic Fibrosis
91.3 - Asthma
91.9 - Other Pulmonary Disease/NOS

Neurologic/Neurovascular Conditions (Excluding CVA)
92.1 - Epilepsy/Seizure Disorder
92.9 - Other Neurologic Disease/NOS

Renal Disease
93.1 - Chronic Renal Failure/End-Stage Renal Disease (ESRD)
93.9 - Other Renal Disease/NOS

Cerebrovascular Accident not Secondary to Hypertensive Disorders of Pregnancy
95.1 - Cerebrovascular Accident (Hemorrhage/ Thrombosis/Aneurysm/Malformation) not Secondary to Hypertensive Disorders of Pregnancy

Metabolic/Endocrine
96.2 - Diabetes Mellitus
96.9 - Other Metabolic/Endocrine Disorder/NOS

Gastrointestinal Disorders
97.1 - Crohn's Disease/Ulcerative Colitis
97.2 - Liver Disease/Failure/Transplant
97.9 - Other Gastrointestinal Disease/NOS

Mental Health Conditions
100.1 - Depressive Disorder
100.2 - Anxiety Disorder (including Post-Traumatic Stress Disorder)
100.3 - Bipolar Disorder
100.4 - Psychotic Disorder
100.5 - Substance Use Disorder
100.9 - Other Psychiatric Condition/NOS

Unknown COD
999.1 - Unknown COD

NCHS Training - Improving Cause of Death Reporting (cdc.gov)

Improving Cause of Death Reporting

Committee Decisions: Underlying Cause of Death

Optional:

TYPE	OPTIONAL: CAUSE (DESCRIPTIVE)
UNDERLYING*	
CONTRIBUTING	
IMMEDIATE	
OTHER SIGNIFICANT	

COMMITTEE DETERMINATIONS ON CIRCUMSTANCES SURROUNDING DEATH

DID **OBESITY** CONTRIBUTE TO THE DEATH?	☐ YES	☑ PROBABLY	☐ NO	☐ UNKNOWN
DID **DISCRIMINATION**** CONTRIBUTE TO THE DEATH?	☐ YES	☑ PROBABLY	☐ NO	☐ UNKNOWN
DID **MENTAL HEALTH CONDITIONS** *OTHER THAN SUBSTANCE USE DISORDER* CONTRIBUTE TO THE DEATH?	☐ YES	☐ PROBABLY	☑ NO	☐ UNKNOWN
DID **SUBSTANCE USE DISORDER** CONTRIBUTE TO THE DEATH?	☐ YES	☐ PROBABLY	☑ NO	☐ UNKNOWN

MANNER OF DEATH

WAS THIS DEATH A SUICIDE?	☐ YES	☐ PROBABLY	☑ NO	☐ UNKNOWN
WAS THIS DEATH A HOMICIDE?	☐ YES	☐ PROBABLY	☑ NO	☐ UNKNOWN

IF ACCIDENTAL DEATH, HOMICIDE, OR SUICIDE, **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
- ☐ ACQUAINTANCE
- ☐ OTHER, SPECIFY:
- ☐ UNKNOWN
- ☐ NOT APPLICABLE

COMMITTEE DETERMINATIONS ON CIRCUMSTANCES SURROUNDING DEATH

DID **OBESITY** CONTRIBUTE TO THE DEATH?	☐ YES	☑ PROBABLY	☐ NO	☐ UNKNOWN
DID **DISCRIMINATION**** CONTRIBUTE TO THE DEATH?	☐ YES	☑ PROBABLY	☐ NO	☐ UNKNOWN
DID **MENTAL HEALTH CONDITIONS** *OTHER THAN SUBSTANCE USE DISORDER* CONTRIBUTE TO THE DEATH?	☐ YES	☐ PROBABLY	☑ NO	☐ UNKNOWN
DID **SUBSTANCE USE DISORDER** CONTRIBUTE TO THE DEATH?	☐ YES	☐ PROBABLY	☑ NO	☐ UNKNOWN

MANNER OF DEATH

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- ☐ ACQUAINTANCE
- ☐ OTHER, SPECIFY:
- ☐ UNKNOWN
- ☐ NOT APPLICABLE

Committee Decisions: 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.

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 ☐ NO CHANCE	☐ SOME CHANCE ☐ UNABLE TO DETERMINE

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

3

IBUTING FACTORS AND RECOMMENDATIONS FOR ACTION (Entries may continue to grid on page 5)

IBUTING FACTORS WORKSHEET

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

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?

DESCRIPTION OF ISSUE (enter a description for EACH contributing factor listed)	CONTRIBUTING FACTORS (choose as many as needed below)	LEVEL	COMMITTEE RECOMMENDATIONS [Who?] should [do what?] [when?] Map recommendations to contributing factors.	LEVEL	PREVENTION TYPE (choose below)	EXPECTED IMPACT (choose below)

Recommendations are structured to denote at which level preventability may have occurred:

WHO is the entity/agency who would have been/be responsible for the intervention?*	**WHAT** is the intervention and **WHERE** is the intervention point? o Patient/Family o Provider o Facility o System o Community	**WHEN** is the proposed intervention point?* • Among women of reproductive age ("preconception") • During and after pregnancy o Labor & Delivery (L&D) o Prior to L&D hospitalization discharge o First 6 weeks after pregnancy o 42-365 days after pregnancy

*Enter recommendation at the relevant level (Patient/Family, Provider, Facility, System, Community).

Contributing Factors and Recommend-ations for Action

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 AND RECOMMENDATIONS FOR ACTION (Entries may continue to grid on page 5)

CONTRIBUTING FACTORS WORKSHEET
What were the factors that contributed to this death?
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CONTRIBUTING FACTOR KEY (DESCRIPTIONS ON PAGE 4)

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

DEFINITION OF LEVELS

- **PATIENT/FAMILY:** An individual before, during or after a pregnancy, and their family, internal or external to the household, with influence on the individual
- **PROVIDER:** An individual with training and expertise who provides care, treatment, and/or advice
- **FACILITY:** A physical location where direct care is provided - ranges from small clinics and urgent care centers to hospitals with trauma centers
- **SYSTEM:** Interacting entities that support services before, during, or after a pregnancy - ranges from healthcare systems and payors to public services and programs
- **COMMUNITY:** A grouping based on a shared sense of place or identity - ranges from physical neighborhoods to a community based on common interests and shared circumstances

PREVENTION TYPE

- **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 what has become an ongoing contributing factor (i.e, management of complications)

EXPECTED IMPACT

- **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 (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.)

CONTRIBUTING FACTOR KEY (DESCRIPTIONS ON PAGE 4)

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- Adherence
- Assessment
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- Clinical skill/ quality of care
- Communication
- Continuity of care/ care coordination
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- Other

CONTRIBUTING FACTORS AND RECOMMENDATIONS FOR ACTION (Entries may continue to grid on page 5)

CONTRIBUTING FACTORS WORKSHEET

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

RECOMMENDATIONS OF THE COMMITTEE

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- Other

See Pg. 4 for factor descriptions

MMRIA committee decisions form (https://reviewtoaction.org/content/matern

Contributing Factor Descriptions

LACK OF **ACCESS/FINANCIAL** RESOURCES
System issues, e.g. lack or loss of healthcare insurance or other financial duress, as opposed to woman's noncompliance, impacted woman's ability to care for herself (e.g. did not seek services because unable to miss work or afford postpartum visits after insurance expired). Other barriers to accessing care: insurance non-eligibility, provider shortage in woman's geographical area, and lack of public transportation.

ADHERENCE TO MEDICAL RECOMMENDATIONS
The provider or patient did not follow protocol or failed to comply with standard procedures (i.e. non adherence to prescribed medications).

FAILURE TO SCREEN/INADEQUATE **ASSESSMENT** OF RISK
Factors placing the woman at risk for a poor clinical outcome recognized, and the woman was not transferred/transported to a provider able to give a higher level of care.

CHILDHOOD SEXUAL ABUSE/TRAUMA
The patient experienced rape, molestation, or one or more of the following: sexual exploitation during childhood plus persuasion, inducement, or coercion of a child to engage in sexually explicit conduct; physical or emotional abuse or violence other than that related to sexual abuse during childhood.

CHRONIC DISEASE
Occurrence of one or more significant pre-existing medical conditions (e.g. obesity, cardiovascular disease, or diabetes).

CLINICAL SKILL/QUALITY OF CARE (PROVIDER OR FACILITY PERSPECTIVE)
Personnel were not appropriately skilled for the situation or did not exercise clinical judgment consistent with current standards of care (e.g. error in the preparation or administration of medication or unavailability of translation services).

POOR **COMMUNICATION**/LACK OF CASE COORDINATION OR MANAGEMENT/ LACK OF CONTINUITY OF CARE (SYSTEM PERSPECTIVE)
Care was fragmented (i.e. uncoordinated or not comprehensive) among or between healthcare facilities or units, (e.g. records not available between inpatient and outpatient or among units within the hospital, such as Emergency Department and Labor and Delivery).

LACK OF **CONTINUITY OF CARE** (PROVIDER OR FACILITY PERSPECTIVE)
Care providers did not have access to woman's complete records or did not communicate woman's status sufficiently. Lack of continuity can be between prenatal, labor and delivery, and postpartum providers.

CULTURAL/RELIGIOUS, OR LANGUAGE FACTORS Demonstration that any of these factors was either a barrier to care due to lack of understanding or led to refusal of therapy due to beliefs (or belief systems).

DELAY
The provider or patient was delayed in referring or accessing care, treatment, or follow-up care/action.

DISCRIMINATION
Treating someone less or more favorably based on the group, class or category they belong to resulting from biases, prejudices, and stereotyping. It can manifest as differences in care, clinical communication and shared decision-making. (Smedley et al, 2003 and Dr. Rachel Hardeman)

ENVIRONMENTAL FACTORS
Factors related to weather or social environment.

INADEQUATE OR UNAVAILABLE **EQUIPMENT/TECHNOLOGY**
Equipment was missing, unavailable, or not functional, (e.g. absence of blood tubing connector).

INTERPERSONAL RACISM
Discriminatory interactions between individuals based on differential assumptions about the abilities, motives, and intentions of others and resulting in differential actions toward others based on their race. It can be conscious as well as unconscious, and it includes acts of commission and acts of omission. It manifests as lack of respect, suspicion, devaluation, scapegoating, and dehumanization. (Jones, CP, 2000 and Dr. Cornelia Graves).

KNOWLEDGE - LACK OF KNOWLEDGE REGARDING IMPORTANCE OF EVENT OR OF TREATMENT OR FOLLOW-UP
The provider or patient did not receive adequate education or lacked knowledge or understanding regarding the significance of a health event (e.g. shortness of breath as a trigger to seek immediate care) or lacked understanding about the need for treatment/follow-up after evaluation for a health event (e.g. needed to keep appointment for psychiatric referral after an ED visit for exacerbation of depression).

INADEQUATE **LAW ENFORCEMENT** RESPONSE
Law enforcement response was not in a timely manner or was not appropriate or thorough in scope.

LEGAL
Legal considerations that impacted outcome.

MENTAL HEALTH CONDITIONS
The patient carried a diagnosis of a psychiatric disorder. This includes postpartum depression.

INADEQUATE COMMUNITY **OUTREACH**/RESOURCES
Lack of coordination between healthcare system and other outside agencies/organizations in the geographic/cultural area that work with maternal health issues.

LACK OF STANDARDIZED **POLICIES/PROCEDURES**
The facility lacked basic policies or infrastructure germane to the woman's needs (e.g. response to high blood pressure, or a lack of or outdated policy or protocol).

LACK OF **REFERRAL** OR CONSULTATION
Specialists were not consulted or did not provide care; referrals to specialists were not made.

STRUCTURAL RACISM
The systems of power based on historical injustices and contemporary social factors that systematically disadvantage people of color and advantage white people through inequities in housing, education, employment, earnings, benefits, credit, media, health care, criminal justice, etc. – (Adapted from Bailey ZD. Lancet. 2017 and Dr. Carla Ortique)

SOCIAL SUPPORT/ISOLATION - LACK OF FAMILY/ FRIEND OR SUPPORT SYSTEM
Social support from family, partner, or friends was lacking, inadequate, and/or dysfunctional.

SUBSTANCE USE DISORDER – ALCOHOL, ILLICIT/ PRESCRIPTION DRUGS
Substance use disorder is characterized by recurrent use of alcohol and/or drugs causing clinically and functionally significant impairment, such as health problems or disability. The committee may determine that substance use disorder contributed to the death when the disorder directly compromised a woman's health status (e.g. acute methamphetamine intoxication exacerbated pregnancy-induced hypertension, or woman was more vulnerable to infections or medical conditions).

TOBACCO USE
The patient's use of tobacco directly compromised the patient's health status (e.g. long-term smoking led to underlying chronic lung disease).

UNSTABLE HOUSING
Woman lived "on the street," in a homeless shelter, or in transitional or temporary circumstances with family or friends.

VIOLENCE AND INTIMATE PARTNER VIOLENCE (IPV)
Physical or emotional abuse perpetrated by current or former intimate partner, family member, or stranger.

OTHER
Contributing factor not otherwise mentioned. Please provide description.

Contributing Factors

Category	Class	Description
Facility	Access/Financial	Access to outpt records
Provider	Communication	No documentation of follow-up as referred by ED to PCP
	Knowledge	
Provider	Other	
System	Personnel	Inadequately trained personnel
System	Personnel	Unavailable personnel


But what could be done to prevent a future death?

Recommendations

- Developed collaboratively
- Align with contributing factors

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

Mapping Contributing Factors to Recommendations

DESCRIPTION OF ISSUE (enter a description for EACH contributing factor listed)	CONTRIBUTING FACTORS (choose as many as needed below)	LEVEL	COMMITTEE RECOMMENDATIONS [Who?] should [do what?] [when?] Map recommendations to contributing factors.	LEVEL
Inadequate risk assessment of cardiac history	Assessment	Provider	Obstetric providers should refer patients with a reported cardiac condition to a cardiologist during prenatal care or between pregnancies	Provider
Lack of care coordination between prenatal/L&D/ED	Continuity of care	Facility	MTFs should prioritize care coordination and communication between PNC clinics, L&D wards and EDs	Facility
Postpartum instructions not provided	Communication	Facility	MTFs should routinely provide postpartum discharge instructions, including urgent maternal early warning signs	Facility

4

MMRIA committee decisions form (https://reviewtoaction.org/content/maternal-mortality-review-committee-decisions-form)

Additional Worksheet Page
Mapping Contributing Factors to Recommendations

DESCRIPTION OF ISSUE (enter a description for EACH contributing factor listed)	CONTRIBUTING FACTORS (choose as many as needed below)	LEVEL	COMMITTEE RECOMMENDATIONS [Who?] should [do what?] [when?] Map recommendations to contributing factors.	LEVEL
translation services not utilized	Policies/procedure	Facility	MTFs should require all providers to use official translation services to discuss patient medical conditions, care, education and	Facility
obesity	Chronic disease	Patient/Fam	Base should increase access to and promote healthier food choices for all throughout their stay	System
chronic smoker	Tobacco use	Patient/Fam	Base should provide tobacco cessation programming and incentives to quit for all smokers	System
culturally and linguistically appropriate standards training for staff	Cultural/religious	Facility	MTFs should require all providers to undergo CLAS trainings and refreshers throughout their assignment	Facility
referral to resources for women positive for IPV	Social support/iso	Community	DHA should consider an education campaign for PNC providers re: resources avail. to victims of IPV during pregnancy and pp period	System

Specific and Actionable Recommendations

Specific and Actionable Recommendations

_____ should _____ _____.

(who?) (do what?) (when?)

Specific and Actionable Recommendation

Obstetric providers should refer patients with a reported cardiac condition to a cardiologist during prenatal care or between pregnancies.

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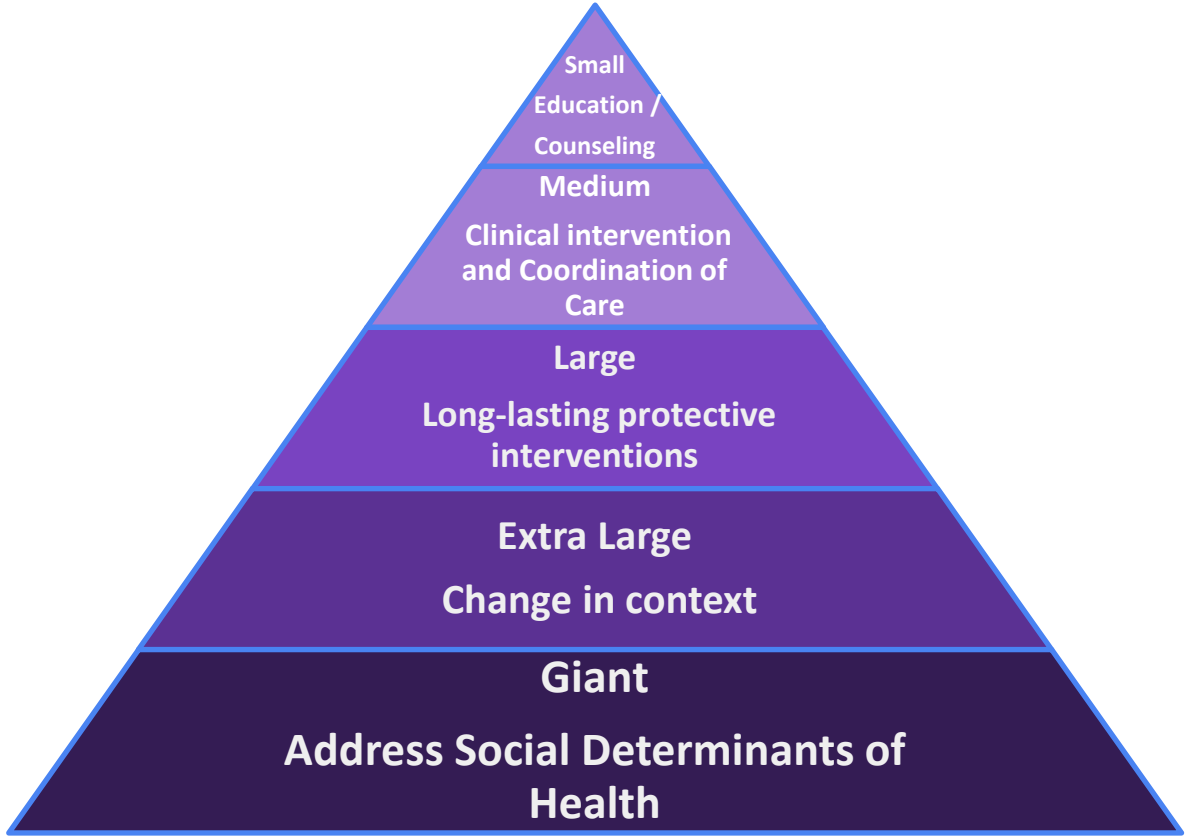
PREVENTION LEVEL

- **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)

LEVEL OF PREVENTION (SEE BELOW)	LEVEL OF IMPACT (SEE BELOW)
Primary	Medium
Secondary	Small
Secondary	Small
Secondary	Small
Primary	Medium
Primary	Large

Committee Decisions: Recommendations and Impact



Examples of data to action

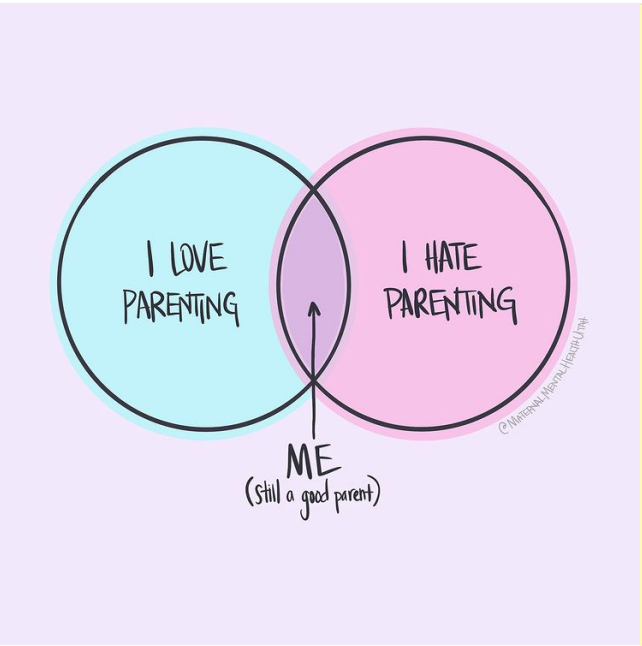
Data to Action Examples

State	Success
Illinois	Medicaid expansion from 60 days to one year postpartum.
Washington	Legislative change so that hospitals and birthing centers report deaths during or within 42 days of pregnancy to coroner or ME, with autopsy strongly advised.
Utah	Developed the Maternal Mental Health Resource Network in which women and clinicians can search for providers that have been specifically trained in maternal mental health screening and treatment.

@maternalmentalhealthutah

232 likes

maternalmentalhealthutah "If our goal is to be happy all the time, then we block ourselves from vital elements of the human experience that help... more



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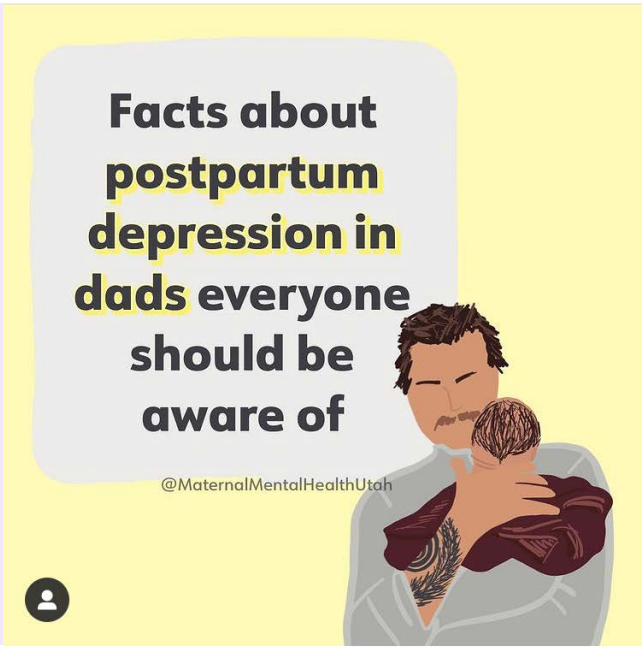
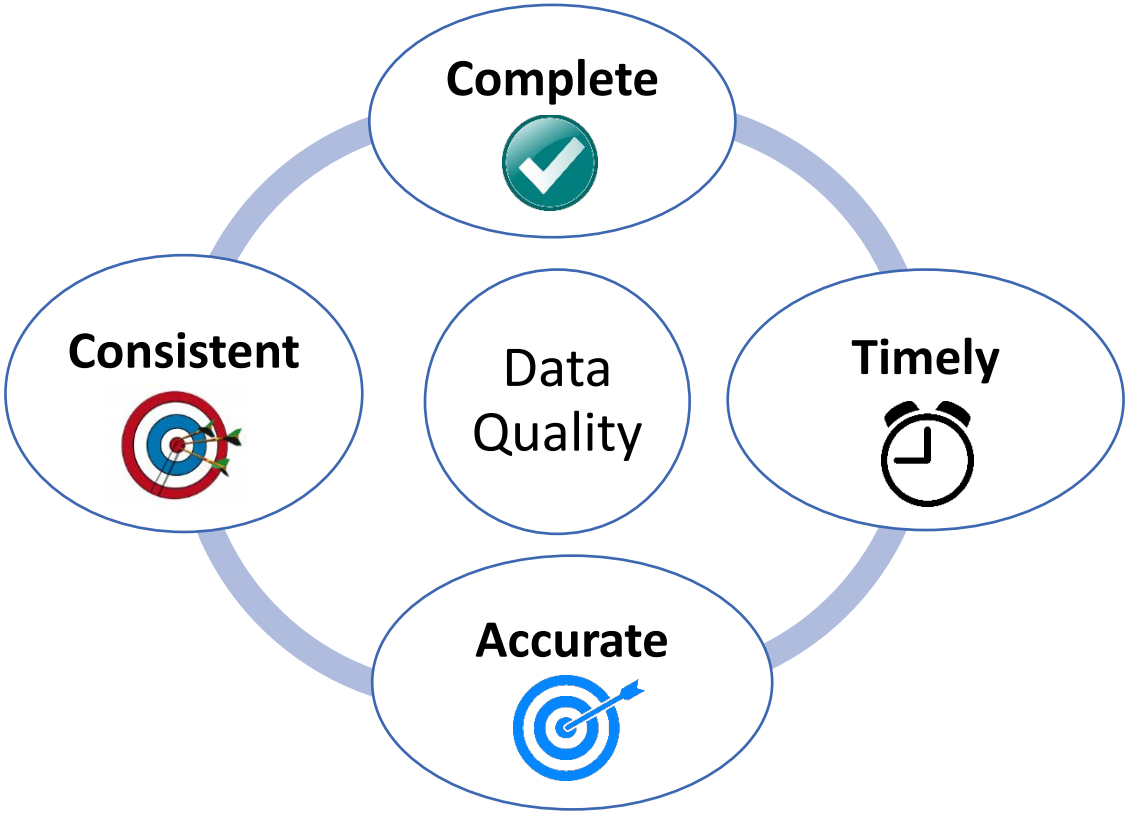


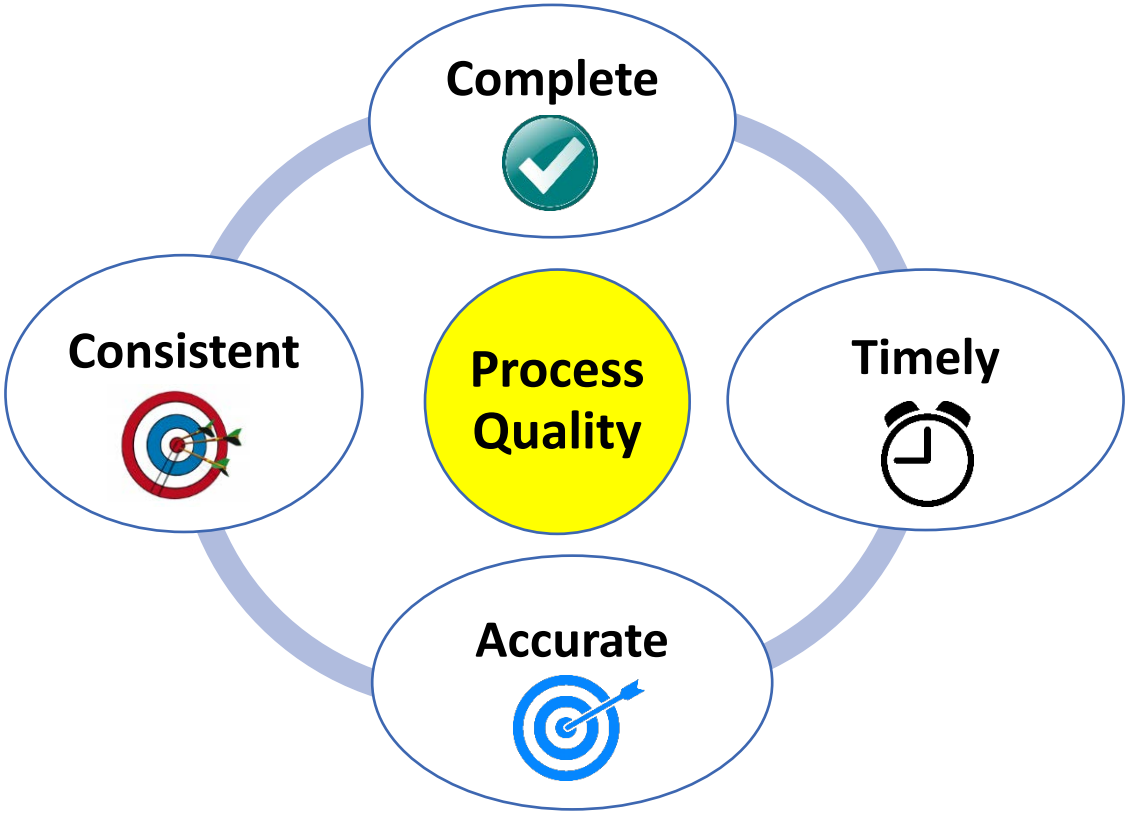
898 likes

maternalmentalhealthutah 👨‍🎤 Did you know partners can experience postpartum depression and anxiety, too? Let's talk about dads and... more

Setting up for Success



Setting up for Success



Strengthening the Data

- CDC provides training and work groups on gaps, such as case identification
- MMRCs using comparable forms will provide comprehensive data
- Progress toward comparable data signals a tremendous step forward in addressing maternal mortality
- MMRCs are a cornerstone of action, connecting data-informed strategies improve outcomes and save the lives of moms

Data to make a difference….

MMRIA
MATERNAL MORTALITY REVIEW INFORMATION APP

REVIEW to ACTION
WORKING TOGETHER TO PREVENT MATERNAL MORTALITY

Thank you!

For more information, contact:
yzq1@cdc.gov