NORTH CAROLINA

2018-2019 Maternal Mortality Review Report

FEBRUARY 2024

NC DEPARTMENT OF
HEALTH AND
HUMAN SERVICES
Division of Public Health

EXECUTIVE SUMMARY

The North Carolina Maternal Mortality Review Committee (MMRC), which was established by state law in 2015, examines maternal deaths associated with pregnancy. The 2015 legislation established a nine-member, multidisciplinary committee of external partners appointed by the Secretary of the NC Department of Health and Human Services (NCDHHS). In 2022, the legislation (G.S 130A-33.60) was updated to allow for an increase in committee members, from nine to twenty.

This report provides an overview of all maternal deaths in the state with a primary focus on the patterns and trends in pregnancy-associated deaths that occurred in 2018 and 2019 and provides actionable public health and clinical recommendations aimed at the prevention of future maternal deaths. Given the time-intensive process, deaths for other years are still under review. Case identification process is outlined in the 2014-2016 MMRC report.

Key Findings

- The MMRC reviewed 181 NC resident deaths occurring from 2018 to 2019.
- 42% (n=76) of the cases were determined to be pregnancy-related.
- Among the 76 deaths occurring in 2018 and 2019 classified as pregnancy-related by the MMRC, mental health conditions were the overall leading cause of death, comprising nearly one-third of all cases (31.6%, n=24).
  - Twenty pregnancy-related deaths were attributed to overdoses.
- Eight pregnancy-related deaths were homicides:
  - For non-Hispanic Black individuals, the increase in pregnancy-related mortality ratios (PRMRs) was associated with an increase in pregnancy-related homicides.
- Nearly all the overdose deaths involved opioids (18 of 20) and fentanyl was noted in 14 of the 20 overdose cases.
- Among the 76 pregnancy-related deaths, more than half occurred during pregnancy, delivery, or within 42 days postpartum (n=40; 52%).
- Discrimination was determined to be a probable contributing factor in 53 pregnancy-related deaths (69.7%) and was the most common contributory factor recorded.
- The majority (85.5%) of pregnancy-related deaths occurring in 2018 and 2019 were preventable, that is "the committee determined that there was at least some chance of the death being averted by one or more reasonable changes."

Key Recommendation Themes

The primary goal of the MMRC is to apply the information gathered during maternal death reviews to the development of recommendations and strategies aimed at preventing **pregnancy-related** deaths in the state. Four hundred eleven recommendations were developed from the pregnancy-related deaths occurring from 2018-2019. Almost half (44%) of the recommendations focused on the system level (n=182), followed by approximately one-third (30%) on the provider level, and the other recommendations focused on patient/family, facility, and community levels. Below are the common themes that emerged from the 411 recommendations. In the report, the recommendations are organized under each theme below and sorted by level.

- Addressing Implicit Bias and Racism in Healthcare Settings
- Identification, Management, and Support of Individuals Struggling with Mental Health
- Overdose Prevention and Substance Use Disorders
- Intimate Partner Violence (IPV)
- Management of Chronic Diseases in Pregnancy
- Management of Obstetric and Postpartum Emergencies
- Access to Care
- Ensuring Family Security

Background

The current MMRC includes representation from the following perspectives: maternal fetal medicine, general obstetrics and gynecology, certified nurse midwifery, labor and delivery nursing, medical examiner, substance use, mental health, public health, patient advocacy, and community-based doulas.

The MMRC reviews all maternal deaths of NC residents to determine if pregnancy-related or pregnancy-associated. The Centers for Disease Control and Prevention (CDC) provides definitions and guidelines for classifying deaths occurring during pregnancy, childbirth, and in the postpartum period (up to 365 days from the end of the pregnancy). The MMRC uses these definitions and guidelines to ensure case review processes are standardized and consistent.

DEFINITIONS:

- **Pregnancy-Related:** A death during pregnancy or within one year of the end of the pregnancy from a pregnancy complication, a chain of events initiated by pregnancy or the aggravation of an unrelated condition by the physiologic effects of pregnancy.
- **Pregnancy-Associated:** A death during pregnancy or within one year of the end of pregnancy from a cause that is not related to the pregnancy.
- **Pregnancy-Associated, but unable to determine pregnancy relatedness**

Case Review Process

In comparison to the 2014-2016 MMRC report, the 2018-2019 report reflects significantly more deaths due to mental health conditions and accidental deaths as the Committee adopted enhanced reviews for suicide and accidental drug overdose deaths. These changes were incorporated based on published reports, such as the Utah Standardized Criteria for Review of Perinatal Suicides and Accidental Drug-Related Death. Utilization of the Utah criteria allowed the MMRC to review suicide and accidental drug-related death cases more consistently.

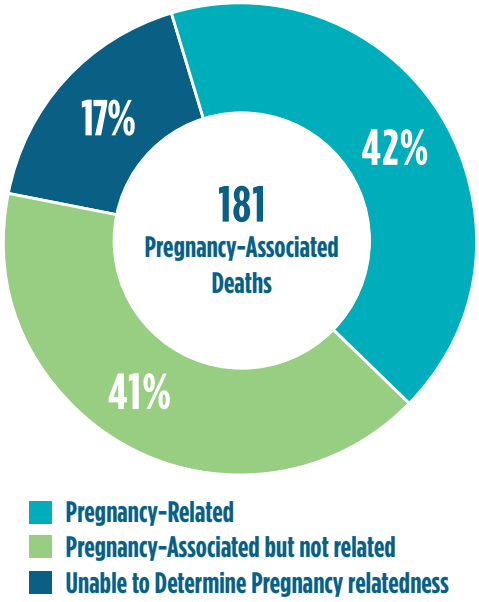
In 2019, North Carolina, along with five other state MMRCs, was identified to participate in a CDC Rapid Maternal Overdose Review (RMOR) project, which consisted of conducting in-depth
examinations of 2016 maternal deaths due to overdose. The CDC released a report summarizing the RMOR data and findings of the six MMRCs. The findings from the RMOR project informed the decision of the MMRC to review overdose cases using an enhanced and consistent process.

OVERVIEW OF 2018-2019 PREGNANCY-RELATED DEATHS

Pregnancy-Related

The MMRC reviewed 181 NC resident deaths occurring from 2018 to 2019 (Figure 1). Based on the Committee determination, a similar proportion of cases were determined to be pregnancy-related (n=76; 42%) and pregnancy-associated but not related (n=74; 41%). The MMRC was unable to determine pregnancy-relatedness for 31 cases (17%). Compared with the MMRC review of 2014-2016 data when 26% of cases were determined to be pregnancy-related and only 4% of cases were classified as undetermined, MMRC case reviews for 2018-2019 deaths represent a substantial increase in both cases determined to be pregnancy-related and in those classified as undetermined.

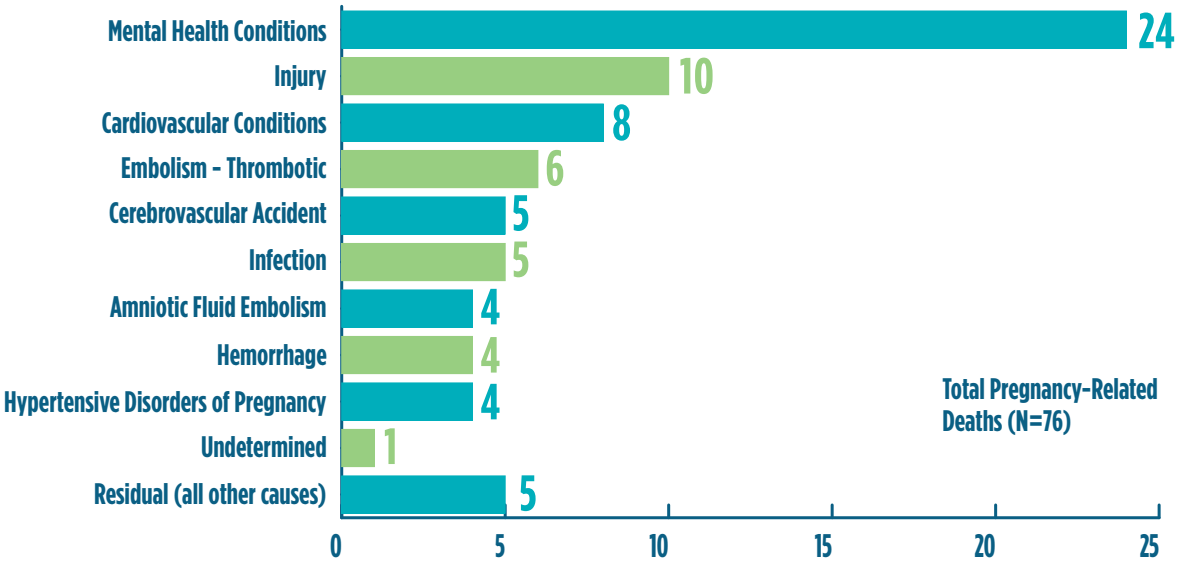
Figure 1. Pregnancy-Associated Death Categories by MMRC Determination, NC Residents 2018-2019



Causes of Pregnancy-Related Deaths

The MMRC classifies pregnancy-related causes of death using a specific set of categories developed by the CDC. The use of a standardized classification protocol facilitates comparable maternal mortality analysis across MMRCs throughout the United States (US). While the MMRC determines pregnancy-relatedness for all cases, the Committee only assigns a cause of death for cases classified as pregnancy-related. Among the 76 deaths from 2018-2019 that were classified as pregnancy-related by the MMRC (Figure 2), mental health conditions were the leading cause of death, comprising nearly one-third of all cases (31.6%, n=24). Injuries were the second leading cause of pregnancy-related deaths (13.2%, n=10). Other leading causes, in order, include cardiovascular conditions, thrombotic embolism, cerebrovascular accident, infection, amniotic fluid embolism, hemorrhage, and hypertensive disorders of pregnancy. A total of 5 pregnancy-related deaths are not presented due to small numbers (one death for each cause category). The MMRC was unable to determine a cause of death for one case.

Figure 2. Leading Causes of Pregnancy-Related Deaths, NC Residents 2018-2019



OVERDOSES, SUICIDES, AND HOMICIDES

The CDC does not include categories for unintentional/accidental poisonings (overdoses) or suicides that would allow the MMRC to specify these as the underlying cause of pregnancy-related deaths. Deaths from overdose and suicide are listed under Mental Health Conditions when the Committee determines pre-existing mental health were the underlying causes of the death. In cases where an overdose was determined to be unrelated to any preexisting mental health conditions or a contributing factor in the death, the MMRC may attribute the cause to Unintentional Drug Overdose within the Injury category. In 2017, the CDC added fields to the MMRIA committee decision form for recording whether the Committee concluded that mental health conditions and/or substance use disorder contributed to the death.

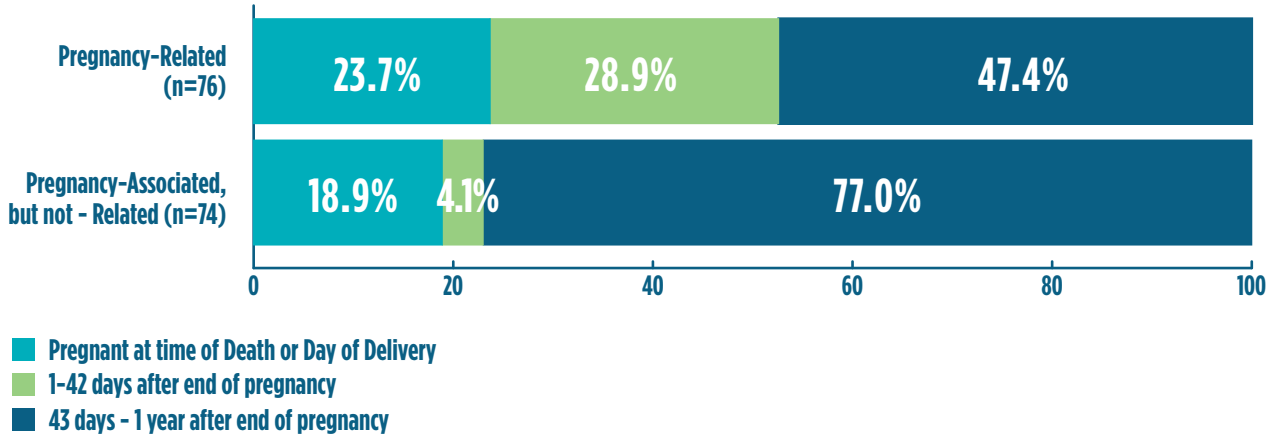
Figure 3 examines the two leading causes of pregnancy-related deaths in 2018 and 2019 — mental health conditions and injuries (i.e. suicide and homicide) — in further detail. Among the 34 pregnancy-related deaths attributed to mental health conditions or injuries, 20 were overdose. There were 8 deaths by homicide, 5 deaths by suicide and one injury case for which the MMRC was unable to determine intent. The CDC categories define homicide and suicide deaths as injury. The MMRC determined substance use disorder contributed or probably contributed to the cause of death among all 20 overdose cases. Nearly all the overdose deaths involved opioids (18 out of 20 deaths) and fentanyl was noted in 14 of the 20 overdose cases. Firearms were noted as the lethal means in 4 of the 8 pregnancy-related deaths by homicide and 2 of the 5 deaths by suicide. Among the suicides, the MMRC concluded that mental health conditions contributed to the death in all 5 cases. Former or current partners were the perpetrators in all 8 homicide cases.

Figure 3. Pregnancy-Related Deaths due to Mental Health Conditions & Injuries (n=34), NC Residents 2018-2019

Timing of Pregnancy-Related Deaths

Figure 4 presents the temporal proximity of the death to delivery/pregnancy for both pregnancy-related and pregnancy-associated but not related deaths. Pregnancy-related deaths were more likely to occur within a shorter time frame from pregnancy or delivery. During 2018-2019, among the 76 pregnancy-related deaths, more than half occurred during pregnancy, delivery, or within 42 days postpartum (n=40; 52%). In contrast, among deaths classified as pregnancy-associated but not related, less than a quarter (n=17; 23%) transpired within 42 days of pregnancy or delivery.

Figure 4. Pregnancy-Related and Pregnancy-Associated but not related Deaths by Timing of Death, NC Residents 2018-2019



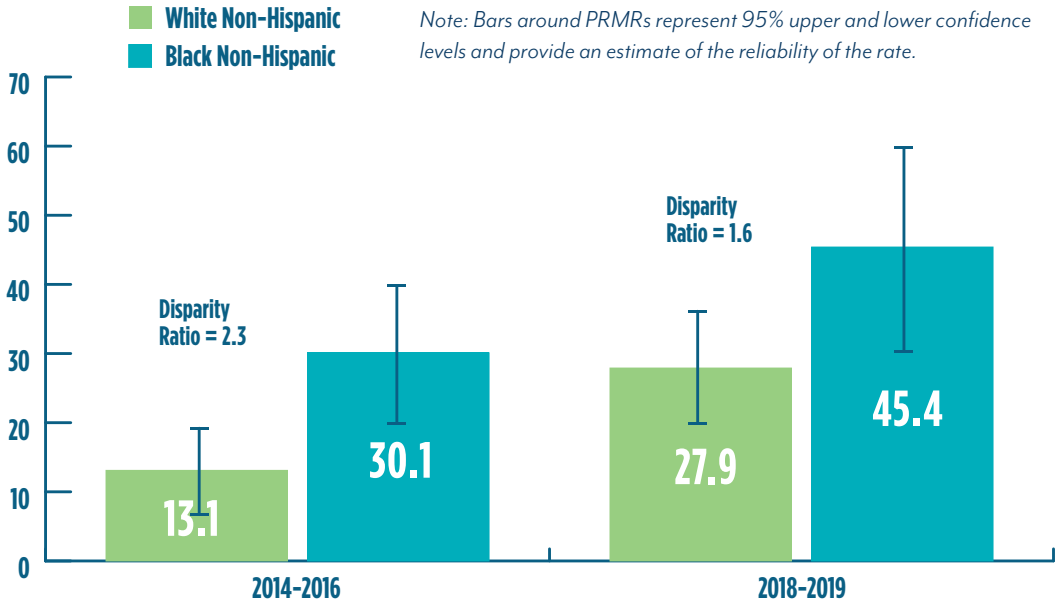
Pregnancy-Related Mortality Disparities

On average, there were 38 pregnancy-related deaths each year in NC from 2018-2019. This figure represents an increase from the last MMRC report, when the state average was 21 pregnancy-related deaths per year. As noted previously, the increase in overdose cases classified as pregnancy-related is largely responsible for the increase.

Given the relatively small number of deaths, it is necessary to aggregate both years of data in order to generate reliable pregnancy-related death ratios by race and ethnicity. Using this approach, aggregate pregnancy-related mortality ratios for non-Hispanic White mothers can be compared with non-Hispanic Black mothers for 2018-2019 as well as for the previous MMRC reporting period of 2014-2016. Other racial and ethnic groups in NC have aggregate multi-year pregnancy-related death figures that are too small (<10 deaths) to produce reliable disparity ratios and are not presented in this report.

As shown in Figure 5, pregnancy-related mortality ratios increased for both non-Hispanic Black and non-Hispanic White women during this time-period, and disparity ratios decreased by 29 percent. However, non-Hispanic White women continued to experience lower pregnancy-related mortality ratios than non-Hispanic Black women across both time periods. The disparity ratio decreased from 2014-2016 to 2018-2019, which appears to be related to the review of overdose cases that occurred starting with 2018 cases. Among the 20 cases of pregnancy-related overdoses in 2018-2019, 15 of the 20 cases were non-Hispanic White individuals. Additionally, overdoses were the leading cause of pregnancy-related deaths for non-Hispanic Whites during this period, accounting for 15 of the 35 pregnancy-related deaths occurring among this group. For non-Hispanic Black individuals, the increase in pregnancy-related mortality ratios (PRMRs) was associated with an increase in pregnancy-related homicides, which involved one death from 2014-2016 compared with 6 deaths during 2018-2019.

Figure 5. Non-Hispanic Black and Non-Hispanic White Pregnancy-Related Mortality Ratios by Year, NC Residents 2014-2016, 2018-2019

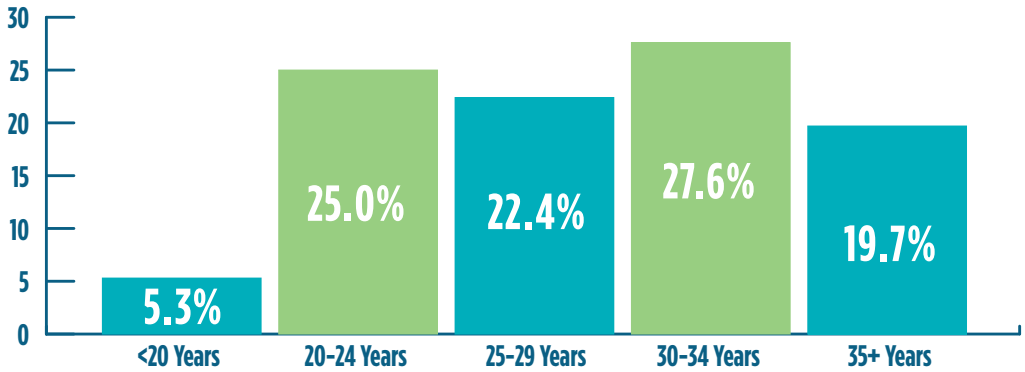


DEMOGRAPHIC CHARACTERISTICS OF PREGNANCY-RELATED DEATHS

With 76 pregnancy-related deaths overall, generating pregnancy-related ratios based on demographic characteristics can be challenging due to the reliability of rates based on small numbers. Consequently, for this section, only proportions are presented.

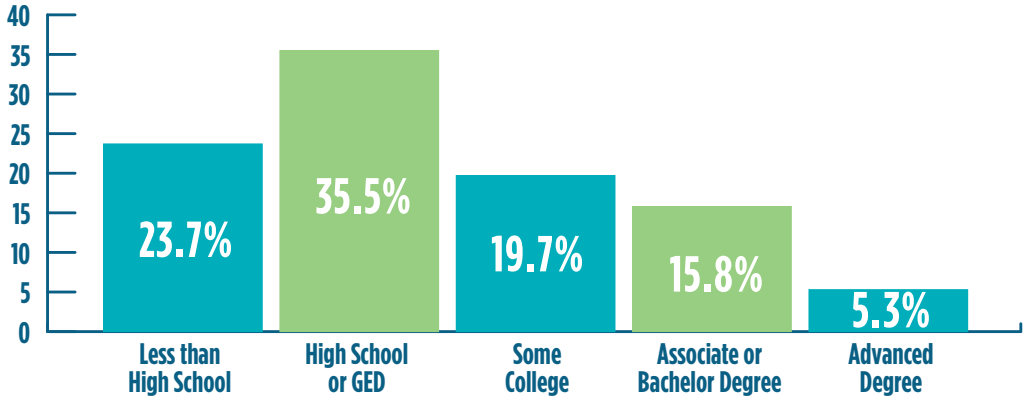
Age Group: Examining pregnancy-related deaths by age group (Figure 6), 27.6% of deaths (n=21) occurred among individuals 30-34 years old and 25.0% of deaths to individuals 20-24 years old (n=19). The lowest proportion of deaths occurred among individuals less than 20 years old (5.3%; n=4).

Figure 6. Pregnancy-Related Deaths: Percentages by Age Group, NC Residents 2018-2019



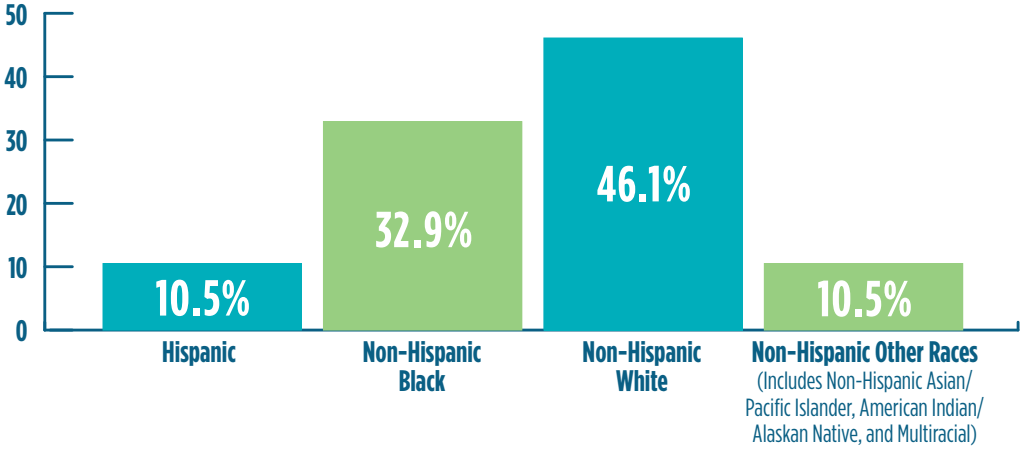
Education Level: As presented in Figure 7, among the 76 pregnancy-related deaths identified in 2018-2019, over half (59%) occurred to those with a high school education or less. By contrast, just over one in five pregnancy-related deaths (21%) occurred among individuals with Associate, Bachelor, or Advanced degrees.

Figure 6. Pregnancy-Related Deaths: Percentages by Education Level, NC Residents 2018-2019



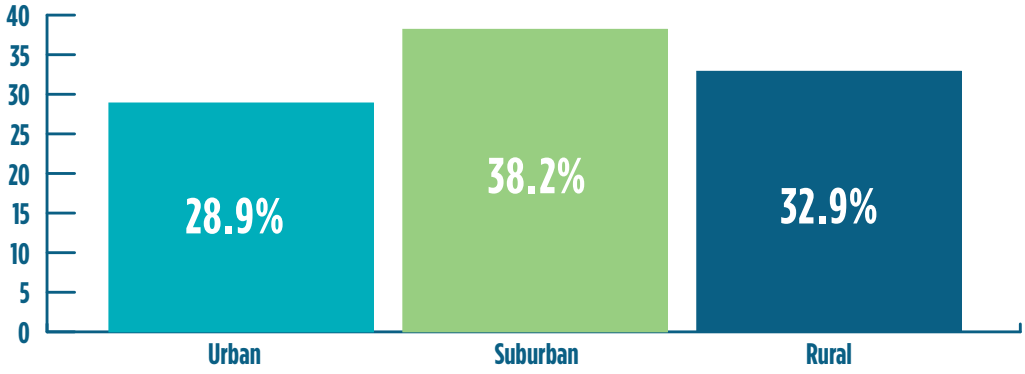
Race/Ethnicity: The small number of pregnancy-related deaths each year prohibits detailed disaggregation by race and ethnicity. However, from 2018-2019, 79% of all pregnancy-related deaths occurred among non-Hispanic White and non-Hispanic Black individuals, as displayed in Figure 8. Hispanics accounted for 10.5% of all pregnancy-related deaths during this period (n=8), and non-Hispanics of other races comprised approximately 10.5% of deaths (n=8). The "other races" category includes racial groupings having fewer than 5 pregnancy-related deaths and includes deaths to Asian/Pacific Islander, American/Indian Alaskan Native, and Multiracial individuals.

Figure 8. Pregnancy-Related Deaths: Percentages by Race/Ethnicity, NC Residents 2018-2019



Urban/Rural Status: The National Center for Health Statistics classifies US counties into six categories that include large central metro, large fringe metro, medium metro, small metro, micropolitan, and noncore. Large central metro and large fringe metro are classified as urban counties. Medium metro and small metro can be classified as suburban and micropolitan and noncore counties are designated as non-metropolitan/rural. (cite: www.cdc.gov/nchs/data/series/sr_02/sr02_166.pdf) According to Figure 9, suburban areas of the state accounted for the largest proportion of pregnancy-related deaths in 2018-2019 (38.2%). Rural areas of the state comprised 32.9% of pregnancy-related deaths and urban areas comprised 28.9% of deaths.

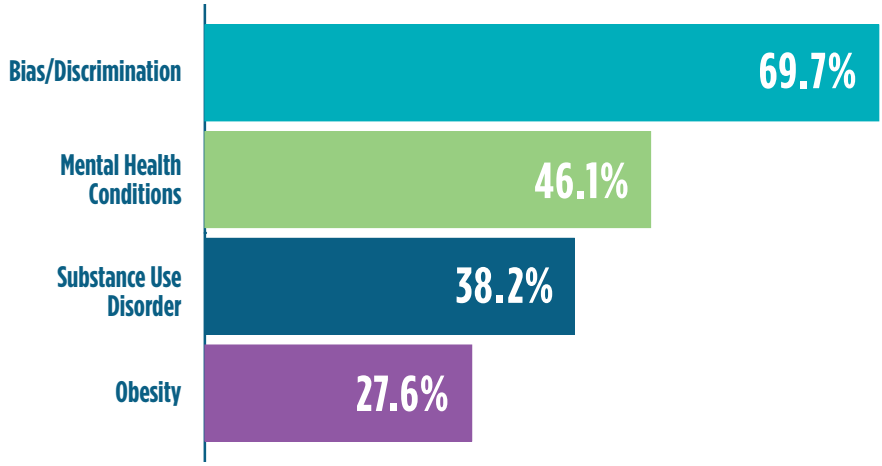
Figure 9. Pregnancy-Related Deaths: Percentages by Urban/Rural Status, NC Residents 2018-2019



OTHER FACTORS ASSOCIATED WITH PREGNANCY-RELATED DEATHS

Contributory Factors: The MMRC documented specific conditions that may have played a contributory role in 2018-2019 pregnancy-related deaths. These conditions include obesity, mental health, substance use disorders, and bias/discrimination. Figure 10 presents the proportion of pregnancy-related deaths where these factors were documented as contributing or probably contributing.

Figure 10. Percentage of Pregnancy-Related Deaths with Key Contributory Factors Documented by MMRC NC Residents 2018-2019



- **Discrimination*:** Discrimination was determined to be a contributing factor in 53 pregnancy-related deaths (69.7%) and was the most common contributory factor recorded. *It is important to bear in mind that this category is not limited to racial discrimination alone but considered more broadly to include discrimination based on other personal characteristics, such as substance use, weight, geography, incarceration history, and other considerations.*
- **Mental Health Conditions:** Mental health conditions were the second most recorded contributory factor, noted for nearly half of pregnancy-related deaths (46.1%; n=35).
- **Substance Use Disorder:** The MMRC determined that substance use disorder contributed to 29 pregnancy-related deaths (38.2%).
- **Obesity:** A smaller, but still substantial proportion of pregnancy-related deaths recorded that obesity may have been a contributory factor (n=21; 27.6%).

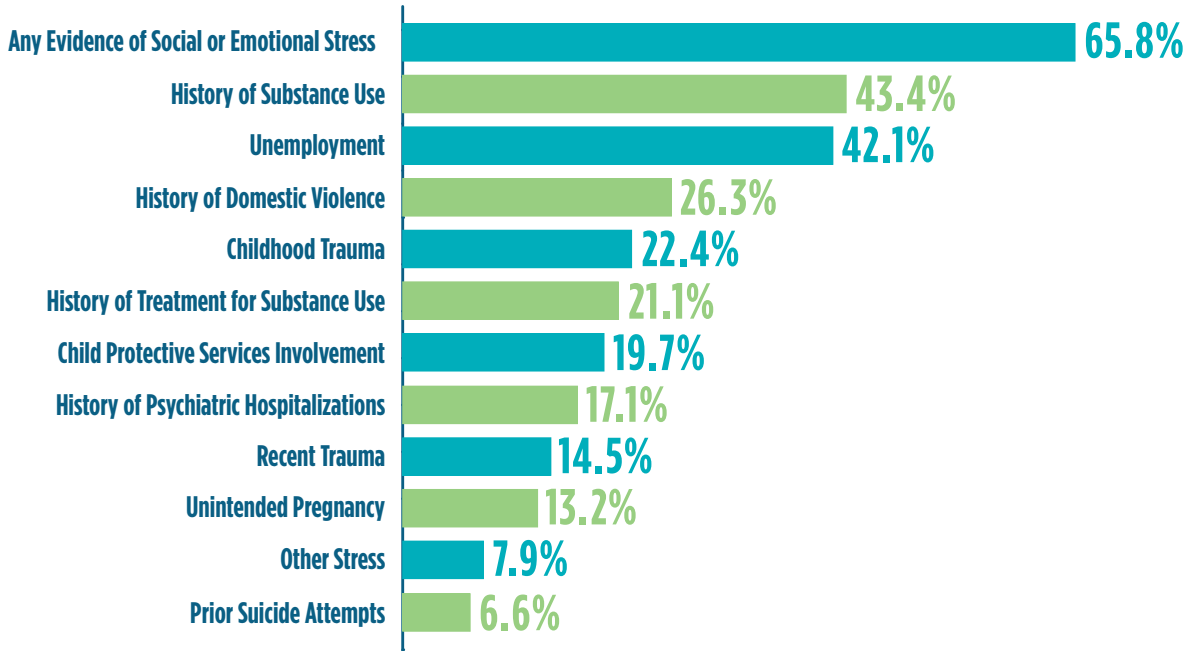
CDC DEFINITIONS FOR DISCRIMINATION:

- **Discrimination:** Treating someone less or more favorably based on the group, class, or category they belong to resulting from biases, prejudices, and stereotyping. It can manifest as differences in care, clinical communication, and shared decision-making.
- **Structural Racism:** The systems of power based on historical injustices and contemporary social factors that systematically disadvantage people of color and advantage white people through inequities in housing, education, employment, earnings, benefits, credit, media, health care, criminal justice, etc.
- **Interpersonal Racism:** Differential assumptions about the abilities, motives, and intentions of others and resulting in differential actions toward others based on their race. It can be conscious as well as unconscious, and it includes acts of commission and acts of omission. It manifests as lack of respect, suspicion, devaluation, scapegoating, and dehumanization.

SOCIAL AND EMOTIONAL STRESS DOCUMENTED THROUGH ABSTRACTION

Social and/or emotional stress indicators are documented during abstraction. These stressors, defined in the MMRIA database include: a history of domestic violence, history of psychiatric hospitalizations, child protective services involvement, history of substance use, unemployment, history of treatment for substance use, unintended pregnancy, recent trauma, history of childhood trauma, prior suicide attempts, or other sources of social/emotional stress. Among pregnancy-related deaths occurring during 2018-2019, 65.8% had some evidence of social or emotional stress at the time of their death (Figure 11). A history of substance use (43.4%) and unemployment (42.1%) were the two most common categories of social/emotional stress documented among pregnancy-related deaths during this period.

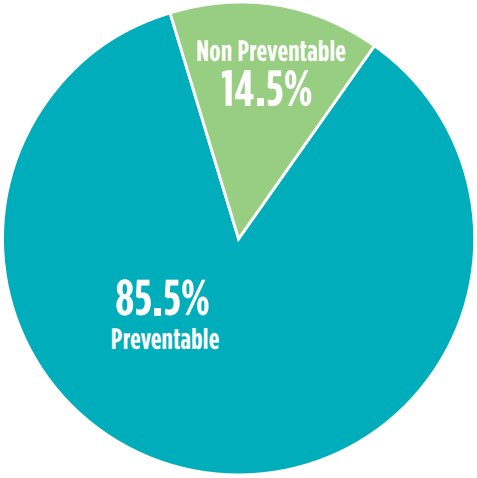
Figure 11. Pregnancy-Related Deaths by Evidence of Social or Emotional Stress, NC Residents 2018-2019



PREVENTABILITY OF PREGNANCY-RELATED DEATHS

As shown in Figure 12 the MMRC determined that the majority (85.5%) of pregnancy-related deaths from 2018-2019 were preventable, that is "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".

Figure 12. Pregnancy-Related Deaths: Proportion NC MMRC Determined to be Preventable, NC Residents 2018-2019



This represents an increase from the 2014-2016 period when the MMRC concluded that 70% of pregnancy-related deaths might have been preventable. Among the 65 preventable deaths occurring during 2018-2019, the Committee concluded there was *"some chance"* to alter the outcome for 28 deaths and a *"good chance"* to avert the outcome for 33 deaths (Table 1). The MMRC was unable to determine whether there was a chance to alter the outcome for 4 deaths classified as preventable.

Table 1. Pregnancy-Related Deaths by Preventability, NC Residents 2018-2019

Chance to Alter Outcome	PREVENTABILITY		
	Not Preventable	Preventable	Total
No Chance	11	0	11
Some Chance	0	28	28
Good Chance	0	33	33
Unable to Determine	0	4	4
Total	11	65	76

COMMITTEE RECOMMENDATIONS

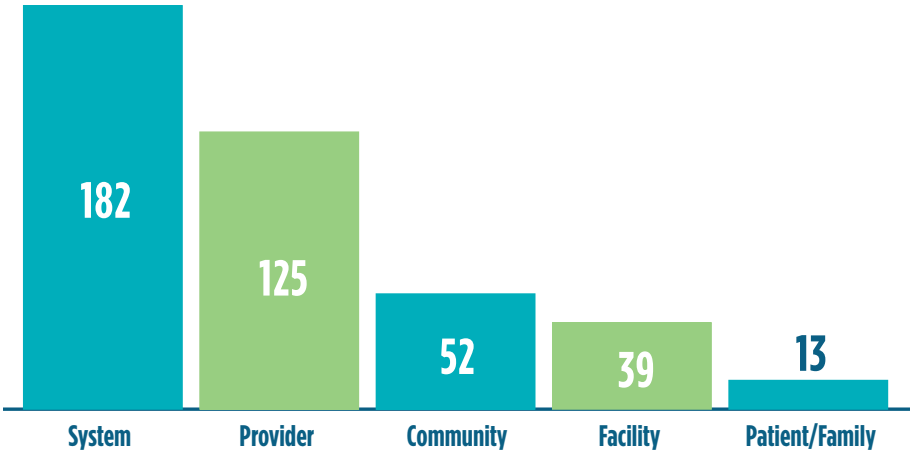
The primary goal of the MMRC is to apply the information gathered during maternal death reviews to the development of recommendations and strategies aimed at preventing pregnancy-related deaths in the state.

The MMRC utilizes CDC's MMRIA system's five standardized categories for classifying committee recommendations by contributing factors. These categories are:

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

Almost half (44%) of the recommendations focused on the system level (n=182), followed by approximately one-third (30%) on the provider level and the other recommendations focused on patient/family, facility, and community levels. When the MMRC was first established, due to the nature of the cases reviewed, recommendations were primarily medically focused. In more recent years, the MMRC began making broader, more comprehensive recommendations acknowledging the role of social determinants and non-medical drivers of health and systems that sustain and perpetuate circumstances associated with pregnancy-related deaths. Figure 13 presents total recommendations made based on categories.

Figure 13. Committee Recommendations by Category, NC Pregnancy-Related Deaths, 2018-2019



MMRC RECOMMENDATIONS

Common themes derived from MMRC recommendations from 2018-2019 are provided below. The recommendations have been grouped by topic area, and within each topic, the recommendations are sorted by level.

ADDRESSING IMPLICIT BIAS AND RACISM IN HEALTHCARE SETTINGS

Pregnancy-related mortality disproportionately impacts non-Hispanic Black mothers. Implicit bias and racism contribute to these disparities and needs to be addressed to improve outcomes among non-Hispanic Black individuals. Additionally, other marginalized groups also experience poor health outcomes which are impacted by discrimination, i.e., migrant communities etc.

Recommendations for healthcare systems, including hospitals, clinics, veteran-focused healthcare systems, or health professions training programs.

- Hospitals, healthcare systems, and medical schools should mandate and provide training on issues including:
  - Implicit bias, racism, and the impact of (dehumanizing) language during the perinatal period.
  - How to implement equity and reduce discrimination and racism in care for all patients.
  - Implicit bias, specifically focused on issues related to substance misuse and disorders.
  - Comprehensive communication addressing implicit bias, explicit bias, racism, and shared decision making.
  - Cultural humility that reflects the communities being served.
- Hospitals and healthcare systems should consider the needs of the communities being served, including.
  - Provide culturally and linguistically appropriate education on perinatal complications and postpartum warning signs in the format preferred by the patient.
  - Have protocols in place requiring and ensuring patients are offered and provided information in their preferred language.
  - Prioritize the development of culturally responsive services, programs, and written materials with patient input.

Recommendations for healthcare providers

- Use language outlined by the CDC Health Equity Guide when documenting and considering patient's behavior.
- Provide information about available resources to all patients, regardless of financial status, to develop culturally responsive care.

Recommendations for community

- Join with advocacy groups to provide education on hypertensive disorders of pregnancy, warnings, along with management and follow-up in an appropriate language.
- Advocate for care navigators and community health workers that can provide culturally aligned care.

IDENTIFICATION, MANAGEMENT, AND SUPPORT OF INDIVIDUALS STRUGGLING WITH MENTAL HEALTH

MMRC recommendations focused on identifying, treating, and supporting individuals struggling with mental health conditions.

Recommendations for local, state, or federal level policymakers

- Allocate funds to build the mental health infrastructure focused on supporting individuals throughout the perinatal period.
  - Increase funding for workforce expansion of perinatal behavioral health providers (i.e., psychiatric prescribers, therapists) as well as community health workers and doulas supporting individuals throughout the perinatal period.
  - Fund community providers and organizations who are engaged in culturally responsive, trauma-informed care for those who have been impacted by human trafficking.
  - Financially support inpatient mental health services for perinatal mental mood disorders.
  - Financially support the establishment of an integrated healthcare model within Obstetric (OB) offices to support closer follow-up and directly connect with community psychiatry and mental health resources.
- Invest more at the federal level to expand Tricare coverage to support active military and veterans throughout the perinatal period.
  - Ensure that active-duty personnel and veterans have access to Tricare coverage of evidence-based treatment for all perinatal services including mood and substance use disorders from pregnancy through one-year postpartum.
  - Ensure Tricare's network of mental health and substance use providers is sufficient to serve all perinatal active-duty personnel and veterans who need the services.

  - Ensure that Tricare reimburses perinatal active-duty personnel and veterans who can only access out-of-network mental health and substance use providers.
- Implement policies and processes to ensure appropriate mental health follow-up is available for those who experience a traumatic event.
- The NC State Bar should require yearly training(s) on trauma-informed practice and utilize appropriate subject matter experts, including those who have lived experience, to deliver these trainings.
- Payors should continue to support the provision of consultation via telemedicine to address medical management of pregnant and postpartum moms, including medication management for perinatal mood disorders.

Recommendations for healthcare systems, including hospitals, clinics, veteran-focused healthcare systems, or health professions training programs.

- Ensure training for those who provide care to recognize co-occurring substance use and mental health disorders as well as the ability to link to resources in the community and secure treatment.
- Boards who license physicians (OB/GYN, family medicine providers, etc.) and Advanced Practice Providers should require continuing education modules specific to perinatal mental health and substance use disorders to support their understanding of the safety of psychotropic medications during pregnancy. (Refer to NC MATTERS, / Postpartum Support International (PSI) National Directory, HRSA Maternal Mental Health Hotline, and Mothertobaby.org).
- Implement a hospital protocol that incorporates risk stratification and Adverse Childhood Experiences (ACEs) screening to respond appropriately to a patient expressing a mental health concern. This should include an interdisciplinary team approach to provide a complete intervention that includes psychotherapy and medication management.
- All antepartum patients should have a behavioral health assessment at admission.
- Educate the public and raise awareness of local maternal mental health and crisis resources such as the HRSA Maternal Mental Health Hotline and 988 Suicide and Crisis Lifeline.
- Develop programs to provide mental health services to individuals not otherwise eligible for Medicaid benefits.

Recommendations for healthcare providers

- Screen for mental health and substance use disorders.
  - Follow American College of Obstetricians and Gynecologists (ACOG) guidelines related to mental health and substance use screening during pregnancy at each trimester and in the postpartum visit.
  - Obstetric providers should evaluate the existence of and acuity of existing mental health conditions and follow-up accordingly by scheduling postpartum visits within two weeks of discharge.
  - Ensure that individuals with a prior history of mental health conditions receive enhanced behavioral health care during the perinatal period per ACOG criteria.
  - Screen for Adverse Childhood Experiences (ACEs).
- Educate perinatal patients and their families about risks related to mental health disorders and connect them to relevant resources.
  - Educate family members for when mood disorders can occur and reasons to seek treatment for post-pregnancy or post-loss mood disorders after birth and/or post-miscarriage.
  - Educate patients and families about the risks of access to lethal means after identified known previous suicide attempts.
  - Connect individuals to grief counseling (support groups or individual) and mental health services for all impacted by pregnancy loss.
- Regularly review resources available to stay up-to-date on the safety of psychotropic medications during the perinatal period.
  - Consult with medication consultation lines (such as NC MATTERS, PSI Medication Consult Line) as needed for information on psychiatric medications that are safe throughout the perinatal period.
- Provide trauma-informed care and assess trauma with referral, as necessary.

Recommendations for community

- Advocate for the rights of undocumented immigrants to receive medical and behavioral health services without fear of arrest and/or deportation.
- Provide increased education regarding the treatment of mood disorders to decrease stigma and increase awareness of how to seek help.

OVERDOSE PREVENTION AND SUBSTANCE USE DISORDERS (SUD)

Recommendations for local, state, or federal level policymakers

- Allocate funds for the treatment and resources for pregnant and postpartum individuals struggling with substance use.
  - Increase funding for inpatient beds and residential treatment programs for pregnant and parenting individuals.

  - — Utilize opioid settlement funds to develop interventions focused on the needs of pregnant and postpartum individuals, support harm reduction efforts, and substance use education.
- The justice system should treat SUD as a medical illness, emphasizing treatment rather than incarceration for birthing individuals.

Recommendations for healthcare systems, including hospitals, clinics, veteran-focused healthcare systems, or health professions training programs.

- Health care systems, along with medical schools, should provide ample opportunity for training via accredited sources such as the American Society of Addiction Medicine (ASAM) and ACOG to ensure healthcare providers are up-to-date on how to best care for individuals living with substance use. These trainings should focus on topics such as:
  - — The intersection of pain, substance use, and mental health.
  - — How to recognize co-occurring substance use disorders (SUD) and mental health disorders
  - — The increased risk of return to substance use during postpartum period after discontinued use of psychotropic medications.
  - — Expansion of substance use screening to include inhalant use.
  - — How to recognize SUD and perinatal mental health concerns and refer to appropriate services in the community.
- Keep literature about Naloxone/Narcan visible and available in exam rooms.

Recommendations for healthcare providers

- For pregnant and postpartum individuals with a history of substance use, SUD, or overdose, include additional preventive steps when providing care:
  - — Offer Naloxone/Narcan at every appointment.
  - — Tailor close follow-up for high-risk pregnancy patients
  - — Follow ACOG and Alliance for Innovation on Maternal Health (AIM) guidelines for SUD screenings throughout pregnancy and postpartum period.
  - — Increase awareness of community resources available to accept referrals for substance use and mental health needs.
- Check the controlled substances database prior to prescribing opioids.
- Screen everyone for SUD using a validated screening tool when providing care for individuals who are pregnant and up to 12 months postpartum.

Recommendations for county or state level agencies

- Child Protective Service (CPS) agencies should ensure frontline, client-facing providers and staff receive training related to trauma and SUD to enhance knowledge about and receptiveness to working with people with SUD.

- CPS agencies should implement a notification pathway for substance exposed infants as it relates to the Child Abuse Prevention and Treatment (CAPTA) Plan of Safe Care requirements.
- Pregnancy care manager or patient navigator services should be provided for all pregnant individuals, particularly those who have substance use or mental health conditions, for at least one year postpartum.

Recommendations for first responders and Emergency Medical Services (EMS)

- Be aware of and act in accordance with NCGS 90-21.13 which states no recovery may be made against healthcare provider on the grounds that healthcare was rendered without the informed consent to utilize Naloxone/Narcan in the field
- Administer naloxone in all potential overdose cases.

INTIMATE PARTNER VIOLENCE (IPV)

Recommendations for local, state, or federal level policymakers

- Pass a law barring individuals with previous charges of IPV from owning a firearm.
- Reinstate the Violence Against Women Act (VAWA).
- Create legislation to decrease access to guns, such as through community buy-back programs.
- Allocate funds to address IPV and the needs of victims of IPV.
  - — Expand funds and services for victim advocacy of IPV survivors, regardless of criminal charge.
  - — Fund additional shelter and support services for people experiencing IPV.
  - — Provide funding for a media campaign around IPV as a public health priority and provide more messaging and resources.
  - — Provide funding and resources to implement ACOG and CDC policy recommendations around gun violence and safety.

Recommendations for healthcare systems, including hospitals, clinics, veteran-focused healthcare systems, or health professions training programs.

- Require ongoing training on human trafficking.
- Implement policy of separating visitors from patients during IPV assessment.
- Apply national standards for IPV screening tools for global screening of all pregnancies consistently. For example, ACOG Committee Opinion No. 518 for guidelines or the Pregnancy Risk Screening tool used as part of the Care Management for High Risk Pregnancies (CMHRP) program
- Implement protocols to screen patients with a history of domestic violence for a traumatic brain injury (TBI) and provide information on the effects of TBI.

Recommendations for county or state level agencies

- Law enforcement should increase awareness of resources in the community, including orders of protection (Domestic Violence Protective Order), to ensure that firearms are removed from the possession of the defendant/batterer.
- Law enforcement agencies should utilize a lethality assessment for all assault response whether there have been or not known incidents of IPV.
- Government agencies should ensure indigenous and tribal representation for decision making regarding policy decisions related to IPV in the perinatal period.

Recommendations for community

- Expand resources and capacity for victims and survivors of IPV.
- Faith leadership, community leadership, and IPV advocacy groups should collaborate to identify and respond to IPV within communities.
- National organizations and advocacy groups should develop or enhance a national standard to engage partners and families who are experiencing IPV and strategies to prevent domestic violence during the perinatal period.
- Social media platforms should link individuals who post about IPV to national hotline resources for IPV.
- Adoption agencies should screen for IPV both with potential adoptive parents and mothers seeking placement for their babies throughout the process and provide resources as needed.
- Provide community education on the disparities experienced by communities of color who experience IPV.
- Receive training in order to recognize and refer to organizations that provide services for people who have experienced trauma, such as a history of sexual assault and IPV.

MANAGEMENT OF CHRONIC DISEASES IN PREGNANCY:

Recommendations for healthcare systems, including hospitals, clinics, veteran-focused healthcare systems, or health professions training programs.

- Develop a system-wide protocol to provide patient education about hypertension throughout pregnancy.
- Include a workflow in the Electronic Health Record that incorporates protocols of management of hypertension in perinatal patients.
- Provide a care navigator to individuals with chronic conditions, such as asthma, who can help them access resources and ensure optimal treatment of chronic conditions throughout the perinatal period.
- Insurance companies should cover blood pressure cuffs for all perinatal individuals.

Recommendations for healthcare providers

- Ensure appropriate cardiology follow-up for patients with congenital heart disease from preconception through at least one year postpartum.
- Provide pregnant patients with a blood pressure cuff for home use according to ACOG 222 Practice Bulletin.
- Follow ACOG guidelines regarding acute fatty liver in pregnancy.
- Explore barriers or reasons why an individual is not taking their prescribed medication during pregnancy and the postpartum period.
- Implement protocols for early recognition and response to cardiac disease during pregnancy.
- Follow ACOG/AIM guidelines for treatment of severe hypertension during pregnancy.

Recommendations for county or state level agencies

- NC Department of Health and Human Services should lead statewide, multidisciplinary (pediatric and adult congenital heart disease, Maternal Fetal Medicine, cardiology, OB anesthesiology) initiatives to include comprehensive and collaborative cardiac obstetric care, to outline appropriate care for individuals in the preconception, intrapartum, and at least one year postpartum.
- Carceral settings (jails and prisons) should have protocols in place for administering scheduled medications in a timely manner for chronic conditions, such as diabetes.

MANAGEMENT OF OBSTETRIC AND POSTPARTUM EMERGENCIES

Recommendations for healthcare systems, including hospitals, clinics, veteran-focused healthcare systems, or health professions training programs.

- Implement protocols to be prepared for various medical emergencies and operations including:
  - Performing perimortem cesarean sections within 5 minutes of cardiac arrest.
  - Performing a resuscitative cesarean section on pregnant people greater than 20 weeks who present to Emergency Department (ED) in cardiac arrest after 4 minutes of resuscitation.
  - How to receive blood products on an emergency basis if a hospital has limited blood bank resources.
- Include routine trainings, didactics, and simulations (including ED providers) for various emergencies including:
  - Recognition and response to coagulopathy & hemorrhage.
  - Postpartum hemorrhage
  - Professional guidelines for the care of pregnant individuals in cardiac arrest.

- Birthing hospitals should stock or otherwise make rapidly available the minimal requirement of blood products that enable initiation of massive transfusion protocol.
- Ensure that evaluation and follow-up of activities of daily living following a severe maternal morbidity event including behavioral health occurs prior to discharge and at least up to one year postpartum.
- Pregnant and up to one-year postpartum patients should have autopsy evaluation to determine cause of death with family consent.
- All hospitals should have evaluation and management services available on-site 24/7 for common conditions for which pregnant women present.

Recommendations for healthcare providers

- Providers, especially in emergency settings, need to apply the hypertension bundles and ACOG guidelines for recognition of Hemolysis, Elevated Liver Enzymes and Low Platelets (HELLP)/hypertensive disorders during pregnancy.
- ED providers should consult OB provider to recommend appropriate hypertension medication management and follow-up when pregnant patients present with severe high blood pressures.
- Clinical teams should fully evaluate and appropriately respond to any potential signs of coagulopathy during labor and postpartum period.
- Educate patients on emergency OB conditions and the need to have a skilled provider at delivery with a pathway for escalation.

Recommendations for local or state agencies

- DPH should continue the Hear Her campaign to provide ongoing education regarding the importance of listening to pregnant and postpartum individuals.
- Educate the public on the importance of personal and family medical history pertaining to the lethality of inherited disease during the perinatal period.
- Provide education to the community regarding the risks and signs of pulmonary embolism in pregnancy and individual appropriate vital signs.

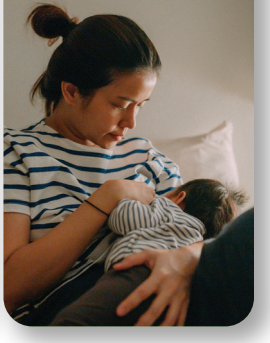
ACCESS TO CARE

Accessible and affordable prenatal care, including pregnancy care management, is vital in identifying and addressing medical concerns before it is too late. The MMRC included several recommendations to increase access to care.

Recommendations for local, state, or federal level policymakers

- Implement programs that incentivize specialists to work in rural areas.
- Expand Medicaid eligibility to include all pregnant individuals regardless of citizenship status.





- Enhance Medicaid transportation services to ensure transportation is available for necessary medical appointments in a timely manner throughout the perinatal period.
- Medicaid should develop a uniform approach to transportation and childcare services.
- Medicaid should reimburse for both birth and postpartum doula services.

Recommendations for healthcare systems, including hospitals, clinics, veteran-focused healthcare systems, or health professions training programs.

- State health systems should require and provide financial support for all hospitals to develop collaborative systems using ACOG Clinical Guidance for risk appropriate care.
- Ensure that discharged patients have a plan of care sent to OB providers.
- Emergency departments should develop a process to allow them to make prenatal appointments for pregnant patients, regardless of insurance status, during the ED visit.
- Expand access to preconception and interception services for adolescents.
- Incorporate community health workers, patient navigators, doulas, and care managers into OB care to expand patient resources and capacity to address postpartum medical concerns.
- Develop community-based pregnancy care management for all pregnancies regardless of insurance status.

Recommendations for healthcare providers

- Refer individuals to pregnancy care managers to address barriers for nonadherence to evidence-based medical treatment during pregnancy and the postpartum period.
- If there are concerns regarding inadequate prenatal care, make an automatic referral to social work during the hospital stay.
- Leadership within carceral settings should implement a state developed toolkit to standardize clinical skill and quality within carceral settings with ongoing orientation, annual reviews, and continuing education.

Recommendations for local or state agencies

- Educate the public on physical and mental healthcare resources for the uninsured and underinsured.
- Implement programs that incentivize specialists to work in rural areas continuously.
- DHHS should inform statewide programs to employ perinatally trained community support workers, including doulas, to support at-risk pregnant and postpartum birthing people.

- Medicaid should provide Emergency Departments throughout the state with a list of contacts and a simple, timely process for Care Management for High-Risk Pregnancies (CMHRP) referral.
- Develop and implement a toolkit to standardize clinical skill and quality within carceral settings with ongoing orientation, annual reviews, and continuing education.

ENSURING FAMILY SECURITY

Recommendations for local, state, or federal level policymakers

- Ensure safe and affordable housing.
- Ensure family security by enacting or reenacting policies such as:
  - Paid family and medical leave.
  - Paid sick days.
  - Earned income tax credit.
  - Child tax credit.
  - Mandate ready access to safe and affordable housing.
- Work with community-based organizations to explore alternative options for pregnant individuals that are incarcerated for nonviolent offenses.
- Include wraparound services and care that includes in-home nursing aides, clinical social workers for assessments, and vouchers for free childcare in the perinatal period.

Recommendations for healthcare systems, including hospitals, clinics, veteran-focused healthcare systems, or health professions training programs.

- Screen for malnutrition and food insecurity at admission.
- Partner with community organizations to provide free food to patients who are experiencing food insecurity.
- Engage and encourage partners/support people in OB care as a prevention strategy. Examples include group prenatal care, i.e., Centering Pregnancy or a Fatherhood Initiative.

Recommendations for local or state agencies

- CPS should create a statewide, standardized protocol that prioritizes keeping mothers and babies together.
- Foster care system support should be extended past age 18, with an emphasis on children transitioning to the workforce or furthering their education.
- Local Departments of Social Services should hire only professionally trained social workers (at least Bachelor of Social Work) as CPS workers.

ACKNOWLEDGMENTS

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