Iowa 2024 Maternal Mortality Report, 2019-2021 Deaths

Abridged Version

Iowa Maternal Mortality Review Committee

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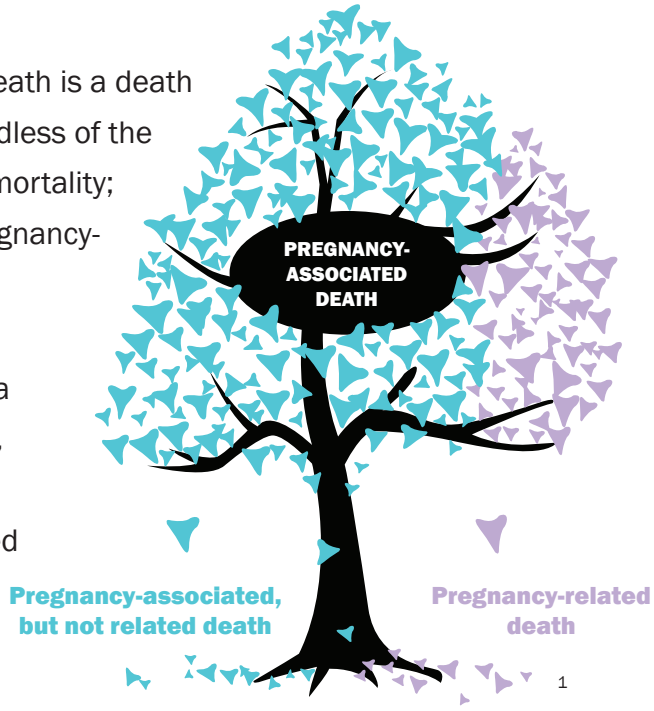
Definitions

Maternal Mortality Classification Definitions

Pregnancy-Associated Death: Pregnancy-associated death is a death during or within one year of the end of pregnancy, regardless of the cause. These deaths make up the entirety of maternal mortality; within that whole are pregnancy-related deaths and pregnancy-associated but not related deaths.[2]



Pregnancy-Related Death: Pregnancy-related death is a death during 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.[2]

Pregnancy-Associated but Not Related Death: Pregnancy-associated but not related death is a death during or within one year of the end of pregnancy, from a cause that is not related to pregnancy.[2]

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[1] Maternal Mortality. [Updated 2024 Sept 23] In: South Dakota Department of Health [Internet]. Available from: https://doh.sd.gov/health-data-reports/maternal-child-health/maternal-mortality

[2] Centers for Disease Control and Prevention. (2024). MMRIA Committee Decisions Form. Atlanta.

Overview of Population

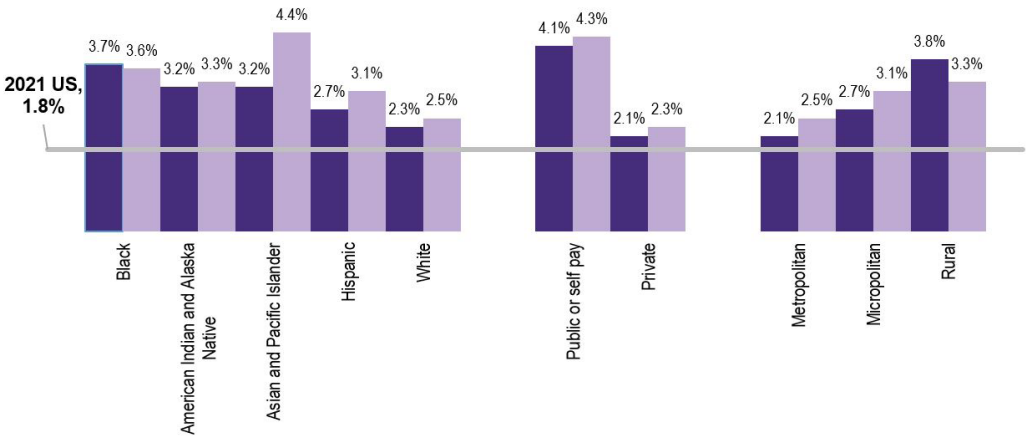
Iowa Birthing Population

Iowa's birthing population has a higher prevalence of chronic and pregnancy-related diseases compared to the US overall. For example, during pregnancy 60% of Iowan's were classified as overweight or obese based on their pre-pregnancy BMI. This compares to 58% nationally. The percent of Iowans with gestational diabetes is also greater than the national percent (10% vs. 8%). The conditions that make pregnancy and childbirth potentially higher risk include overweight and obesity, hypertensive conditions, and diabetes. Iowans also report a higher percentage of tobacco use during pregnancy compared to the percent nationally (7% vs. 4%).

In 2022, nearly one-quarter (24%) of female-headed households in Iowa lived below the federal poverty line (FPL). Among women ages 18 to 54, 14% in metropolitan and micropolitan counties lived below the FPL, while the rate was slightly lower in rural communities, where about 12% of women in this age group were living in poverty. Health insurance coverage also varied by region. Women living in rural (8%) and micropolitan (7%) counties were more likely to be uninsured, as compared to metropolitan county women who had the lowest rate of being uninsured (6%).

Severe Maternal Morbidity (SMM) is higher in Iowa than the rest of the country and there are significant disparities by race, ethnicity, primary payment source, and where people live (Figure 1). For nearly all groups, SMM was higher in 2020-2022 than in 2017-2019, suggesting an ongoing need to elevate the quality of care being received across the state and particularly for rural residents, those with public insurance (Medicaid), and racial minorities.

Figure 1. Trends and disparities in SMM by race and ethnicity, primary source of payment, and place of residence in Iowa, 2017-2019 and 2020-2022 as compared to the US overall for 2021.



The Review Process

About the MMRC

Maternal mortality review is not new in Iowa. In fact, these deaths have been reviewed by a multidisciplinary committee for decades. Iowa's MMRC, coordinated by the Iowa Medical Society in partnership with Iowa HHS, is responsible for reviewing identified maternal deaths for the purpose of reducing morbidity and mortality. In recent years, the national number of maternal deaths has continued to rise along with unacceptable disparities in maternal deaths among women of color. To improve surveillance of maternal deaths, the CDC began a program to standardize maternal death reviews. The goal of standardized death reviews is to develop more robust state and national pictures of maternal health and deaths and identify prevention opportunities.

The MMRC is composed of public health, healthcare, and community experts who represent professional organizations involved in the delivery of healthcare to pregnant women in Iowa. The MMRC strives to include representation from multiple disciplines, including public health, obstetrics and gynecology, maternal-fetal medicine, nursing, midwifery, forensic pathology, mental and behavioral health, law enforcement, doula work, social work, and community-based organizations. Each member of the MMRC brings specific knowledge and experience to the group which helps to strengthen the work of the whole committee.

Maternal Mortality Review Committee During Review of 2019 – 2021 Deaths:

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Executive Summary of Pregnancy-Related Deaths in Iowa, 2019-2021

Key Findings of Pregnancy-Related Deaths 2019-2021:

- **Iowa's pregnancy-related mortality ratio (PRMR)** was **18.1 deaths per 100,000 live births,** up from 9.5 deaths per 100,000 live births between 2016 and 2018.
  - The PRMR for Non-Hispanic White women was 15.4 deaths per 100,000 live births.
  - The PRMR for Hispanic women was 26.5 deaths per 100,000 live births.
  - The PRMR for Non-Hispanic Black women was 39.7 deaths per 100,000 live births.
  - Excluding COVID-19 deaths, the PRMR was 13.6 deaths per 100,000 live births.
- A total of **20 pregnancy-related deaths** occurred in Iowa residents.
- The majority **(80%) of Iowa pregnancy-related deaths occurred postpartum.** Of these postpartum deaths, 25% occurred after 6 weeks postpartum.
- **Obesity was the most common circumstance surrounding (40%)** Iowa pregnancy-related deaths.
- **Infection** (which included deaths from COVID-19) **was the leading cause of death (30%)** in Iowa pregnancy-related deaths.
- The MMRC determined **95% of 20 pregnancy-related deaths were preventable.**

Key Recommendations of Pregnancy-Related Deaths 2019-2021:

- **Obstetrical Providers and Staff** should adhere to best practices outlined by ACOG through the AIM patient safety bundles and practice guidelines for common conditions such as prenatal anemia, hypertensive disorders of pregnancy, and obstetric hemorrhage.
- **Facilities** should ensure all patients receive respectful, person-centered care.
- **Policy Makers and Systems Leaders** should implement evidence-based policies to improve care coordination or patient navigation services between health insurance, healthcare, public health, and community services, especially for women with high-risk pregnancies.
- **Communities** should support care coordination or patient navigation services between health insurance, healthcare, public health, and community organizations, especially for women with high-risk pregnancies. Communities should identify a single point of entry for vulnerable patients where they can be connected to multiple services.

Findings in Pregnancy-Related Deaths in Iowa, 2019-2021

This report includes the results from three calendar years of data (2019-2021). Although each death is tragic, the actual count of maternal deaths in Iowa per year is small for statistical analysis purposes. Because of this, some of the findings presented below include collapsed categories for selected characteristics to provide confidentiality and should be interpreted with caution.

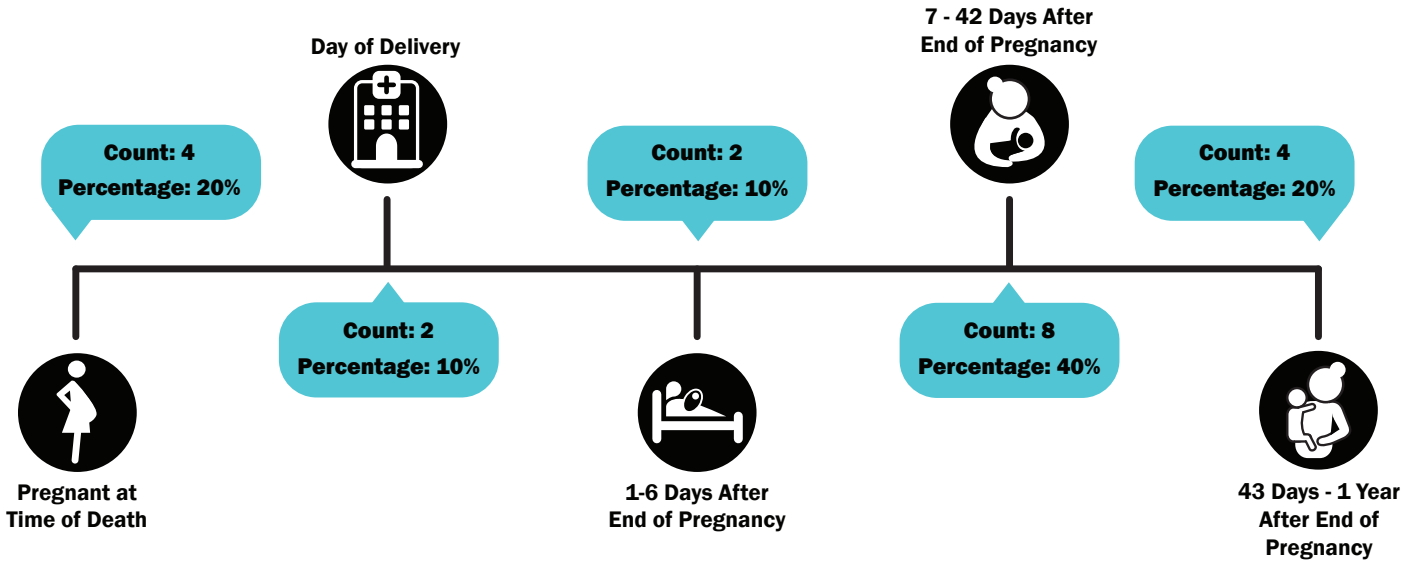
Number of Pregnancy-Related Deaths in Iowa, 2019-2021

In the years 2019, 2020, and 2021, the MMRC determined a total of 20 women died from pregnancy-related complications. Pregnancy-related death is a death during 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.

Timing of Pregnancy-Related Deaths in Iowa, 2019-2021

The first year after giving birth remains a time of ongoing physical and mental changes in the postpartum woman. These changes impact every facet of life and recognition of ongoing support for all of Iowa's birth population is essential. The timing of pregnancy-related deaths can provide insight into preventive interventions. Of the 20 pregnancy-related deaths, 16 occurred during the postpartum period.

Figure 2. Timing of pregnancy-related deaths in Iowa, 2019-2021.



This is the story of "Olivia"

Olivia is not a real Iowa woman. While the story is fiction, it contains key elements from actual maternal deaths in Iowa.

Olivia was a healthy 25-year-old woman with an uncomplicated health history. She lived in a rural county and worked at a local elementary school. She had private insurance and saw a local family practice physician for her prenatal care. She had miscarried her first child and was over the moon when she delivered a healthy baby boy at 39 weeks gestation. Her recovery was uneventful, and she and her husband were settling into being new parents until one evening, 18 days postpartum, she began to experience chest pain, shortness of breath, and difficulty breathing. As her condition worsened her husband called 911 for an ambulance to take her to the hospital. The hospital's one ambulance crew was already out on a call, but police were dispatched to the home. Her local police department responded quickly to their home.

She stopped breathing shortly after the police arrived and CPR was started, but their training and equipment was not as advanced as the ambulance crew and they lacked the ability to transport her to the hospital. The officers and her husband did all they could until the ambulance crew arrived 16 minutes later. Unfortunately, she was unable to be revived, and she died at the hospital. Upon autopsy she was found to have a pulmonary embolism. She was also found to have a genetic blood clotting disorder which was unknown to her family and healthcare providers. Upon review of the case, the MMRC determined her death was pregnancy-related as the likelihood of her having a pulmonary embolism in the setting of pregnancy is significantly higher than if she had not been pregnant.

Demographic Differences of Pregnancy-Related Deaths in Iowa, 2019-2021

- Most pregnancy-related deaths occurred among **women between the ages of 25 and 29 (50%)**, followed by women between the ages of 30 to 34.
- The majority **(65%)** of pregnancy-related deaths occurred among **women who identified as Non-Hispanic White.**
- The majority **(55%)** of pregnancy-related deaths occurred among **women who lived in metropolitan counties.**
- The majority **(58%)** of pregnancy-related deaths were among **women enrolled in Medicaid** at the time of delivery.

Demographics of Pregnancy-Related Deaths Compared to Birthing Population in Iowa, 2019-2021

Pregnancy-related deaths do not occur in all demographic groups equally. This inequity was examined by comparing the percentage of deaths that occurred among one group to the percentage of all live births that occurred among that same group. The following are the findings of these inequities:

- Mothers between the **age of 25 and 29 were disproportionately represented in pregnancy-related maternal deaths** compared to women in other age groups.
- **Women of color were disproportionately represented** among pregnancy-related maternal deaths compared to White women. **Women of color** made up **21% of the birthing population,** yet they represented **35% of the pregnancy-related deaths.**
- Mothers with **at least an associate's degree made up 35% of pregnancy-related deaths** in Iowa compared to women with other levels of education.
- Both the **majority of births (63%) and deaths (55%) occurred in women who resided in metropolitan** areas compared to rural and micropolitan areas.
- **Medicaid recipients were disproportionately represented among pregnancy-related maternal deaths (58%)** compared to those covered by private insurance **(42%).**

Causes of Pregnancy-Related Deaths in Iowa, 2019-2021

Below is the percentage distribution of the causes of pregnancy-related deaths determined by the MMRC:

- **30% Infection**[3] (includes COVID-19 and sepsis/septic shock): Infection was the most frequent underlying cause of pregnancy-related deaths, driven by pregnancy-related COVID-19 deaths of unvaccinated women.
- **20% Hemorrhage** (excludes aneurysms and cerebrovascular accidents or strokes): Blood loss.
- **20% Embolism** (excludes amniotic fluid embolism): Blockage of a blood vessel by an embolus.
- **30% Other Conditions:** Other causes include cancer, cardiovascular conditions, hypertensive disorders of pregnancy, and mental health conditions (including substance use disorder).

MMRC Determination of Preventability of Pregnancy-Related Deaths in Iowa, 2019-2021

A death is considered preventable if the MMRC determines that there was some chance of the death being averted by one or more reasonable changes to patient, family, provider, facility, system, and/or community factors. **In 95% of pregnancy-related deaths the MMRC determined that the death was preventable.**

[3] Like Iowa, national level reports noted that infection was the most frequent underlying cause of pregnancy-related deaths in 2020 and 2021. These deaths were driven by pregnancy-related COVID-19 deaths. This information is based on "https://www.cdc.gov/maternal-mortality/php/pregnancy-mortality-surveillance/?ACSTrackingID=DM140520&ACSTrackingLabel=PMSS%202021%20data&deliveryName=DM140520#print "Pregnancy Mortality Surveillance System (Accessed 11.18.24).

Pregnancy-Related Death Recommendations

Below are selected MMRC recommendations for pregnancy-related deaths. Each recommendation represents at least one maternal death of an Iowa woman during the years 2019 - 2021. The recommendations are sorted by level of influence. The level of influence is a descriptor of who would have influence or responsibility for the recommendation (e.g., healthcare provider, facility, system, and community); think of them as a stakeholder in the recommendation.

Key Recommendations for Healthcare Providers

Obstetrical providers and staff should adhere to best practices outlined by the American College of Obstetrics and Gynecology through the Alliance for Innovation on Maternal Health patient safety bundles and practice guidelines for common conditions such as prenatal anemia, hypertensive disorders of pregnancy, and obstetric hemorrhage.

Obstetrical providers should perform universal screening for perinatal mood disorders using a validated screening instrument (e.g., EPDS, PHQ-9, GAD-7) and provide evidence-based treatment for mood disorders, including pharmacologic therapy and referral for counseling services.

Healthcare providers should provide person-centered communication inclusive of patient-specific needs, including cultural, religious, and social influences. Providers should use shared decision making when developing care plans for patients. Providers should recognize how their unconscious bias, including weight stigma, may influence interactions with patients.

Key Recommendations for Healthcare Facilities

Facilities should ensure all patients receive respectful, person-centered care.

Facilities should have a comprehensive hemorrhage prevention and management guideline that includes hemorrhage risk assessment, real-time quantification and cumulation of blood loss, a stage-based hemorrhage management plan, and a massive transfusion protocol. Facilities with few blood resources should have a massive transfusion protocol that includes rapid acquisition of additional blood products from external sources.

Facilities should have a protocol for venous thromboembolism risk assessment and risk-based prophylaxis. Individuals identified at high-risk antenatally should have this clearly documented in their hospital record.

In the next two levels of influence, Systems and Community, there is additional contextual information in italics before the recommendation. The information in italics does not represent the recommendation of the MMRC, instead was added as contextual reference for the reader to better understand the recommendation.

Key Recommendations for Systems

Context: Many of the maternal deaths had instances where the woman "fell through the cracks." Working to create systems where case navigators, case workers, community health workers, doulas, social workers, use of warm-hand offs, and home visits during prenatal and postpartum care are essential.

Recommendation: Policy makers and systems leaders should implement evidenced-based policies to improve care coordination or patient navigation services between health insurance, healthcare, public health, and community services, especially for women with high-risk pregnancies.

Context: Most deaths reviewed by the MMRC occurred to women whose pregnancies were unplanned or mistimed (which includes pregnancies that happened earlier or later than intended). A woman's health status prior to her pregnancy can greatly affect the birth outcome, as well as her health status after birth. Most women lack knowledge regarding the association of preexisting health conditions and how severely those conditions may interact with the pregnancy, leading to increased morbidity and mortality. All women should have access to comprehensive family planning. Women with chronic health problems should have individualized contraception planning (including long term options and comprehensive choices) through shared decision-making with their provider.

Recommendation: Iowa policy makers and health systems leaders should ensure women of reproductive age have access to the full range of family planning services to support optimal pregnancy planning and timing.

Context: Lack of access to timely transport from one hospital to a hospital with a higher level of care was identified to be a likely contributing factor in multiple maternal deaths. See Olivia's Story on page 7 to understand how a transportation delay contributes to death.

Recommendation: Public Health and state hospital systems should develop a coordinated statewide maternal transport program to ensure timely transfers of high-risk pregnant patients.

Context: Pregnancy causes physiologic changes that exacerbate chronic medical conditions, such as diabetes. Diabetic education is currently a once in a lifetime service, and if provided before pregnancy it is needed again to address the changes in pregnancy. Knowledge and understanding by the patient of how to manage their diabetes in pregnancy is crucial to prevent complications in or death of both mom and baby.

Recommendation: Health insurance providers should provide coverage for and incentivize diabetes education on multiple occasions through the life course, including with each pregnancy.

Context: Policy makers and employers should offer paid leave for medical appointments and postpartum leave for all employees, including hourly wage workers. High-risk pregnancies can be exacerbated by working physical labor jobs that add stress to the body during a critical time. Such jobs are more likely to be low paying, require long hours with strict attendance policies, and provide few benefits, including quality health insurance and paid leave. The inability to have paid leave also results in missed prenatal and follow-up appointments and is associated with higher rates of postpartum complications. See Emma's story on page 14 to understand how paid leave influences women's choices while they try to maintain their employment and manage a complicated pregnancy. These choices can lead to death.

Recommendation: Iowa policy makers and employers should introduce policies to ensure access to paid leave for medical appointments and adequate parental leave for all employees, including hourly wage workers. Employers should also support reduced workload for pregnant employees with labor intensive positions.

Context: Pregnant, postpartum, and parenting women need substance use services that support their unique needs. There are currently four inpatient treatment facilities in Iowa that will allow mothers with children. This lack of treatment access and fear of losing their children due to substance use results in untreated substance use disorders which may have contributed to overdose deaths.

Recommendation: State and local governments should assess the need for local substance use disorder treatment programs, including harm reduction and housing, and ensure geographic access to treatment, including during pregnancy.

Key Recommendations for Communities

Context: Several of the suicide deaths reviewed by the MMRC were completed with a firearm. Firearms are more lethal than other suicide methods. About 85% of suicide attempts with firearm are fatal compared to 5% of other suicide methods. Because suicide is often completed impulsively, reducing quick access to firearms may prevent deaths. This is especially true among young adults – those under 35 years of age.

Recommendation: Communities should enact evidence-based policies that reduce access to firearms in the community and increase time to access firearms, such as safe storage, to reduce deaths by firearm.

Context: Many of the maternal deaths had instances where the woman "fell through the cracks." Working to create systems where case navigators, case workers, community health workers, doulas, social workers, use of warm-hand offs, and home visits during prenatal and postpartum care are essential.

Recommendation: Communities should support care coordination or patient navigation services between health insurance, healthcare, public health, and community organizations, especially for women with high-risk pregnancies. Communities should identify a single point of entry for vulnerable patients where they can be connected to multiple services.

Context: Pregnant, postpartum, and parenting women need substance use services that support their unique needs. There are currently four inpatient treatment facilities in Iowa that will allow mothers with children. This lack of treatment access and fear of losing their children due to substance use results in untreated substance use disorders which have led to overdose deaths.

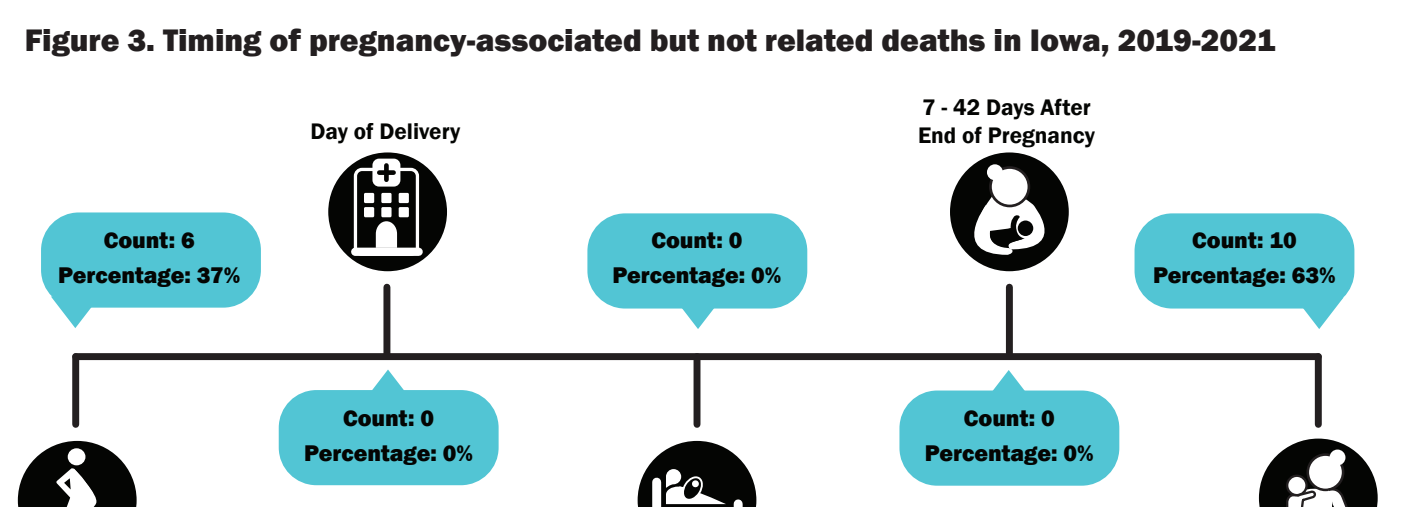
Recommendation: Communities should assess the need for local substance use disorder treatment programs, including harm reduction, and ensure access for residents with need.

Findings in Pregnancy-Associated but Not Related Deaths in Iowa, 2019-2021

Timing of Pregnancy-Associated but Not Related Deaths in Iowa, 2019-2021

The first year after giving birth remains a time of ongoing physical and mental changes in the postpartum woman. These changes impact every facet of life and recognition of ongoing support for all of Iowa's birth population is essential. The timing of pregnancy-associated but not related deaths can provide insight into preventive interventions. Of the 16 pregnancy-associated but not related deaths, 10 occurred during the postpartum period.

Figure 3. Timing of pregnancy-associated but not related deaths in Iowa, 2019-2021



This is the story of "Emma"

Emma is not a real Iowa woman. While the story is fiction, it contains key elements from actual maternal deaths in Iowa.

Emma was a 32-year-old woman who was pregnant with her seventh child. She and her husband lived with their four boys and two girls in a micropolitan county where she worked at a manufacturing plant. Working at the plant, she had no paid leave for medical appointments. She was afraid to take off for too many prenatal appointments because she simply couldn't afford to miss too many hours, and she was afraid of losing her job.

Because of this, she only had two instead of the standard five prenatal appointments when her baby was delivered. She had high blood pressure with her last pregnancy and again developed symptoms with this pregnancy. She was not taking the prescribed blood pressure medications because she was unable to afford the monthly cost. Her blood pressure was uncontrolled during her pregnancy, and she struggled at work with headaches, swelling of her hands and feet, and nausea. She was unable to meet the physical demands of her job and was dismissed.

Without a job, she was now uninsured. Her husband was self-employed, and his income was too high to be eligible for Medicaid. They planned to go the marketplace to look for insurance, but she was becoming sicker by the day. Four nights after she lost her job, she had a terrible headache and suddenly collapsed. Her husband called 911 saying she was having a seizure. She was transported to the local hospital where they were able to stabilize her and successfully delivered a 29-week premature female infant, however Emma had irreversible brain damage.

The infant died 2 days after birth. Emma was in the ICU for 3 days before the family decided to compassionately extubate her. Her husband is left to raise their six children without a mother. She did not have an autopsy. Upon reviewing the case, the MMRC determined Emma's death to be pregnancy-related as she suffered from eclampsia which caused the seizure and brain damage.

Demographic Differences of Pregnancy-Associated but Not Related Deaths in Iowa, 2019-2021

- Most pregnancy-associated but not related deaths occurred among **women between the ages of 25 and 29 (31%)**, followed by women between the ages of 30 to 34.
- The majority **(69%)** of pregnancy-associated but not related deaths occurred among **women who identified as Non-Hispanic White.**
- The majority **(63%)** of pregnancy-associated but not related deaths occurred among **women who lived in metropolitan counties.**
- The majority **(64%)** of pregnancy-associated but not related deaths were among **women enrolled in Medicaid** at the time of delivery.

MMRC Determination of Preventability of Pregnancy-Associated but Not Related Deaths in Iowa, 2019-2021

A death is considered preventable if the MMRC determines that there was at least some chance of the death being averted by one or more reasonable changes to patient, family, provider, facility, system, and/or community factors. **In 94% of pregnancy-associated but not related deaths, the MMRC determined that the death was preventable.**

MMRC Determination of Circumstances Surrounding Pregnancy-Related and Pregnancy- Associated but Not Related Deaths in Iowa

The death review committee also reviews the circumstances present in the women's life at the time of death to determine whether those factors contributed (or probably contributed) to a pregnancy-related or pregnancy-associated but not related death. The recommendations put forward in the report address these factors including these examples:

- Women have access to person-centered care, along with access to patient advocates, such as doulas,
- Responsive and timely transportation to a higher level of care
- Ensuring pregnant and lactating women are included in research participation (for medications and immunizations), with recruitment encouraged regardless of background or personal characteristics, including pregnancy.