

**LOUISIANA
MATERNAL
MORTALITY
REVIEW
REPORT**

2011-2016

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Finally, we honor the women whose experiences we have attempted to understand and learn from here, as well as their partners, children, families, and communities. We hope that the lessons learned from their deaths will help to create new pathways to prevention, health, and equity.

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Executive Summary

Maternal mortality in Louisiana, 2011–2016

About Louisiana Pregnancy-Associated Mortality Review

The Louisiana Pregnancy-Associated Mortality Review (LA-PAMR) works to quantify and understand pregnancy-related and pregnancy-associated deaths in order to create actionable, comprehensive recommendations to prevent future deaths. This is accomplished through epidemiological surveillance and multidisciplinary case review. LA-PAMR is an official activity of the Louisiana Commission on Perinatal Care and Prevention of Infant Mortality (Louisiana Perinatal Commission).

About This Report

In response to national and local concern regarding rising maternal mortality rates, this report summarizes LA-PAMR's recent review of maternal deaths from 2011-2016, and subsequent recommendations regarding *pregnancy-related* deaths (those aggravated by the pregnancy or its management, occurring during a pregnancy or within 42 days of the end of a pregnancy).

Vital records were used to identify maternal deaths, then medical records were used to verify pregnancy at or near the time of death. After the verification process, a maternal mortality review committee confirmed cases that had a *pregnancy-related* cause of death, then conducted in-depth review of those cases.

Summary of Key Findings

1. The review committee confirmed that 47 maternal deaths occurring between 2011 and 2016 were pregnancy-related. These 47 deaths represent a 6-year (2011-2016) mortality ratio of 12.4 deaths per 100,000 births in Louisiana.
2. From 2011-2016, maternal mortality in Louisiana increased at a higher rate than that of the United States.
3. The most common causes of pregnancy-related death were hemorrhage, cardiomyopathy, and cardiovascular disease.
4. 45% of all pregnancy-related deaths were deemed preventable.
5. Provider- and facility-level factors were the most commonly identified contributing factors to pregnancy-related maternal death, including issues related to screening and risk assessment. Patient-level factors included chronic disease and delay in seeking care/access to care.
6. Black women in Louisiana were 4 times more likely to experience pregnancy-related death than white women. Women over age 35 were almost 3 times more likely to experience pregnancy-related death.
7. Almost half of pregnancy-related deaths occurred between 24 hours and 42 days after delivery.
8. Autopsy findings and/or complete records for review were not available in a majority of cases.
9. 1 in 5 women were transferred to a higher level of care during their terminal hospitalization.

Executive Summary

Maternal mortality in Louisiana, 2011–2016

Summary of Recommendations

The recommendations below represent the consensus of the committee’s critical review of each of the 47 confirmed maternal deaths, as well as their review of aggregate data. For this report, recommendations focus on systems changes on a clinical level.

1. Support, expand, and sustain a robust PAMR process

- A. Enhance data completeness: Ensure timely availability and review of facility records, establish new linkages between hospital discharge data and vital records, and further implement use of the Centers for Disease Control and Prevention (CDC) Maternal Mortality Review Information Application (MMRIA).
- B. Facilitate death investigation: Advance standardized guidelines for autopsy and investigation of maternal death, including recommending autopsy for all in-hospital deaths occurring within a reasonable timeframe of childbirth. Assure consistent coroner and toxicology reporting on maternal deaths.
- C. Embed an approach focused on equity and fairness in health outcomes: Expand LA-PAMR membership to be representative of the communities and regions most impacted by maternal death. Build committee expertise on addressing social determinants of health and the negative impact of policies, practices, and systems on people of color.

2. Build a culture of continuous quality improvement

- A. Leverage quality initiatives: Address provider and facility factors through quality improvement initiatives co-designed with patient advisors, with a focus on leading causes of maternal death in Louisiana: obstetric hemorrhage, cardiovascular disease, and cardiomyopathy.
- B. Implement evidence-based policies and protocols: Develop clear facility-level policies and protocols across care settings to prevent or manage maternal illness, improve timely recognition of early warning signs and maternal change in clinical status, assure appropriate escalation of care, and provide effective discharge counseling and follow-up.
- C. Incorporate strategies into quality improvement activities to reduce racial bias and modify policies, practices, and systems to support equity in outcomes.
- D. Promote appropriate provision of cesarean birth: Prevent unnecessary cesarean births, and ensure appropriately timed and dosed antibiotic prophylaxis and anesthesia care in coordination with obstetric teams when surgery is necessary.

3. Reduce missed opportunities for prevention in the emergency room

- A. Improve timeliness of Emergency Medical Services response: Ensure timely transport to and from remote areas and individuals with accessibility restrictions.
- B. Increase coordination between emergency and obstetric providers: Create protocols and referral channels for common obstetric concerns.
- C. Leverage current insurance payer focus on avoidable emergency department utilization to connect frequent users of emergency services during pregnancy and during the postpartum period to recommended clinical and behavioral health services.
- D. Support health information exchanges to coordinate and improve obstetric, inpatient, outpatient, and emergency care.

Executive Summary

Maternal mortality in Louisiana, 2011–2016

Summary of Recommendations (continued)

4. **Assure access to comprehensive reproductive health and contraceptive services; promote pregnancy readiness in women with chronic disease**
 - A. Expand healthcare coverage and coordination between primary, specialty, reproductive health and prenatal care, and integrate with supportive services.
 - B. Integrate reproductive and medical care using a life-course approach.

5. **Redesign perinatal care and inter-conception care to support fully integrated management of mental health and substance use disorders**
 - A. Screen for mental health issues and substance use disorders.
 - B. Ensure access to medication assisted treatment for opioid use disorder during pregnancy.

6. **Address inequities in social determinants of health to improve women’s preconception health**
 - A. Distribute report findings to stakeholders who are able to influence the social determinants of health.
 - B. Leverage opportunities such as value-based payment arrangements.
 - C. Promote a community response to challenges in maternal health.

Introduction

Maternal mortality in Louisiana, 2011–2016

Maternal deaths are sentinel events that serve as a call to action for public health professionals, health systems, providers, and communities. Each maternal death has far-reaching ramifications for families and communities. Maternal mortality is a crucial indicator of healthcare quality and gender equity, nationally and internationally.^{1,2} Studying maternal mortality can help reveal health and social challenges that women of reproductive age face, and systemic responsiveness to these challenges.^{1,2}

In the United States, maternal mortality is rising, with significant variation by race and ethnicity. Non-Hispanic black women are 3 to 4 times more likely than non-Hispanic white women to experience maternal death.³ The most common cause of pregnancy-related death in the United States from 2011-2013 was cardiovascular disease, as reported by the Centers for Disease Control and Prevention (CDC).³ Based on estimates of maternal mortality by the National Center for Health Statistics, Louisiana ranks 47th out of 48 reportable states.⁴

Surveillance and analysis of maternal mortality has been challenging to accomplish nationally and locally due to a lack of standard definitions, limited data collection systems, and lack of public investment in reliable processes for case identification and study.³ When interpreting any reported mortality rate, several factors must be considered:

1. The definition of maternal death used to calculate the rate (eg. pregnancy-associated versus pregnancy-related, within 42 days versus 1 year following the end of a pregnancy)
2. The time period over which the rate has been averaged
3. The data source for the identified cases (e.g. drawn from vital records or based on a committee review)

While surveillance using vital statistics can capture general trends, it is recognized that local review committees are best positioned to comprehensively assess maternal deaths and identify opportunities for prevention.

In 2010, the Louisiana Pregnancy-Associated Mortality Review (LA-PAMR) was established under the authorization of the Louisiana Commission on Perinatal Care and Prevention of Infant Mortality to understand and address maternal mortality in Louisiana. LA-PAMR seeks to establish a strong, reliable, and timely maternal mortality surveillance system in order to inform, guide, and evaluate mortality and morbidity prevention strategies.

LA-PAMR is authorized to review all pregnancy-associated and pregnancy-related deaths. A targeted maternal mortality review committee (hereafter referred to as “the committee”) was assembled from experts who volunteered their time to complete an expedited review from October 2017 to May 2018. The committee focused only on pregnancy-related deaths. This decision was made to balance organizational capacity to review and analyze maternal deaths with an urgent need for local data in order to identify new opportunities for action and prevention. The committee focused on maternal deaths as defined by the World Health Organization and the National Center for Health Statistics in order to inform state-level quality improvement efforts. Findings in this report are therefore focused on pregnancy-related maternal deaths verified to have occurred *during pregnancy or within 42 days* of the end of a pregnancy.

Key Definitions

Term	Definition	Source
Maternal death	<p>The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes. This definition is operationally the same as that used by the CDC National Center for Health Statistics (NCHS) and Healthy People 2020.</p> <p>The measure resulting from this definition is referred to as the maternal mortality rate (or maternal mortality ratio), is derived from death and birth certificate data, and is defined as the number of women who die from a pregnancy-related cause during or within 42 days of the end of pregnancy in a given year (numerator) divided by the number of live births in that year (denominator) multiplied by 100,000.</p> <p><i>This report focuses on deaths that meet the criteria for this definition and measure.</i></p>	<p>World Health Organization http://www.who.int/healthinfo/statistics/indmaternalmortality/en/.</p>
Pregnancy-related death*	<p>The death of a woman while pregnant or within 1 year of the end of a pregnancy – regardless of the outcome, duration, or site of the pregnancy – from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.</p> <p>The measure resulting from this definition is referred to as the pregnancy-related mortality rate (or pregnancy-related mortality ratio), is derived from the pregnancy checkbox on the death certificate and/or deaths of women who link to a live birth or fetal death certificate, and is defined as the number of women who die from a pregnancy-related cause during or up to 1 year after the end of pregnancy (numerator) divided by the number of live births in that year (denominator) multiplied by 100,000.</p>	<p>Centers for Disease Control and Prevention, Pregnancy Mortality Surveillance System https://www.cdc.gov/reproductivehealth/maternalinfanthealth/pmss.html</p>
<p>*Due to the parameters of the expedited maternal mortality review process, the findings in this report focus on pregnancy-related deaths that occurred during pregnancy or within 42 days of the end of pregnancy.</p>		
Pregnancy-associated death	<p>The death of a woman while pregnant or within 1 year of the end of pregnancy, regardless of the cause. This term encompasses both pregnancy-related deaths and pregnancy-associated but not related deaths, which describes the death of a woman while pregnant or within 1 year of the end of pregnancy from a cause that is not related to pregnancy.</p>	<p>Centers for Disease Control and Prevention http://www.reviewtoaction.org/learn/definitions</p>

Data Sources and Methodology

Maternal Mortality in Louisiana, 2011-2016

Louisiana Maternal Mortality Review

Data sources and methodology

Vital Records Data

Louisiana Vital Records death certificates were used to identify maternal deaths occurring from January 1, 2011 through December 31, 2016. Data were limited to women ages 10-55 years old who were Louisiana residents at the time of death, and whose deaths occurred in Louisiana.

The World Health Organization's definition of a "maternal death" was used: the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes. This definition can be quantified based on International Classification of Diseases version 10 (ICD-10) underlying causes of death A34, O00-O95, and O98-O99 as identified on the death certificate. The resulting list of maternal deaths was linked to live birth and fetal death certificates to confirm the pregnancy status of as many records as possible.

Linkage Methodology

Variables used to link identified maternal deaths with live birth or fetal death records included mother's social security number, mother's date of birth, infant/fetal date of delivery, mother's first and last name, and child's last name (some linkages were made using soundex, a phonetic algorithm for indexing names by sound so they can be linked despite minor differences in spelling). SAS version 9.2 was used in conjunction with the LinkPro macro to complete all linkages.

Ensuring Complete Identification of Maternal Deaths

Results from the ICD-10 underlying cause of death, including results from the data linkage, were cross-referenced with Louisiana Pregnancy Mortality Surveillance System (LPMSS) data from 2011-2015 to ensure complete identification of maternal deaths (2016 LPMSS data was not available at the time of this review).

Verification of Eligibility for Review

BFH Regional Maternal and Child Health (MCH) Coordinators (nurses) received an Excel file of potential maternal deaths identified through Vital Records data that occurred within their regional geographic coverage area (see pg. 11 for regional map). The file was posted to a secure server and contained each woman's first and last name, date of birth, date of death, ICD-10 cause of death, location or hospital where the death occurred, and, where available, information relating to the delivery of the fetus or infant. A death was considered "verified" and therefore eligible for review, if the MCH Coordinator confirmed a pregnancy within 42 days of death based on medical records or coroner reports.

Clinical Records Abstraction

BFH Regional MCH Coordinators abstracted available medical records and/or coroner reports for all verified maternal deaths using an abstraction form developed by Louisiana clinicians and including sections thought to be most relevant to the outcome of each case (See Appendix F).

Louisiana Maternal Mortality Review

Data sources and methodology

Methodology & Guidelines for Reviewing Maternal Deaths

A Maternal Mortality Review Committee made up of clinicians with predominantly obstetric expertise met 6 times to review the 59 verified cases (see Appendix B). All committee members signed a confidentiality form prior to receiving de-identified case summaries. Anyone with personal knowledge of a particular case did not share details beyond the record abstraction.

A summary of each case was presented by the review committee Chair, followed by open forum, then structured discussions. The committee used the Building U.S. Capacity to Review and Prevent Maternal Deaths project Maternal Mortality Review Information Application (MMRIA) Maternal Mortality Review Committee Decisions Form (version 14) to classify each case along the following dimensions (see Appendix G):

1. Was the death pregnancy-related?
2. What was the underlying cause of death?
3. Was the death preventable?
4. If preventable, what was the chance to alter the outcome?
5. What were the factors that contributed to the death?
6. What are the recommendations and actions that address those contributing factors?

Data Limitations

Methods to identify maternal deaths on the Vital Records death certificate can lead to:

- Correct identification of a maternal death.
- Misclassification by:
 - Reporting a maternal death in error (false case): a recent pregnancy (*defined as either pregnant at the time of death; pregnant within 42 days of death; or pregnant within 43 days to 1 year prior to death*) on the death certificate that cannot be confirmed through medical records or coroner reports.
 - Failing to identify a true case (missed case): any woman who was pregnant or recently pregnant based on the definitions above at the time of death.

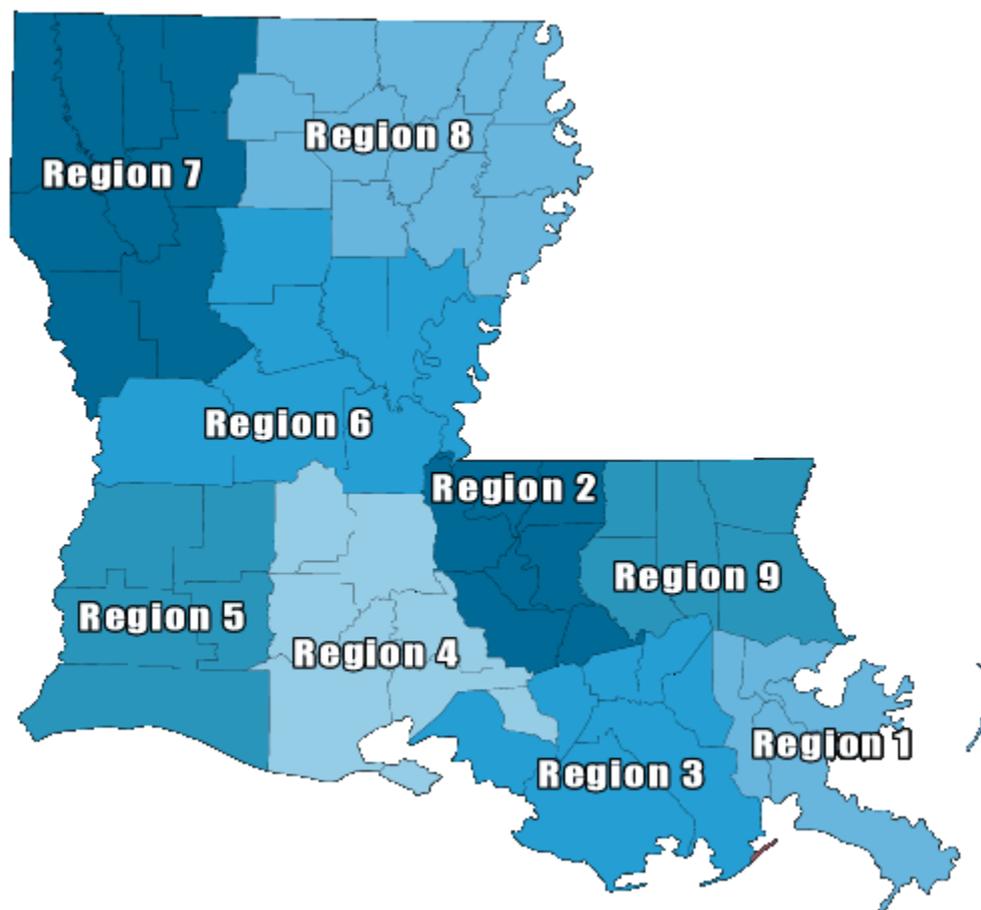
Potential reasons for missed cases include, but are not limited to:

- Early pregnancies that were not known or detected at the time of death.
- Recent miscarriages, other pregnancy terminations, or fetal deaths that were not known or detected at the time of death.
- Failing to identify a live birth or fetal death record associated with a woman who was pregnant or had recently delivered at the time of death.
- Infants who were adopted prior to the data linkage between maternal deaths and live births.

Classification based on ICD-10 codes alone, without full record review, are more likely to result in misclassification. The ability to classify these deaths relies heavily on the availability of medical and coroner records. Even a complete history from medical records and/or coroner reports does not guarantee that a determination can be made.

Counts of less than 5 during a single calendar year are not reported to preserve confidentiality. Aggregate data based on counts less than 20 are considered unstable and should be interpreted with caution; these numbers, percentages, or rates may change considerably from one time period to the next.

Regional Map of Louisiana



Region	Area	Parishes within Region
1	New Orleans	Jefferson, Orleans, Plaquemines, St. Bernard
2	Baton Rouge	Ascension, East Baton Rouge, East Feliciana, Iberville, Pointe Coupee, West Baton Rouge, West Feliciana
3	Houma	Assumption, Lafourche, St. Charles, St. James, St. John the Baptist, St. Mary, Terrebonne
4	Lafayette	Acadia, Evangeline, Iberia, Lafayette, St. Landry, St. Martin, Vermilion
5	Lake Charles	Allen, Beauregard, Calcasieu, Cameron, Jefferson Davis
6	Alexandria	Avoyelles, Catahoula, Concordia, Grant, La Salle, Rapides, Vernon, Winn
7	Shreveport	Bienville, Bossier, Caddo, Claiborne, DeSoto, Natchitoches, Red River, Sabine, Webster
8	Monroe	Caldwell, East Carroll, Franklin, Jackson, Lincoln, Madison, Morehouse, Ouachita, Richland, Tensas, Union, West Carroll
9	Hammond/Slidell	Livingston, St. Helena, St. Tammany, Tangipahoa, Washington

From Data to Review

Maternal Mortality in Louisiana, 2011-2016

Increase in Maternal Mortality

Louisiana and the United States

Maternal mortality is increasing; reasons are likely multifactorial.

Maternal Mortality Ratios

- Maternal death identification begins with vital records death certificates, using standard criteria that can be applied by all states. These data show an increase in maternal mortality in Louisiana and the U.S. from 2011-2016.
- The main benefit of using these data is that they are able to be compared between states and with national-level data. A primary limitation is that these data alone do not rule out false cases or provide any contextual information that may be helpful in preventing future deaths.

Maternal deaths per 100,000 live births in the U.S. and Louisiana

Maternal deaths were identified through vital records data alone, using the WHO definition of maternal death (death during or within 42 days of pregnancy)



Reasons for Observed Increase in Mortality

- The Centers for Disease Control and Prevention (CDC) reports that reasons for the observed increase in maternal mortality are unclear. Use of computerized data linkages, changes in the way causes of death are coded, and the addition of a standardized pregnancy checkbox on the death certificate have likely improved identification of pregnancy-related deaths in recent years.³
- It is unclear whether the actual risk of a woman dying from pregnancy-related causes has increased. However, increased chronic disease burden and increasing maternal age may be contributing factors.⁶
- In Louisiana, the timing of the greatest observed increase is consistent with the implementation of the standardized pregnancy checkbox on the death certificate in mid-2012. Even after this checkbox was implemented, rates continued to increase.

Key Points

- Maternal mortality is increasing in Louisiana at a rate exceeding that of the United States. Increases in maternal mortality on state and national levels emphasize the vital role that maternal mortality review committees play in identifying and recommending strategies for eliminating preventable maternal deaths.
- It is important to note which definition of maternal mortality is being used, as comparisons should not be made across definitions.
- Key findings and recommendations in this report focus on confirmed maternal deaths that occurred during pregnancy or within 42 days of the end of pregnancy.

Verifying and Confirming Maternal Deaths

Review process and criteria

Use of Vital Records death data alone is not enough to identify true pregnancy-related maternal deaths.

From 2011 to 2016, 187 maternal deaths were identified using Vital Records data alone. The Office of Public Health, Bureau of Family Health Regional MCH Coordinators verified that 59 of the 187 identified deaths had a documented pregnancy at the time of death or within 42 days of death. The remaining 128 deaths were classified as false cases and not considered eligible for review. 47 of the 59 verified deaths were confirmed as pregnancy-related by the maternal mortality review committee.

187 Identified Deaths

Identified deaths met the following criteria:

- Louisiana resident at the time of death and death occurred in Louisiana
- Between the ages of 10 and 55 years at the time of death
- Cause of death had an ICD-10 code of A34, O00-O95, or O98-O99 (causes related to pregnancy, childbirth, or complications during the postpartum period)
- Identified as having been pregnant at the time of death or within the preceding 42 days by indication of pregnancy status on the death certificate and/or linkage of the death certificate to a corresponding live birth or fetal death certificate

Cases reviewed by BFH Regional Maternal and Child Health Coordinators

128 False Cases

These cases met the definition of a maternal death based on the cause of death listed on death certificates, but could not be validated through medical records and/or coroner reports.

In other words, there was either no record of any pregnancy or there was a documented pregnancy that ended more than 42 days before death.

These cases were ineligible for further review

STOP

59 Verified Deaths

Verified maternal deaths met the following criteria:

- Documentation in medical records and/or coroner reports of a pregnancy at the time of death or within 42 days of death

Cases reviewed by committee

47 Confirmed Deaths

Confirmed maternal deaths met the following criteria:

- Review by the maternal mortality committee led to a confirmation that the cause of death was related to or aggravated by the pregnancy or its management, and not due to accidental or incidental causes

Preventable Maternal Deaths

Case Vignettes

The case vignettes below are not real cases, but are representative examples based on actual cases reviewed by the maternal mortality review committee.

Hemorrhage Case Vignette

During her first pregnancy, a woman initiates prenatal care at 10 weeks and has 11 prenatal visits. She is admitted at term for induction of labor without a medical indication. Subtle signs of fetal distress are noted, so she undergoes a cesarean section, which is described as uncomplicated. Soon after surgery, she develops incisional and vaginal bleeding and receives uterotonic agents. The bleeding persists and she is taken back to the operating room. An exploratory laparotomy is performed. A moderate amount of blood in the abdomen and some bleeding from the uterine incision is noted. The laparotomy is concluded, but upon attempting to transfer the patient from the operating room, excessive vaginal bleeding ensues. Emergency blood is released. Given persistent bleeding, a hysterectomy is performed. The patient becomes unresponsive and the code team is alerted. At this time, the woman is bleeding from all operative sites and her upper abdomen. After extensive efforts and transfusion of blood products, attempts at resuscitation are discontinued. Autopsy is performed and the medical examiner lists cause of death as “disseminated intravascular coagulopathy with severe postpartum hemorrhage secondary to placental abruption.” The review committee codes primary underlying cause of death as placental abruption and secondary underlying cause of death as hemorrhage. This case was determined to be a preventable pregnancy-related death with good chance to have altered the outcome.

Cardiomyopathy Case Vignette

A woman presents for childbirth care and has an uncomplicated vaginal birth after receiving 11 prenatal visits beginning at 6 weeks gestational age. She develops high blood pressure during the hospitalization and is discharged with a borderline blood pressure of 148/90 and a follow-up appointment in 6 weeks. She attends a subspecialty visit for wrist pain 7 days postpartum. Her blood pressure at that visit is 190/100. The provider recommends dietary changes and primary care follow-up. A few days later, her boyfriend finds her at home, unresponsive. He calls emergency medical services, but she is declared dead upon their arrival in the hospital. He shares that she had reported chest pain 2 days prior. Autopsy is consistent with a dilated cardiomyopathy. The review committee codes the primary underlying cause of death as cardiomyopathy and a secondary underlying cause of death as hypertensive cardiovascular disease. The committee determines that this was a preventable, pregnancy-related death with some chance to have altered the outcome.

Cardiovascular Disease Case Vignette

A pregnant woman with history of eclampsia in a prior pregnancy presents to an emergency room 4 times over the course of 2 weeks, beginning at 20 weeks, reporting headache, nausea and vomiting each time. At each visit, she is treated for a migraine headache and discharged with pain medication. A few days later, she collapses at home and her family brings her to the emergency room. Her blood pressure is 220/120 and a CT scan shows central venous thrombosis. She becomes unresponsive and is transferred to a facility offering a higher level of care. Upon arrival, she cannot be resuscitated and is declared dead. An autopsy is not performed and there are no available prenatal records. The review committee codes the primary underlying cause of death as hypertensive/cardiovascular disease and the secondary underlying cause of death as cerebrovascular accident. The committee determined that this was a pregnancy-related, preventable death with a good chance to have altered the outcome.

Key Findings

Maternal Mortality in Louisiana, 2011-2016

Maternal Deaths

Pregnancy-related vs. pregnancy-associated

From 2011-2016, Louisiana had **47 confirmed pregnancy-related deaths**.

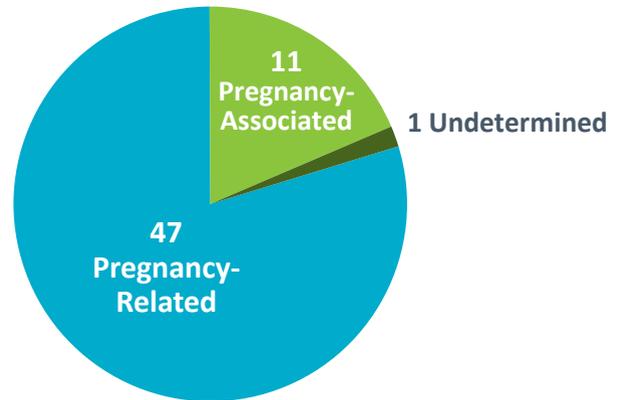
Pregnancy-Related vs. Pregnancy-Associated Deaths

Of the 59 deaths reviewed, the committee confirmed **47 deaths (80%)** were **pregnancy-related**.*

Of the remaining deaths, **11** were classified as **pregnancy-associated**,* but not pregnancy-related. After classification, the committee did not conduct further review on these cases, per MMRIA guidance.

1 death could not be classified based on the information available at the time of the case review.

*See page 7 for definitions



Maternal Deaths Over Time

From 2011 to 2016, pregnancy-related deaths in Louisiana **increased by an average of 34% per year**.

The **6-year maternal mortality ratio** of pregnancy-related deaths** in Louisiana was **12.4 per 100,000 births**.

**Confirmed as pregnancy-related through committee review



Key Points

- Confirmed pregnancy-related maternal deaths in Louisiana increased from 2011 to 2016.
- Reasons for the increase may include: improved case identification, increased burden of chronic disease, advanced maternal age at time of childbirth, and/or health system factors impacting women of reproductive age, such as limited access to primary and specialty care, fragmentation of care, and inconsistent or inadequate healthcare coverage.³ Potential contributing factors are explored further on page 20.

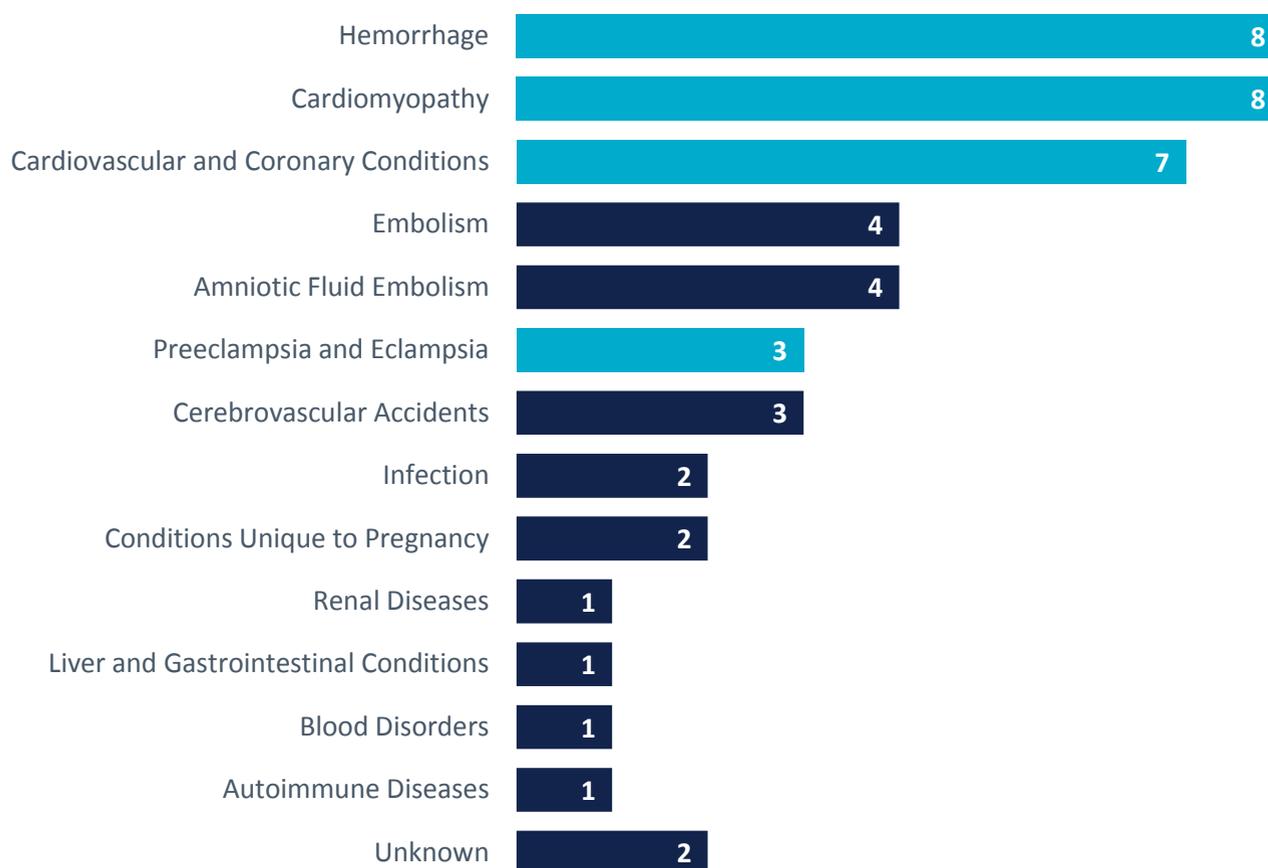
Underlying Causes of Death

Among confirmed pregnancy-related deaths

- From 2011 to 2016, **8** women died as a result of hemorrhage.
- 15** women died as a result of cardiovascular diseases, conditions or events, including cardiomyopathy.
- 3** women died as a result of complications of preeclampsia/eclampsia.

Causes of Maternal Death

All causes of confirmed pregnancy-related deaths in Louisiana from 2011-2016, by number of deaths.



Key Points

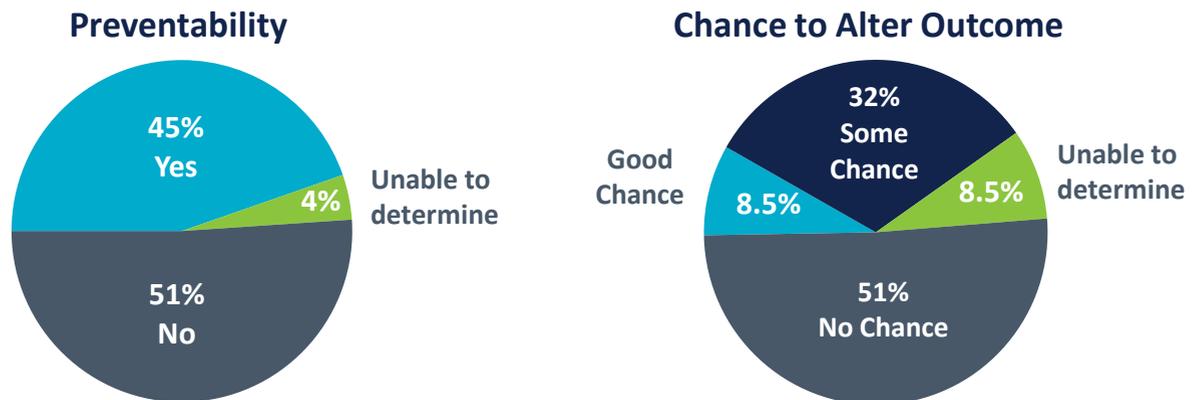
- Hemorrhage was a leading cause of pregnancy-related death (17%).
- Hypertension was often noted as an additional underlying cause of death in cases where the cause was coded as “cardiomyopathy,” “cardiovascular conditions,” or “preeclampsia and eclampsia.”

Preventability & Chance to Alter Outcomes

Among confirmed pregnancy-related deaths

Almost half of confirmed pregnancy-related deaths were thought to be **preventable** by the review committee.

The committee reviewed all confirmed pregnancy-related deaths and used the Maternal Mortality Review Committee Decisions Form (see Appendix G) to determine their preventability and the chance to alter the outcome of each case. A death was considered preventable if the committee determined 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.



National Findings

Based on data from review committees in 9 other states and cities:⁸

-  **70%** of deaths due to **hemorrhage** were thought to be **preventable**.
-  **68.2%** of deaths due to **cardiovascular/coronary conditions** were thought to be **preventable**.
-  **66%** of deaths **occurring within 42 days of pregnancy** were thought to be **preventable**.

Louisiana Findings

-  **62.5%** of **hemorrhage** deaths were deemed **preventable**.
-  **62.5%** of **cardiomyopathy** deaths were deemed **preventable**.
-  **40%** of deaths due to **cardiovascular/coronary conditions** were deemed **preventable**.
-  **7 out of 8 deaths due to embolism**, including thromboembolism and amniotic fluid embolism, were deemed **not preventable**.

Key Points

- Review committee assessments of preventability and chance to alter outcomes help prioritize future areas of intervention and action. Hemorrhage deaths are particularly preventable.⁸
- Determination of preventability is based on consensus achieved by maternal mortality review committees. Comparison between national and Louisiana committee findings confirm that deaths due to leading causes are all highly preventable.

Contributing Factors

Among confirmed pregnancy-related deaths

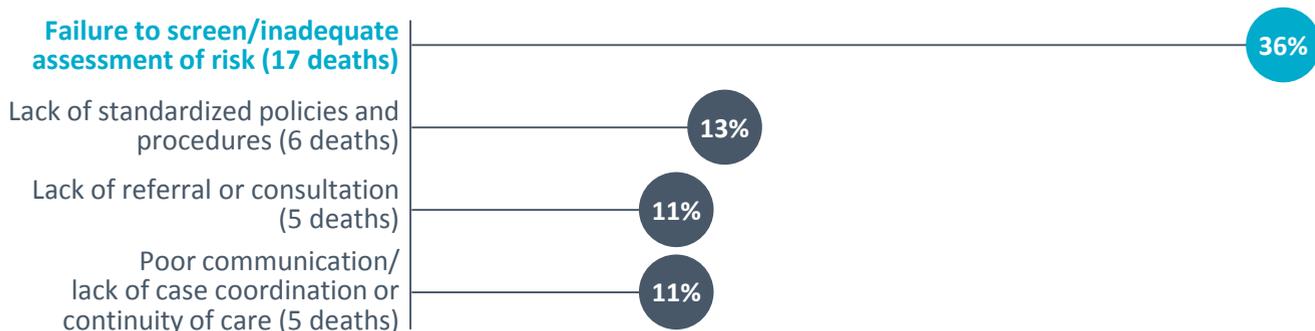
Provider and facility-level factors were most commonly identified as contributing factors to pregnancy-related deaths.

Review committee members identified contributing factors to confirmed pregnancy-related deaths using the Maternal Mortality Review Committee Decisions Form (see Appendix G). Contributing factors included any behavior or systems issues, or the deficiency thereof, which increased the severity of morbidity or the likelihood of mortality.⁹ These factors did not necessarily cause the fatal outcome, but may have been among a number of factors that led to the maternal death. Contributing factors can be analyzed to develop and guide quality improvement efforts.

Each contributing factor identified through review committee discussion was categorized into 1 of 5 levels (see Appendix G for more details).

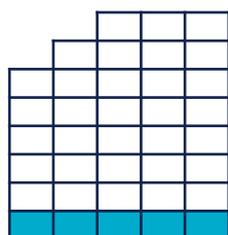
Top Contributing Factors: Provider & Facility Level

Contributing factors are not mutually exclusive – one death may have more than one of the following top contributing factors. Specific contributing factors could not be identified for 12 of 47 deaths.

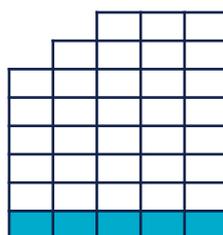


Top Contributing Factors: Patient Level

Contributing factors are not mutually exclusive – one death may have more than one of the following top contributing factors. **Of note, completeness of medical records and availability of relevant information often limited the review committee’s ability to assess for patient, family, and community-level contributing factors.**



5 deaths (10.6%)
Presence of **complex chronic disease** with need for primary care and tailored reproductive life planning



5 deaths (10.6%)
Delay or failure to seek care

Maternal Demographics

Demographic information for confirmed pregnancy-related deaths

Maternal deaths can happen to women of any race, age, or insurance group. However, some women are **disproportionately affected**.

Maternal Race and Ethnicity

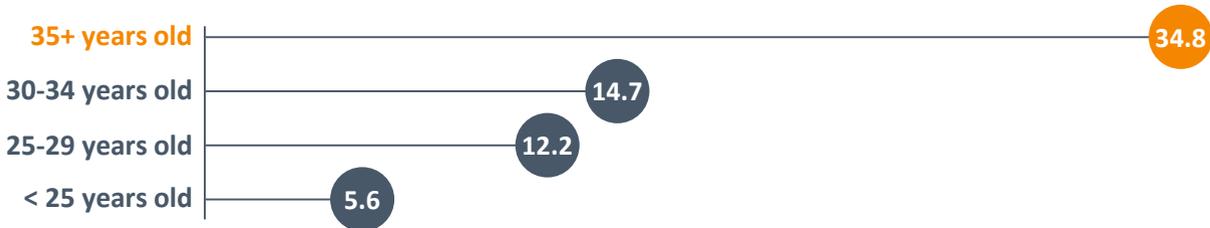
68% of maternal deaths from 2011-2016 were to **non-Hispanic black** women. Comparatively, only 37% of all births from the same time period were to non-Hispanic black women.¹⁰



Maternal Age

Women age **35 years and older** were **6.3 times as likely to die** as women under age 25 years.

Maternal Mortality Ratio by Age Group (deaths per 100,000 births)



Insurance Type

62% of women who died had **Medicaid** insurance.



Key Points

- Maternal death disproportionately affects non-Hispanic black women and women over the age of 35.
- Women over the age of 35 are at higher risk for pregnancy-related death. Trends toward increasing maternal age at the time of pregnancy and childbirth may contribute to increasing maternal mortality rates.⁶
- The majority of Louisiana women who were pregnant or gave birth from 2011 to 2016 were Medicaid-insured.¹⁰ The majority of pregnancy-related deaths were also among Medicaid-insured women.

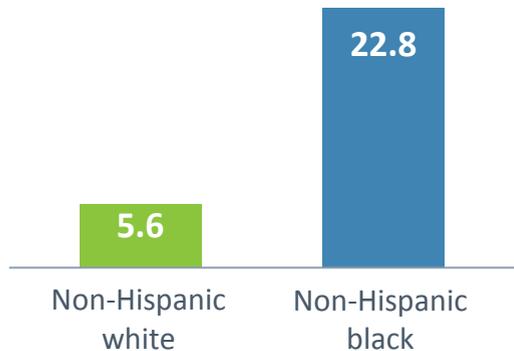
Racial and Geographic Disparities

Disparities in confirmed pregnancy-related deaths

From 2011 to 2016, black mothers were **4.1 times as likely to die** as white mothers in Louisiana.

Racial and Ethnic Disparities

Maternal Mortality Ratios by Race
(per 100,000 births)



4 **black women** in Louisiana die...



...for every **1 white woman**



Maternal mortality ratios were also higher among other race/ethnic groups when compared to non-Hispanic whites, but counts were too low to be reportable.

Geographic Disparities

The Louisiana Department of Health divides the state into 9 administrative regions (see map, pg. 11). Region 5 (southwest Louisiana/Lake Charles area), Region 6 (central Louisiana/Alexandria area), and Region 9 (Northshore area) have the **highest maternal mortality ratios in the state**.

Maternal Deaths by Region (2011-2016)	1	2	3	4	5	6	7	8	9
Maternal death counts	10	4	3	3	5	5	7	2	8
Maternal mortality ratio per 100,000 live births	14.4	7.3	9.2	5.8	20.3	18.9	15.3	6.9	18.1

Key Points

- Racial disparities in maternal mortality are complex and multifactorial. Mortality is influenced by a wide range of economic, social, and clinical determinants. In addition to health status prior to pregnancy and consistent access to quality healthcare during pregnancy and throughout the life course, social determinants of health such as racial bias and discrimination, lack of transportation or childcare, poverty, and racism in policies, practices and systems can contribute to adverse outcomes, including maternal death.^{11,12}
- Geographic disparities exist across Louisiana. Region 5 (southwest Louisiana/Lake Charles area) has the highest maternal mortality ratio in the state. More investigation is needed to understand drivers of this variation.

Understanding Maternal Deaths

Timing of deaths, autopsy rates and records available for review

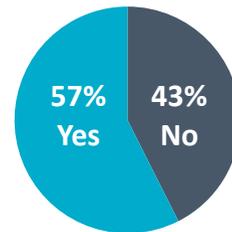
Autopsies were performed in **only 57%** of cases. **Over half** of the cases were missing at least some records crucial to case review.

Timing of Maternal Death

32% Antepartum	23% Intrapartum/ immediately postpartum	45% Delayed postpartum
<ul style="list-style-type: none">Deaths occurring before onset of labor¹³Most frequently due to cardiovascular disease, stroke, and thromboembolism	<ul style="list-style-type: none">Deaths occurring up to 24 hrs after delivery¹³Most frequently due to hemorrhage and amniotic fluid embolism	<ul style="list-style-type: none">Deaths occurring 24 hours to 42 days after delivery¹³Most frequently due to cardiovascular disease, hemorrhage, and preeclampsia/eclampsia

Autopsy

- Autopsies reveal information that helps establish cause of death. Without an autopsy, it is challenging to determine the immediate and underlying cause of death in certain scenarios.
- Autopsies were performed on **57%** of confirmed pregnancy-related maternal deaths.



Completeness of Records for Review

Access to complete medical, coroner, and social records are critical to classify a maternal death as pregnancy-related or not. Only **6 cases out of 47** confirmed maternal deaths were determined by the committee to have **complete records available** for review. **Over half (28 cases)** were identified as having either **“somewhat complete”** or **“not complete” records**, meaning that information crucial to the review of the case was not available to the nurse abstractor.



Key Points

- Almost half of pregnancy-related deaths occurred during the delayed postpartum period, indicating a need for quality improvement efforts focused on the period leading up to and immediately following hospital discharge.
- Improved understanding of the causes and circumstances surrounding all maternal deaths is needed to direct quality improvement efforts and ensure effective resource allocation. Autopsies and the availability of complete records for review are vital to this process, and were missing in a majority of cases.

Understanding Maternal Deaths

Place of deaths and hospital transfers

The majority of deaths occurred in a hospital. About 1 in 5 women were transferred to a different hospital during their terminal hospitalization.

Place of Death

The majority (57%) of maternal deaths occurred in the **inpatient hospital setting**. An additional 20% occurred in an **Emergency Department (ED) or outpatient setting**.

More than 1 in 5 deaths (21%) occurred outside of a clinical setting.



Facility Transfers

Hospitals have differing capacities to handle high-risk pregnancies and deliveries. Louisiana birthing hospitals are categorized by the Louisiana Department of Health (LDH) Health Standards Section into 1 of 4 levels of care, ranging from Level I (appropriate to deliver low-risk patients) to Level IV (staffed to provide onsite care of the most complex and critically ill women).

In 10 cases of pregnancy-related death (21%), women were transferred to a different facility during their terminal episode of care. Transfer to another facility was sometimes related to a need for a higher level of critical medical care, obstetric care, or both.



Among women who were transferred to different facilities, 4 were pregnant at the time of transfer (before onset of labor), and 6 were transferred sometime after they gave birth.



Among those 6 women who had already given birth:

4 transfers took place
3-8 days postpartum

3 women delivered at a
Level I or Level II hospital

3 women delivered at a
Level III or higher hospital

Key Points

- About 1 in 5 deaths occurred in the woman's home or other non-clinical setting. Maternal mortality prevention strategies should include timely postpartum follow-up and education for women and families at the time of hospital discharge about early warning signs of critical illness.
- Transfer to a higher level of care should take into account needs for higher level of obstetric care as well as need for subspecialty medical and critical care.

From Review to Action

Maternal Mortality in Louisiana, 2011-2016

Review Committee Recommendations

The recommendations below represent the consensus of the committee’s critical review of each of the 47 confirmed maternal deaths, as well as their review of aggregate data. A key question used to stimulate development of case-specific recommendations for each case was: “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?” (question is from The Building U.S. Capacity to Review and Prevent Maternal Deaths project). The committee worked to develop recommendations for each of the contributing factors identified via the Maternal Mortality Review Committee Decisions Form. For this report, recommendations primarily focus on clinical level systems changes.

1. Support, expand, and sustain a robust PAMR process

A. Enhance data completeness

- Ensure timely availability and review of facility records, including those from prenatal care, emergency departments, emergency response, inpatient care, mental health providers and social service providers. This will further the understanding of patient and community-level contributing factors.
- Support reliable processes for collecting, storing, and analyzing data on maternal death and severe maternal morbidity in hospital discharge datasets and on death certificates through facility-level training and new linkages between hospital discharge data and vital records.
- Implement use of a nationally validated database – the Maternal Mortality Review Information Application – for case abstraction and archiving of committee decisions. Consistent abstraction of records over time will allow for national and regional comparisons.

B. Facilitate death investigation

- Recommend that coroner's offices perform an autopsy on perinatal non-natural deaths in accordance with the National Association of Medical Examiner's Autopsy Performance Standards. If the coroner's office does not do an autopsy, hospitals should obtain permission from next of kin to perform one.
- Coroners and medical examiners should report findings, including toxicology, using consistent language and structure.
- Expand LA-PAMR to include medical examiners and broaden representation from board-certified forensic pathologists. This will increase awareness, highlight the value of coroner reports and autopsy findings, and improve implementation of guidelines in the field.

C. Embed an approach focused on equity and fairness in health outcomes

- Expand the LA-PAMR review committee members to be representative of the communities and regions most impacted by maternal deaths.
- Build LA-PAMR expertise on social determinants of health, management of complex and high-risk populations, and the negative impacts of policies, practices, and systems on people of color. Apply a health equity framework to maternal mortality surveillance, committee review, and dissemination and implementation of recommendations.
- Use opportunities such as Act 497, which creates the Healthy Moms, Healthy Babies Advisory Council, to strengthen efforts to address disparities in maternal mortality and morbidity in Louisiana.
- Support LA-PAMR with staffing and funding resources to facilitate integrated review of all pregnancy-associated deaths.

Review Committee Recommendations

2. Build a culture of continuous quality improvement

A. Leverage quality initiatives

- Address provider and facility (systems-level) factors through quality improvement initiatives such as the Louisiana Perinatal Quality Collaborative and the Alliance for Innovation in Maternal Health, that are scaled statewide and aimed at reducing maternal morbidity “near miss” events. Recommendations for change ideas driven by specific case findings include:
 - i. Hemorrhage risk stratification for every woman
 - ii. Massive blood transfusion protocols and immediate access to blood products
 - iii. Pre-identified response team for emergencies inclusive of skilled surgical backup and interventional radiology services
 - iv. Timely recognition and management of severe hypertension and related complications
 - v. Protocols for early postpartum follow up of women who experience severe hypertension or preeclampsia during pregnancy

B. Implement evidence-based policies and protocols

- Develop clear facility-level policies and protocols allowing for provider, patient, and family recognition of maternal early warning signs and criteria for management of pregnancy-associated hypertension and severe hypertension, including during the antepartum and postpartum periods.
- Implement standardized, recommended tools for discharge navigation, counseling, and coordination that are appropriate in terms of language and literacy.
- Establish system protocols for timely recognition and documentation of maternal change in clinical status, escalation of care, and transfer within and across birth facilities. Through regional collaborations, determine appropriate transfer method to nearest facility with intensive care, subspecialty support, higher obstetric level of care, and critical care services.
- Optimize access to immediate subspecialty and critical care within Level III and IV birth facilities.
- Create rapid access to subspecialty consultation reimbursable by Medicaid in women with complex or critical illness at the point of prenatal, obstetric, emergency, and/or other medical care facilities, clinics, and offices (including cardiology, critical care, infectious disease, nephrology & interventional radiology).
- Provide evidence-based preventive care such as universal flu vaccination in all pregnant women.

C. Incorporate strategies into quality improvement activities to reduce racial bias and modify policies, practices, and systems to support equity in outcomes

- Implement and arrange on-demand phone or in-person interpreters at inpatient birth facilities with readiness for use during emergencies, as well as in outpatient offices and clinics.
- Establish systems (co-designed with patient and community involvement) to accurately document self-identified race, ethnicity, and primary language.
- Provide staff trainings on implicit bias, racial and ethnic health disparities and their root causes, and best practices for shared decision-making.
- Provide mechanisms for patient reporting of episodes of inequitable care, miscommunication, or neglect. Once established, track data to make improvements.
- Develop disparities dashboards to monitor process and outcome metrics stratified by race and ethnicity. Disseminate stratified performance data regularly to facility-level providers and leadership.
- Target disparities in healthcare access, treatment, and outcomes in quality improvement projects.

Review Committee Recommendations

2. Build a culture of continuous quality improvement (continued)

D. Promote appropriate provision of cesarean birth

- Facilities should review all primary cesarean births and make improvements to reduce unnecessary primary cesarean births.
- Ensure appropriately timed and dosed antibiotic prophylaxis in event of a medically necessary/recommended cesarean birth.
- Confer with interdisciplinary teams preoperatively to determine appropriate level of anesthesia in event of emergency cesarean.
- Practice drills with emergency medicine providers to ensure readiness to perform perimortem cesarean when indicated (i.e. within 4 minutes of maternal cardiac arrest).

3. Reduce missed opportunities for prevention in the emergency room

- A. **Improve timeliness of Emergency Medical Services (EMS) response**, particularly for individuals living in rural communities and those with accessibility restrictions, including those related to morbid obesity.
- B. **Increase coordination between emergency and obstetric providers** at the facility and regional level. Create protocols for standardized response and consultation process for key, preventable conditions during pregnancy, e.g. diagnosis and management of preeclampsia, pulmonary embolism, ectopic pregnancy, and hyperemesis gravidarum.
- C. **Leverage current insurance payer focus on avoidable emergency department utilization** by encouraging partnered payer and facility risk stratification that incorporates emergency room utilization during pregnancy or the postpartum period. Implement a real-time and efficient case management response when a pregnant or postpartum woman demonstrates multiple emergency visits in a short period of time, and connect those women to recommended clinical and behavioral health services.
- D. **Support health information exchanges** to coordinate and improve obstetric, inpatient, outpatient and emergency care. This includes linkages between birthing facilities, outpatient prenatal offices and clinics, inpatient obstetric services, emergency departments, and private and public payers.

4. Assure access to comprehensive reproductive health and contraceptive services; promote pregnancy readiness in women with chronic disease

- A. **Expand healthcare coverage and coordination between primary, specialty, reproductive health and prenatal care, and integrate with supportive services.**
 - Leverage Louisiana Medicaid expansion to ensure inter-conception access to care, especially in women with chronic conditions.
 - Partner with Medicaid Managed Care Organizations and private payers to provide timely maternal fetal medicine and subspecialist referral, stratified care coordination, home visiting, and social support, such as community health worker or doula services, for women of reproductive age with chronic conditions. This should include embedded support to address barriers to care and medication access such as transportation, childcare, and employment.
 - Ensure high quality access to preventive primary care services and preconception care to help prevent chronic disease.

Review Committee Recommendations

4. Assure access to comprehensive reproductive health and contraceptive services; promote pregnancy readiness in women with chronic disease (continued)

B. Integrate reproductive and medical care using a life-course approach

- Promote a reproductive life planning approach at each point of care, with a full range of contraceptive options for women of reproductive age at risk for chronic disease. Use tools such as “One Key Question” (“Would you like to become pregnant in the next year?”).
- Optimize control of chronic conditions in primary care and subspecialty settings as part of preconception care.
- Establish clear protocols and timely referral channels at the facility level for access to medically necessary termination to save a woman’s life in cases of critical illness, reducing delays in care.

5. Redesign perinatal care and inter-conception care to support fully integrated management of mental health and substance use disorders

A. Screen for mental health issues and substance use disorders

- Offer universal substance use screening, brief intervention, and referral during pregnancy. Screening should include alcohol use disorders, rather than isolated emphasis on routine urine drug screening.
- Ensure high quality mental health screening and access to therapy and treatment in community, home, clinic, and inpatient settings. This is particularly important in the event of potentially high-stress experiences including pregnancy loss, stillbirth, removal of custody, or adoption.

B. Ensure access to medication assisted treatment for opioid use disorder during pregnancy

- Ensure coverage (without prior authorization) by all payers of medication assisted treatment for opioid use disorder including methadone and buprenorphine.
- Maintain linkages to evidence-based, decriminalized medication assisted therapy for opioid use disorder in women of reproductive age at the point of care, without delay. Incentivize provider screening and integration of substance use treatment into prenatal and postpartum care.

6. Address inequities in social determinants of health to improve women’s preconception health

A. Distribute report findings to a broad group of stakeholders who are in a position to influence the social determinants of health that drive racial and geographic health disparities (e.g. racism in policies, practices and systems, transportation, and social policies such as parental leave and childcare). Share findings with legislators, public health agencies and non-profits, and leaders in both public and private health insurance, as well as large health systems with mandated community investments.

B. Leverage opportunities such as value-based payment arrangements between payers and health providers to increase upstream investments in primary care, education, and community infrastructure, to prevent chronic disease and key risk factors from developing in vulnerable populations.

C. Promote a community response to challenges in maternal health.

Next Steps and Opportunities

The goal of this report is to identify specific opportunities for quality improvement that can be acted upon immediately. Certain key findings provide a clear roadmap of concrete strategies to reduce maternal mortality and severe maternal morbidity. These findings include:

- Hemorrhage and cardiovascular disease/hypertension are major drivers of maternal death
- Racial disparities are significant
- Provider and facility level factors are key contributing factors

Several new and current Louisiana initiatives can be leveraged to implement the recommendations generated by this report. Specific opportunities and next steps are outlined below:

1. **The Louisiana Perinatal Quality Collaborative Reducing Maternal Morbidity Initiative** launched coordinated quality improvement efforts across the state in August 2018. Teams participating in the Initiative work together for 12 months to make breakthrough improvements in obstetric care by implementing bundles and best practices supported by the Alliance for Innovation in Maternal Health and the Institute for Healthcare Improvement, with national mentorship from the Centers for Disease Control and the California Maternal Quality Care Collaborative. Changes that will be tested are directly linked to specific recommendations in this report, and focus on hemorrhage, hypertension, risk assessment and monitoring of early warning signs, appropriate escalation of care, and attention to addressing racial disparities, including through the mandated inclusion of patient and community advisors on each facility team. For further information, please visit: partnersforfamilyhealth.org/lapqc
2. **Act 497 (2018 Legislative Session) created the Healthy Moms, Healthy Babies Advisory Council.** This Council will be made up of experts and stakeholders who are committed to addressing racial and ethnic disparities in maternal health outcomes. The Council will incorporate a community-engaged, equity-focused lens into Louisiana programs and campaigns focused on preventing maternal mortality and morbidity, and will promote safe and equitable care for all mothers and babies in the state. The Council is charged with issuing a report summarizing recommendations around key issues, such as how to collect and utilize self-reported race and ethnicity data in quality improvement efforts. For further information, please visit: legis.la.gov/Legis/BillInfo.aspx?i=234684
3. **Louisiana's Medicaid expansion program, Healthy Louisiana,** allows for coverage of low-income adults of reproductive age between and following pregnancies. This facilitates access to care for women with complex chronic diseases such as those whose stories are captured in this report. Further commitments in Medicaid to value based payment, community health worker models, home visiting, telehealth models, and data systems and delivery reform that addresses the social determinants of health, are directly relevant to the recommendations made in this report. For further information, please visit: ldh.la.gov/assets/HealthyLa/LDH_MCO_RFP_WP.pdf
4. **Act 174 (2018 Legislative Session)** provides for a pilot program to expand maternal access to treatment of opioid use disorder and optimize management of neonatal opioid withdrawal syndrome. For further information, please visit: legis.la.gov/Legis/BillInfo.aspx?i=234157

Next Steps and Opportunities

5. **LA-PAMR launched its enhanced multidisciplinary review process in 2018**, with full reliance on the CDC platform MMRIA. The review process continues to use tools and frameworks offered by the Building U.S. Capacity to Review and Prevent Maternal Deaths “Review to Action” project. The expanded review membership emphasizes a commitment to representation from a variety of regions, expertise – including in addressing social determinants of health – as well as broader inclusion of women and people of color.

The key opportunities outlined above are critical to reducing maternal deaths and strengthening systems at the provider, facility, system, and community level. Dedicated efforts, interventions, and partnerships are essential to better understand the factors that lead to persistent disparities in maternal mortality and morbidity. Deaths related to pregnancy should be a rare event, and when they occur, their investigation must lead to valuable insights and timely intervention that save lives.

Appendix

A. Louisiana Maternal Mortality Review History

In 1992, the Louisiana Department of Health (LDH)-Office of Public Health (OPH)-State Center for Health Statistics (SCHS) initiated the Louisiana Pregnancy Mortality Surveillance System (LPMSS) to investigate the causes of pregnancy-related maternal deaths in order to identify system-level opportunities for prevention. A check box on the Louisiana death certificate identified these deaths through a positive response to the question “If deceased was female 10-49, was she pregnant in the last 90 days?”

LPMSS partnered with the Maternal and Child Health (MCH) Program of OPH in 2000 to gain additional medical expertise in the review of causes of pregnancy-related maternal deaths occurring from 1995 through 1999. The MCH Program Medical Director completed reviews using cause of death listed on maternal death certificates. The Medical Director continued to support LPMSS through an annual review of maternal death cases using information from the death certificate along with any corresponding live birth or fetal death records.

Additional improvements in maternal death identification began in 2006 when LPMSS received technical assistance from the Pregnancy Mortality Surveillance System at the Centers for Disease Control and Prevention (CDC). In addition to using Louisiana Hospital Inpatient Discharge Data (LaHIDD) as an additional data source for identification of maternal deaths, LPMSS also expanded the case definition from **pregnancy-related deaths** to all **pregnancy-associated deaths**, or all women who died during pregnancy or within 1 year of pregnancy, irrespective of cause.

In 2007, the MCH Program conducted an evaluation of 2000-2005 LPMSS maternal death records to assess if linkage with LaHIDD data resulted in improved maternal death identification compared to linkages using only vital records death and live birth/fetal death records. The evaluation also examined differences in the number of maternal deaths identified when using different common U.S. and global definitions of maternal mortality. Results highlighted the need to make additional improvements to methodology and procedures pertaining to maternal death review in Louisiana, including the specific recommendation to abstract medical records of all maternal death cases to improve the availability of complete information during the review process.

The MCH Program introduced the Louisiana Pregnancy Associated Mortality Review (LA-PAMR) Program in 2010, achieving four new improvements to the Louisiana maternal mortality review process. First, the scope of reviews beginning with 2008 records was broadened to include all pregnancy-associated maternal deaths as defined by the American College of Obstetricians and Gynecologist (ACOG) and CDC definitions.

Second, standardized case identification procedures were documented, including the recommendation to link death certificates of all Louisiana resident women ages 10-55 years with live birth, fetal death, and LaHIDD data. Third, abstraction of medical and coroner records for all maternal deaths was implemented to provide a comprehensive record for case review. And fourth, LA-PAMR became an official activity of the Louisiana Commission on Perinatal Care and the Prevention of Infant Mortality (Louisiana Perinatal Commission), thereby making LA-PAMR records confidential and protecting them from discovery in legal proceedings.

A. Louisiana Maternal Mortality Review

History

In 2017, recognizing the concern for rising rates of maternal mortality locally and nationally and new opportunities for action and prevention, the LDH-OPH-Bureau of Family Health initiated an intensive review process of maternal deaths occurring between 2011 and 2016. Only pregnancy-related deaths were reviewed for this time period. This decision was made to balance organizational capacity to review and analyze maternal deaths with an urgent need for local data in order to identify new opportunities for action and prevention. This review was needed to produce the following priority items:

- An up-to-date and usable report for public distribution
- A more accurate calculation of Louisiana's maternal mortality ratio
- Data-informed recommendations for perinatal quality initiatives, including the Louisiana Perinatal Quality Collaborative.

The targeted review was restricted to cases of women who were pregnant at the time of death or who died within 42 days of the end of the pregnancy, and whose cause of death is consistent with the World Health Organization's (WHO) definition of maternal death, quantified by a specific set of International Classification of Diseases 10 (ICD-10) codes. Data sources used to produce the case summaries presented in the review meetings included vital records death certificates, live birth or fetal death certificates related to the maternal death, coroner's reports, hospital records, other medical records, and psychosocial records when possible.

B. 2011-16 Maternal Mortality Review Committee

Name	Affiliation
Alfred Robichaux, MD	Maternal Fetal Medicine, Ochsner Health System
Cheri Johnson, RNC-OB, MSN	Perinatal Health and Nursing, Woman's Hospital
Dore Binder, MD	Perinatal Quality, Woman's Hospital
Erin O'Sullivan, MD	Forensic Pathology, Orleans Parish Coroner's Office
Joseph Biggio, MD	Maternal Fetal Medicine, Ochsner Health System
Marshall St. Amant, MD	Maternal Fetal Medicine, Woman's Hospital
Pooja Mehta, MD, MSHP (Medical director)	Obstetrics and Gynecology, Louisiana State University Health Sciences Center New Orleans
Scott Barrilleaux, MD	Maternal Fetal Medicine, Louisiana Commission on Perinatal Care and Prevention of Infant Mortality

C. 2017 Regional Maternal and Child Health Coordinators

Region	Coordinator
Region 1	Rosa Bustamante-Forest, APRN, MPH
Region 2	Kelly Bankston, BSN, RN
Region 3	Nicole Soudelier, BSN, RN
Region 4	Christine Cornell, BSN, RN
Region 5	Bridget Redlich-Cole, RN, CIC
Region 6	Lisa Norman, RN
Region 7	Shelley Ryan-Gray, BN, RN
Region 8	Sara Dickerson, RN
Region 9	Martha Hennegan, RN
Statewide	Robin Gruenfeld, MPH

D. Acronyms

Acronym	Definition
BFH	Bureau of Family Health
LDH	Louisiana Department of Health
ICD	International Classification of Diseases
MCH	Maternal and Child Health
NCHS	National Center for Health Statistics
OPH	Office of Public Health
PAMR	Pregnancy-Associated Mortality Review
WHO	World Health Organization
CDC	Centers for Disease Control and Prevention
MMRIA	Maternal Mortality Review Information Application
MMRDS	Maternal Mortality Review Data System

E. Pregnancy Mortality Surveillance System (PMSS) Cause of Death Categorizations

PMSS Cause of Death	Explanation / Included Conditions
Amniotic Fluid Embolism	----
Autoimmune Diseases	Systemic lupus erythematosus, Other collagen vascular diseases/Not otherwise specified
Blood Disorders	Sickle cell anemia, Other hematologic conditions including thrombophilias/Thrombotic thrombocytopenic purpura/Hemolytic uremic syndrome/Not otherwise specified
Cardiomyopathy	Postpartum/peripartum cardiomyopathy, Hypertrophic cardiomyopathy, Other cardiomyopathy/Not otherwise specified
Cardiovascular and Coronary Conditions	Coronary artery disease/Myocardial infarction/Atherosclerotic cardiovascular disease, Pulmonary hypertension, Valvular heart disease, Vascular aneurysm/Dissection, Hypertensive cardiovascular disease, Marfan's syndrome, Conduction defects/Arrhythmias, Vascular malformations outside the head and coronary arteries, Other cardiovascular disease, including congestive heart failure, cardiomegaly, cardiac hypertrophy, cardiac fibrosis, and non-acute myocarditis/Not otherwise specified
Cerebrovascular Accidents	Hemorrhage/thrombosis/aneurysm/malformation, but not secondary to hypertensive disease
Conditions Unique to Pregnancy	e.g., Gestational diabetes, Hyperemesis, Liver disease of pregnancy
Embolism	Thrombotic (non-cerebral), Other embolism/Not otherwise specified
Hemorrhage	Rupture/Laceration/Intra-abdominal bleeding; Placental abruption, Placenta previa, Ruptured ectopic pregnancy, uterine atony/postpartum hemorrhage, Placenta accreta/increta/percreta, due to retained placenta, due to primary disseminated intravascular coagulation, Other hemorrhage/not otherwise specified
Infection	Postpartum genital tract (e.g., of the uterus/pelvis/perineum/necrotizing fasciitis), Sepsis/septic shock, Chorioamnionitis/antepartum infection, Non-pelvic infections (e.g., pneumonia, H1N1, meningitis, HIV), Urinary tract infection, Other infections/Not otherwise specified

E. Pregnancy Mortality Surveillance System (PMSS) Cause of Death Categorizations

PMSS Cause of Death	Explanation / Included Conditions
Liver and Gastrointestinal Conditions	Crohn's disease/Ulcerative colitis, Liver disease/failure/transplant, Other gastrointestinal diseases/Not otherwise specified
Malignancies	Gestational trophoblastic disease, Malignant melanoma, Other malignancies/Not otherwise specified
Metabolic/Endocrine Conditions	Obesity, Diabetes mellitus, Other metabolic/Endocrine disorders/Not otherwise specified
Preeclampsia and Eclampsia	----
Pulmonary Conditions (Excluding Adult Respiratory Distress Syndrome)	Chronic lung disease, Cystic fibrosis, Asthma, Other pulmonary disease/Not otherwise specified
Renal Diseases	----
Seizure Disorders	Epilepsy/seizure disorder, Other neurologic diseases/Not otherwise specified
Unknown	----

PMSS Cause of Death Categorizations available at: reviewtoaction.org/sites/default/files/national-portal-material/Report%20from%20Nine%20MMRCs%20final%20edit.pdf

F. Maternal Death Abstraction Form

Demographic Information	Abstracted Information
ID#	
Maternal Age	
Ethnicity	
Gravidity	
Parity	
Insurance status	
Pregnancy	Abstracted Information
Time between conception and diagnosis of pregnancy	
Number of prenatal appointments	
Medications	
PMH / PSH	
Family History	
Fetal Presentation	
Multiple births	
Placental location	
Pre-pregnancy weight of first booking weight	
Height (if recorded) and calculated BMI	
Lifestyle factors	
Birth attendant	
Termination of Pregnancy (TOP)	
Lowest Hb	
Glucose screen	
Research studies	

F. Maternal Death Abstraction Form

Pregnancy (continued)	Abstracted Information
Complications of pregnancy	
Interventions – early pregnancy (evacuation, laparotomy, hysterectomy, transfusion)	
Interventions – antenatal (transfusion, version)	
If death occurred antepartum; gestational age at death	
Labor / Delivery	Abstracted Information
Type of labor (spontaneous, augmented, induced, no labor, no specified)	
Interventions – intrapartum (instrument delivery, symphysiotomy, cesarean, hysterectomy, transfusion)	
Complications of delivery	
Method of delivery	
Pain relief during labor	
Live birth / still birth	
Puerperium / late maternal stage / general	Abstracted Information
Interventions – post-partum (evacuation, laparotomy, hysterectomy, transfusion, manual removal, return to OT)	
Interventions – other (general anesthetic, epidural, spinal anesthetic, local anesthetic, ICU / CCU, ventilation)	
Cause of death	Abstracted Information
If death occurred post-partum; number of days post-partum at death	
Classification of death (ICD-10)	
Avoidable factors	
<u>Additional comments</u>	

Note: The additional comments section was used to add any information not contained in any other specific section of the form that the nurse deemed relevant to complete case abstraction

G. MMRIA Committee Decisions Form

MATERNAL MORTALITY REVIEW INFORMATION APPLICATION (MMRIA) Committee Decisions Form – Page 2

CONTRIBUTING FACTORS WORKSHEET		RECOMMENDATIONS OF THE COMMITTEE		
<p>CONTRIBUTING FACTORS WORKSHEET</p> <p>What were the factors that contributed to this death? Multiple contributing factors may be present at each level.</p>		<p>RECOMMENDATIONS OF THE COMMITTEE</p> <p>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?</p>		
<p>CONTRIBUTING FACTOR LEVEL</p>	<p>CONTRIBUTING FACTOR AND DESCRIPTION OF ISSUE</p>	<p>RECOMMENDATIONS OF THE COMMITTEE</p>	<p>LEVEL OF PREVENTION (SEE BELOW)</p>	<p>LEVEL OF IMPACT (SEE BELOW)</p>
PATIENT/FAMILY				
PROVIDER				
FACILITY				
SYSTEM				
COMMUNITY				
<p>CONTRIBUTING FACTOR KEY (DESCRIPTIONS ON PAGE 4)</p> <ul style="list-style-type: none"> • 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 		<p>PREVENTION LEVEL</p> <ul style="list-style-type: none"> • 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) 	<p>EXPECTED IMPACT LEVEL</p> <ul style="list-style-type: none"> • 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.) 	

Additional information about MMRIA can be found at reviewtoaction.org/implement/mmria#collapseThree-mmria

G. MMRIA Committee Decisions Form

MATERNAL MORTALITY REVIEW INFORMATION APPLICATION (MMRIA) Committee Decisions Form – Page 3



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

If more than one is selected, please list them in order of importance beginning with the most compelling (1-2; no more than 2 may be selected in the system).

*PREGNANCY-RELATED DEATH: 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.

- | | | |
|---|---|---|
| <input type="checkbox"/> 10 Hemorrhage (excludes aneurysms or CVA) | <input type="checkbox"/> 83 Collagen vascular/autoimmune diseases | <input type="checkbox"/> 92.1 Epilepsy/seizure disorder |
| <input type="checkbox"/> 10.1 Hemorrhage – rupture/laceration/
Intra-abdominal bleeding | <input type="checkbox"/> 83.1 Systemic lupus erythematosus (SLE) | <input type="checkbox"/> 92.9 Other neurologic diseases/NOS |
| <input type="checkbox"/> 10.2 Placental abruption | <input type="checkbox"/> 83.9 Other collagen vascular diseases/NOS | <input type="checkbox"/> 93 Renal disease |
| <input type="checkbox"/> 10.3 Placenta previa | <input type="checkbox"/> 85 Conditions unique to pregnancy (e.g.
gestational diabetes, hyperemesis, liver
disease of pregnancy) | <input type="checkbox"/> 93.1 Chronic renal failure/End-stage renal
disease (ESRD) |
| <input type="checkbox"/> 10.4 Ruptured ectopic pregnancy | <input type="checkbox"/> 88 Injury | <input type="checkbox"/> 93.9 Other renal disease/NOS |
| <input type="checkbox"/> 10.5 Hemorrhage - uterine atony/postpartum
hemorrhage | <input type="checkbox"/> 88.1 Intentional (homicide) | <input type="checkbox"/> 95 Cerebrovascular accident (hemorrhage/
thrombosis/aneurysm/ malformation)
not secondary to hypertensive disease
Metabolic/endocrine |
| <input type="checkbox"/> 10.6 Placenta accreta/increta/percreta | <input type="checkbox"/> 88.2 Unintentional | <input type="checkbox"/> 96 Obesity |
| <input type="checkbox"/> 10.7 Hemorrhage due to retained placenta | <input type="checkbox"/> 88.9 Unknown/NOS | <input type="checkbox"/> 96.2 Diabetes mellitus |
| <input type="checkbox"/> 10.8 Hemorrhage due to primary DIC | <input type="checkbox"/> 89 Cancer | <input type="checkbox"/> 96.9 Other metabolic/endocrine disorders |
| <input type="checkbox"/> 10.9 Other hemorrhage/NOS | <input type="checkbox"/> 89.1 Gestational trophoblastic disease (GTD) | <input type="checkbox"/> 97 Gastrointestinal disorders |
| <input type="checkbox"/> 20 Infection | <input type="checkbox"/> 89.3 Malignant melanoma | <input type="checkbox"/> 97.1 Crohn's disease/ulcerative colitis |
| <input type="checkbox"/> 20.1 Postpartum genital tract (e.g. of the uterus/
pelvis/perineum/necrotizing fasciitis) | <input type="checkbox"/> 89.9 Other malignancies/NOS | <input type="checkbox"/> 97.2 Liver disease/failure/transplant |
| <input type="checkbox"/> 20.2 Sepsis/septic shock | <input type="checkbox"/> 90 Cardiovascular conditions | <input type="checkbox"/> 97.9 Other gastrointestinal diseases/NOS |
| <input type="checkbox"/> 20.4 Chorioamnionitis/antepartum Infection | <input type="checkbox"/> 90.1 Coronary artery disease/myocardial
Infarction (MI)/atherosclerotic
cardiovascular disease | <input type="checkbox"/> 100 Mental health conditions |
| <input type="checkbox"/> 20.5 Non-pelvic infections (e.g. pneumonia, TB,
meningitis, HIV) | <input type="checkbox"/> 90.2 Pulmonary hypertension | <input type="checkbox"/> 100.1 Depression |
| <input type="checkbox"/> 20.6 Urinary tract infection | <input type="checkbox"/> 90.3 Valvular heart disease congenital and
acquired | <input type="checkbox"/> 100.9 Other psychiatric conditions/NOS |
| <input type="checkbox"/> 20.9 Other Infections/NOS | <input type="checkbox"/> 90.4 Vascular aneurysm/dissection (non-cerebral) | <input type="checkbox"/> 999 Unknown COD |
| <input type="checkbox"/> 30 Embolism - thrombotic (non-cerebral) | <input type="checkbox"/> 90.5 Hypertensive cardiovascular disease | |
| <input type="checkbox"/> 30.9 Other embolism/NOS | <input type="checkbox"/> 90.6 Marfan Syndrome | |
| <input type="checkbox"/> 31 Embolism - amniotic fluid | <input type="checkbox"/> 90.7 Conduction defects/arrhythmias | |
| <input type="checkbox"/> 40 Preeclampsia | <input type="checkbox"/> 90.8 Vascular malformations outside head and
coronary arteries | |
| <input type="checkbox"/> 50 Eclampsia | <input type="checkbox"/> 90.9 Other cardiovascular disease, including CHF,
cardiomegaly, cardiac hypertrophy, cardiac
fibrosis, non-acute myocarditis/NOS | |
| <input type="checkbox"/> 60 Chronic hypertension with superimposed
preeclampsia | <input type="checkbox"/> 91 Pulmonary conditions (excludes ARDS-Adult
respiratory distress syndrome) | |
| <input type="checkbox"/> 70 Anesthesia complications | <input type="checkbox"/> 91.1 Chronic lung disease | |
| <input type="checkbox"/> 80 Cardiomyopathy | <input type="checkbox"/> 91.2 Cystic fibrosis | |
| <input type="checkbox"/> 80.1 Postpartum/peripartum cardiomyopathy | <input type="checkbox"/> 91.3 Asthma | |
| <input type="checkbox"/> 80.2 Hypertrophic cardiomyopathy | <input type="checkbox"/> 91.9 Other pulmonary disease/NOS | |
| <input type="checkbox"/> 80.9 Other cardiomyopathy/NOS | <input type="checkbox"/> 92 Neurologic/neurovascular conditions
(excluding CVAs) | |
| <input type="checkbox"/> 82 Hematologic | | |
| <input type="checkbox"/> 82.1 Sickle cell anemia | | |
| <input type="checkbox"/> 82.9 Other hematologic conditions including
thrombophilias/TTP/HUS/NOS | | |

Additional information about MMRIA can be found at reviewtoaction.org/implement/mmria#collapseThree-mmria

G. MMRIA Committee Decisions Form

MATERNAL MORTALITY REVIEW INFORMATION APPLICATION (MMRIA) Committee Decisions Form – Page 4



CONTRIBUTING FACTOR DESCRIPTIONS

DELAY OR FAILURE TO SEEK CARE

The woman was delayed in seeking or did not access care, treatment, or follow-up care/actions (e.g. missed appointment and did not reschedule).

ADHERENCE TO MEDICAL RECOMMENDATIONS

The woman did not accept medical advice (e.g. refused treatment for religious or other reasons or left the hospital against medical advice).

KNOWLEDGE - LACK OF KNOWLEDGE REGARDING IMPORTANCE OF EVENT OR OF TREATMENT OR FOLLOW-UP

The woman 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).

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).

ENVIRONMENTAL FACTORS

Factors related to weather or terrain (e.g. the advent of a sudden storm leads to a motor vehicle accident).

VIOLENCE AND INTIMATE PARTNER VIOLENCE (IPV)

Physical or emotional abuse other than that perpetrated by intimate partner (e.g. family member or stranger); IPV: Physical or emotional abuse perpetrated by the woman's current or former intimate partner.

MENTAL HEALTH CONDITIONS

The woman carried a diagnosis of a psychiatric disorder. This includes postpartum depression.

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

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

CHRONIC DISEASE

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

CHILDHOOD SEXUAL ABUSE/TRAUMA

Woman experienced rape, molestation, or other sexual exploitation during childhood plus persuasion, inducement, or coercion of a child to engage in sexually explicit conduct; or woman experienced physical or emotional abuse or violence other than that related to sexual abuse during childhood.

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.

UNSTABLE HOUSING

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

SOCIAL SUPPORT/ISOLATION - LACK OF FAMILY/ FRIEND SUPPORT SYSTEM

Social support from family, partner, or friends was lacking, inadequate, and/or dysfunctional (e.g. domestic violence, no one to rely on to ensure appointments were kept).

INADEQUATE OR UNAVAILABLE EQUIPMENT/ TECHNOLOGY

Equipment was missing, unavailable, or not functional, (e.g. absence of blood tubing connector).

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).

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

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.

CLINICAL SKILL/QUALITY OF CARE

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).

INADEQUATE COMMUNITY OUTREACH/RESOURCES

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

INADEQUATE LAW ENFORCEMENT RESPONSE

Law enforcement response was not in a timely manner or was not appropriate or thorough in scope.

LACK OF REFERRAL OR CONSULTATION

Specialists were not consulted or did not provide care; referrals to specialists were not made.

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.

LEGAL

Legal considerations that impacted outcome.

Additional information about MMRIA can be found at reviewtoaction.org/implement/mmria#collapseThree-mmria

H. Health Equity Resources

A number of recommendations in this report relate to health equity. Public health agencies, community organizations and healthcare organizations, facilities, and providers have a significant role to play in addressing disparities in outcomes such as life expectancy and mortality. The American College of Obstetricians and Gynecologists states that there is “a likely effect of experiences of racism and life stressors on obstetric and gynecologic outcomes” and that providers “must acknowledge the role they play in perpetuating health care disparities and must advocate for a system of more culturally and linguistically appropriate care for all.”¹⁷

While healthcare organizations do not have the power to improve every determinant of health, they can address some factors that drive disparities directly at the point of care (including during emergency room visits, prenatal appointments, or hospitalization for childbirth).

Some key definitions and resources for healthcare organizations interested addressing disparities in maternal mortality and working toward health equity are included below.

Definitions

1. **Health equity:** The fair distribution of health determinants, outcomes, and resources within and between segments of the population, regardless of social standing.¹⁸
2. **Institutional racism:** Discriminatory treatment, unfair policies and practices, and inequitable opportunities and impact, based on race.¹⁹
3. **Implicit bias:** Unconscious attitudes and associated stereotypes about categories of people.²⁰
4. **Racial Anxiety:** Discomfort about the experience and potential consequences of interracial interaction²⁰
5. **Stereotype Threat:** The concern felt by a person of a particular group about confirming negative stereotypes about their group²⁰

Resources, Tools, and Recommended Reading

- **Council on Patient Safety in Women’s Health Care’s Reduction of Peripartum Racial/Ethnic Disparities Patient Safety Bundle:** Provides facilities and providers with actionable steps to improve recognition, readiness, response to, and reporting of racial/ethnic disparities in maternal health. It is available at: safehealthcareforeverywoman.org/wp-content/uploads/2017/11/Reduction-of-Peripartum-Disparities-Bundle.pdf. Facilities participating in the Louisiana Perinatal Quality Collaborative will be implementing elements of this patient safety bundle.
- American College of Obstetricians and Gynecologists (ACOG)’s Committee Opinion on Racial and Ethnic Disparities in Obstetrics and Gynecology is available at acog.org/Clinical-Guidance-and-Publications/Committee-Opinions/Committee-on-Health-Care-for-Underserved-Women/Racial-and-Ethnic-Disparities-in-Obstetrics-and-Gynecology
- **Institute for Healthcare Improvement’s Equity Self-Assessment Tool for Healthcare Organizations:** Tool intended to help organizations evaluate their current focus on health equity and identify specific areas for improvement. The health equity assessment tool can be found at: ihi.org/resources/Pages/IHIWhitePapers/Achieving-Health-Equity.aspx.

H. Health Equity Resources

Resources, Tools, and Recommended Reading (continued):

- **Institute for Healthcare Improvement’s (IHI) Framework for Health Equity:** A useful framework health organizations can use to guide their health equity efforts.

IHI’s Framework for Health Equity	
Make health equity a strategic priority	<ul style="list-style-type: none"> • Demonstrate leadership commitment to improving equity at all levels of the organization • Secure sustainable funding through new payment models
Develop structure and processes to support health equity work	<ul style="list-style-type: none"> • Establish a governance committee to oversee and manage equity work across the organization • Dedicate resources in the budget to support equity work
Deploy specific strategies to address the multiple determinants of health on which healthcare organizations can have a direct impact	<ul style="list-style-type: none"> • Healthcare services • Socioeconomic status • Physical environment • Healthy behaviors
Decrease institutional racism within the organization	<ul style="list-style-type: none"> • Physical space: building and design • Health insurance plans accepted by the organization • Reduce implicit bias within organizational policies, structures, and norms, and in patient care
Develop partnerships with community organizations	<ul style="list-style-type: none"> • Leverage community assets to work together on community issues related to improving health and equity

- **Perception Institute:** website with information and resources related to implicit bias, stereotype threat, and racial anxiety. The Perception Institute translates research in concrete recommendations for how to reduce bias in studies, evaluations, interventions and communication strategies. Find it here: perception.org/.
- **Harvard Implicit Association Test (Project Implicit):** A validated online tool that measures implicit associations, sometimes referred to as implicit biases or unknown biases. The test measures the taker’s implicit associations related to race, gender, sexual orientation, and other topics. Find it here: implicit.harvard.edu/implicit/.

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