Minnesota Maternal Mortality Update

Reporting for 2017-2019

DEPARTMENT OF HEALTH

Dedication

The Minnesota Department of Health (MDH) would like to acknowledge the 75 people who died while pregnant or within one year of their pregnancy during 2017-2019. We recognize that everyone's families and communities were deeply impacted by their loss. Understanding the cause of pregnancy-associated deaths in Minnesota will help prevent future generations experiencing these tragic events and cultivate a safer, more just society for our children and families to learn and grow.

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Limitations to the 2019 data

Significant barriers to accessing records for the review include: identifying sources of prenatal and other related health care, birthing location or care provided in institutions, and law enforcement documents. The MMRC does not review out-of-state deaths. If a Minnesota resident is identified as a pregnancy-associated death in another state or jurisdiction, CFH staff work with the vital records and maternal mortality review staff of state/jurisdiction where the death occurred to obtain charts and information pertinent to the death review.

Substance Use Disorder (SUD) diagnosis at the time of pregnancy-associated death reviews are categorized as injuries or unintentional injuries, which could underestimate rates of pregnancy-associated deaths involving substance use.

Updated key findings

From 2017-2019, 75 pregnancy-associated deaths were reviewed by the Maternal Mortality Review Committee (MMRC) in Minnesota. The state's pregnancy-related mortality ratio (PRMR) for 2017-2019 was 8.9 pregnancy-related deaths per 100,000 births compared to the national PRMR of 17.6 pregnancy-related death per 100,000 births in 2019.

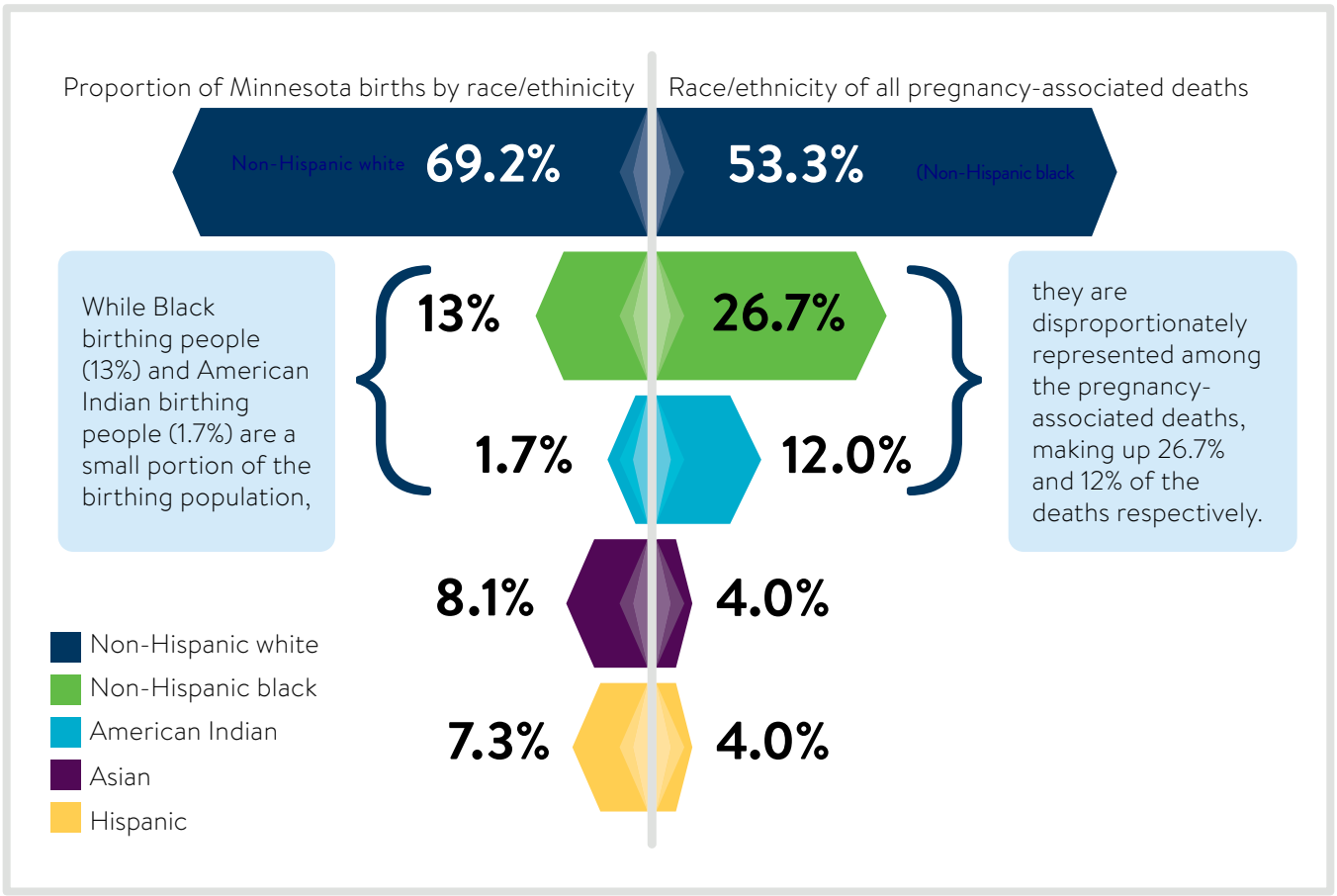
With this additional year of pregnancy-associated deaths reviewed by MMRC, data suggests that while Black birthing people (13%) and American Indian birthing people (1.7%) are a small portion of the birthing population, they are disproportionately represented among the pregnancy-associated deaths, making up 26.7% and 12% of the deaths respectively. This gap continues to widen from the previous report, particularly among Black and American Indian birthing people.

Pregnancy-associated deaths

Deaths by race or ethnicity

While Black birthing people (13%) and American Indian birthing people (1.7%) are a small portion of the birthing population, they are disproportionately represented among the pregnancy-associated deaths, making up 26.7% and 12% of the deaths respectively.

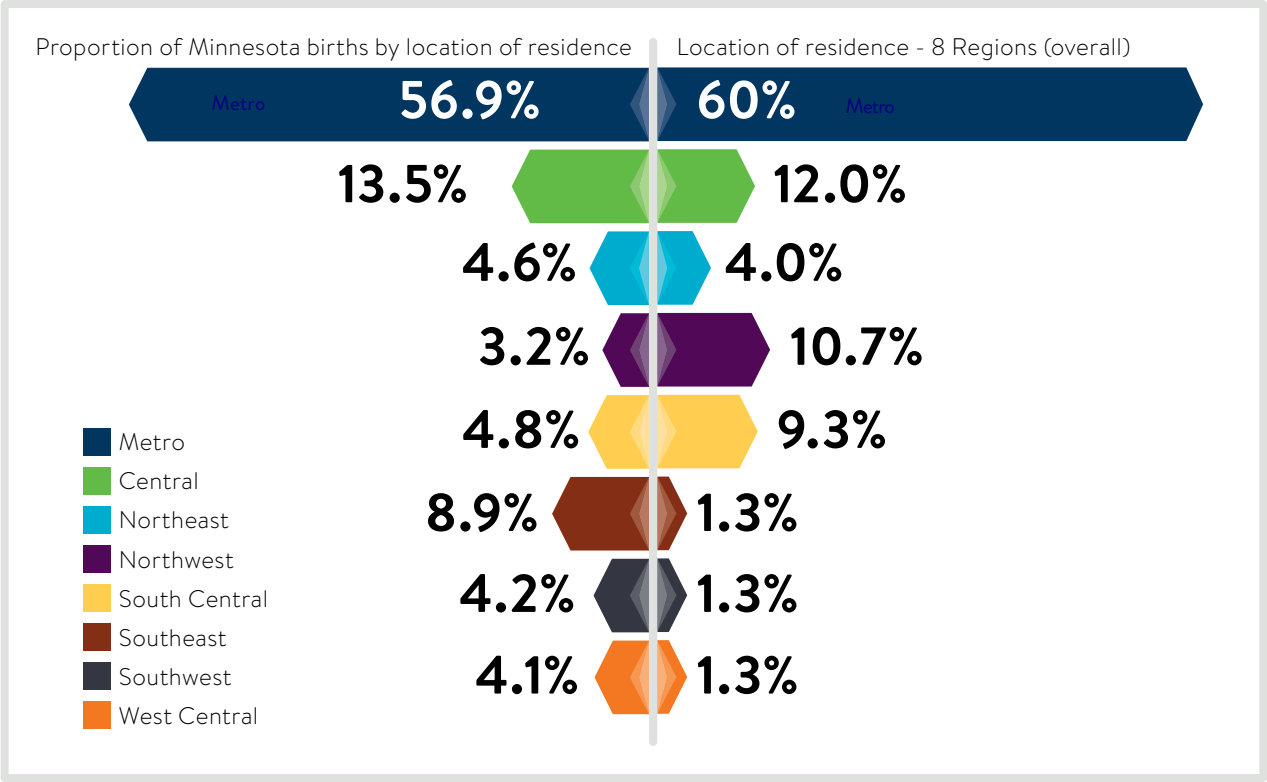
Pregnancy-associated deaths by race/ethnicity (overall) 2017-2019



Deaths by location of residence

In 2019, 74% of pregnancy-associated deaths were of metro-based residents. Over the 3-year span 60% of pregnancy-associated deaths were residents of the metro.

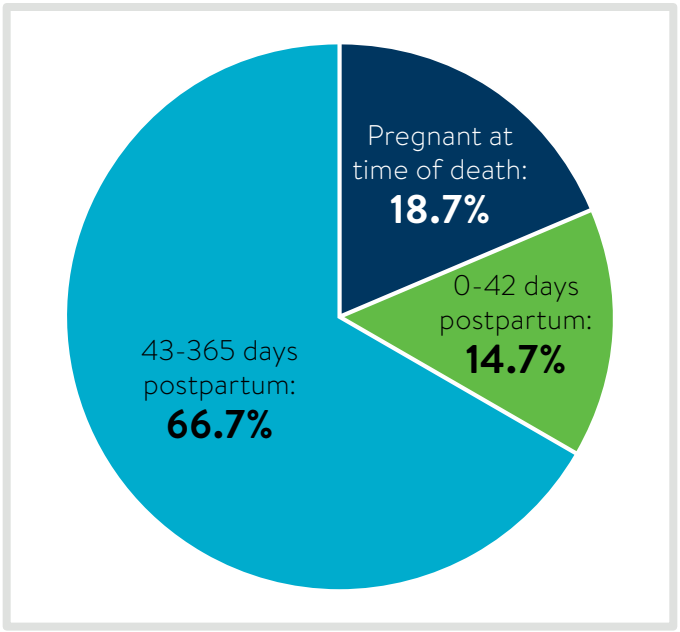
Location of residence of pregnancy-associated death vs. proportion of MN births by location 2017-2019



Pregnancy status

From 2017-2019, 67% of pregnancy-associated deaths occurred 43-365 days postpartum, previously, this was 62.5%. To note, during this timeframe, if an individual was on Medical Assistance during their pregnancy, their insurance was not extended past 6 weeks postpartum.

Timing of death (overall) 2017-2019



Leading cause of death for pregnancy-associated deaths

In April 2021, the Pregnancy Mortality Surveillance System (PMSS-MM) codes on the committee decisions form was changed to include additional mental health codes such as 100.1 Depressive Disorder and 100.5 substance use disorder. However, before these more specific PMSS-codes were added, CDC Maternal Mortality Prevention Team guidance was to code overdose deaths as mental health conditions if there was a SUD.

The top five leading causes of all maternal deaths from 2017-2019 were injury (34.7%), mental health conditions (21.3%), cancer (9.3%), infection (5.3%) and four cases where the specific cause of death could not be identified (5.3%).

Table 1: Top Five Leading Causes of Pregnancy-Associated Death, 2017-2019

Cause of death	Frequency	Percent
Injury	26	34.7
Mental health conditions	16	21.3
Cancer	7	9.3
Infection	4	5.3
Unknown cause of death	4	5.3

In Minnesota, there has been a rise in pregnancy-associated fatalities, primarily attributed to injury or mental health issues (including substance use disorders), when compared to other prevalent causes of death.

Pregnancy-related vs. pregnancy-associated but NOT related

Reviewing three years of data (2017-19), Minnesota still shows/reports about 1 in 4 deaths as pregnancy related. From 2017-19, there were three pregnancy associated, but unable to determine relatedness deaths. Due to the small number of deaths, pregnancy-associated but unable to determine relatedness are not discussed in detail to maintain decedent privacy.

The pregnancy-associated mortality ratio (PAMR) allows states to calculate pregnancy-associated death ratios per total number of births occurring in the state, and it allows for standardized comparisons to other states or national data. This is calculated by dividing the number of pregnancy-associated deaths by the number of live births occurring for both years, and then multiplying by 100,000.

For 2017-2019, Minnesota's PAMR was **37.1** pregnancy-associated deaths per 100,000 live births.

A pregnancy-related mortality ratio (PRMR) can be calculated using the number of identified pregnancy-related deaths and dividing by the number of live births for both years and then multiplying by 100,000. PAMR and PRMR for each race/ethnicity cannot be reported at this time.

For 2017-2019, Minnesota's PRMR was **8.9** pregnancy-related deaths per 100,000 live births.

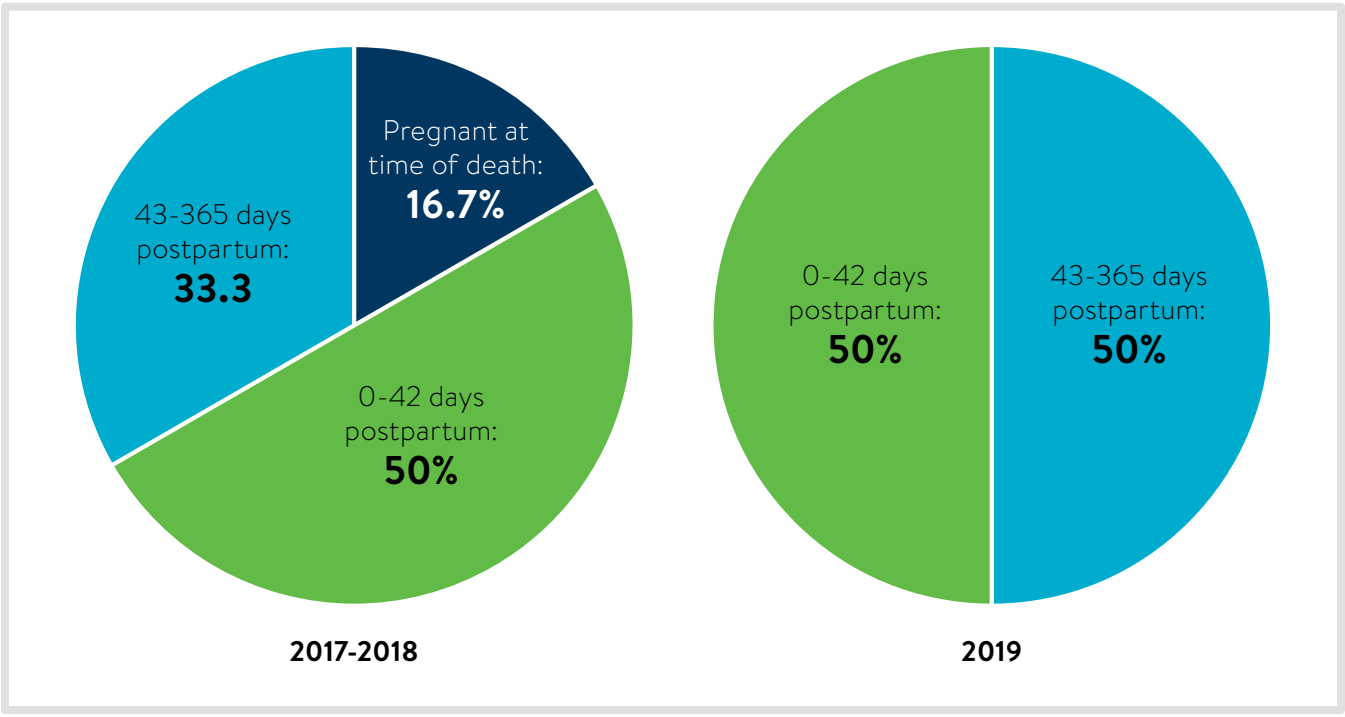
The national PRMR in 2019 was 17.6 pregnancy-related deaths per 100,000 births. Because of the small number of pregnancy-associated deaths within each racial/ethnic group, PAMR and PRMR were not calculated.

Pregnancy-related deaths

Timing of death

All pregnancy-related deaths occurring in 2019 were either 0-42 days postpartum or 43-365 days postpartum.

Timing of pregnancy-related deaths - 2017-2018 vs. 2019



Underlying cause

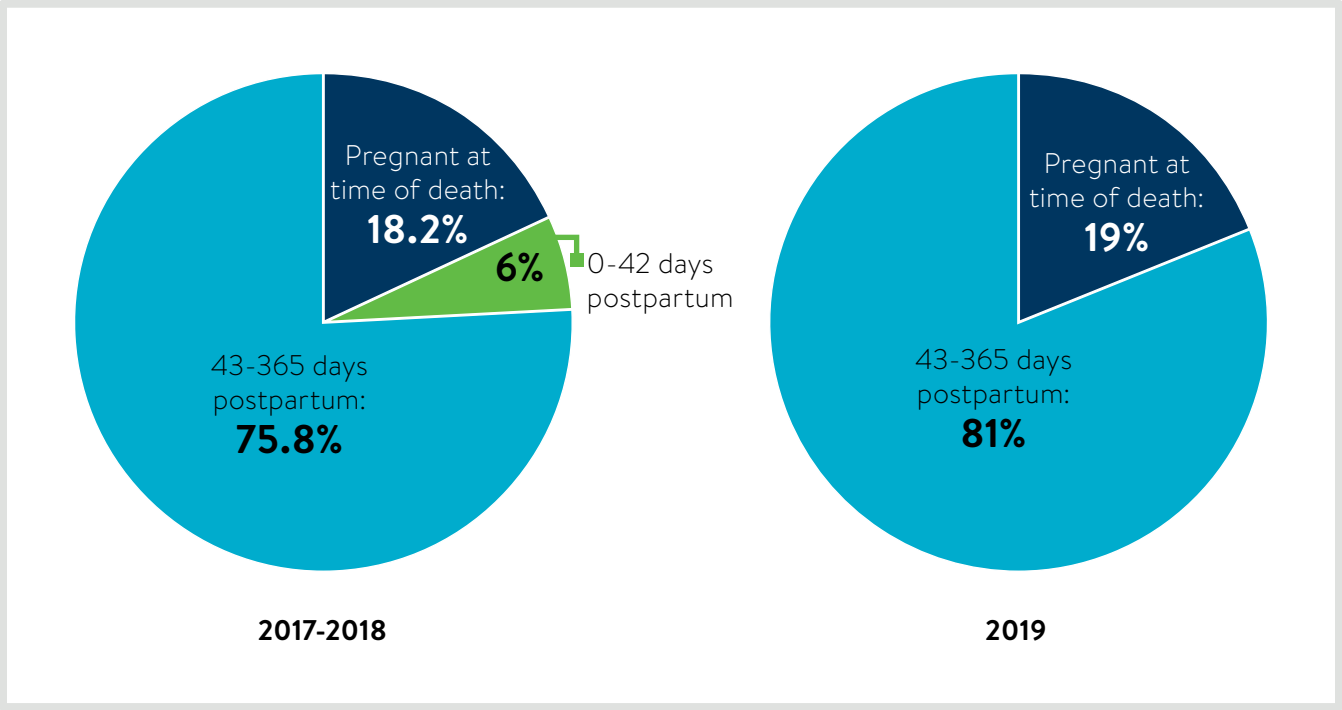
The causes of pregnancy-related death identified from 2017-19 include: infection (16.7%, n=3), cardiomyopathy (16.7%, n=3), mental health conditions (11.1%, n=2), hemorrhage (11.1%, n=2), cardiovascular conditions (5.6%, n=1), embolism (5.6%, n=1), collagen vascular/autoimmune (5.6%, n=1), hematologic (5.6%, n=1), , hypertensive disorders (5.6%, n=1), injury (5.6%, n=1), pulmonary (5.6%, n=1), and unknown cause of death (5.6%, n=1). Due to the small number of pregnancy-related deaths from 2017-2019, no underlying trends in pregnancy-related deaths could be identified, therefore data is not depicted.

Pregnancy-associated, but NOT related deaths

Timing of death

The majority (81%) of pregnancy-associated but not related deaths occur 43-365 days postpartum. This is a minimal increase compared to 2017-18 data.

Timing of pregnancy-associated, but NOT related deaths - 2017-2018 vs. 2019



Leading cause of pregnancy-associated but not related death

The top five leading causes of pregnancy associated but not related death from 2017-2019 were due to injuries (44.4%), followed by mental health conditions (25.9%), cancer (13%), neurologic/ neurovascular conditions (5.6) and two cases where the exact cause of death was unknown (5.6%).

Table 2: Leading Cause of Pregnancy-Associated but NOT related deaths

Cause of death	Frequency	Percent
Injury	24	44.4
Mental health conditions	14	25.9
Cancer	7	13.0
Neurologic/Neurovascular	3	5.6
Unknown cause of death	2	3.7
Cardiovascular	1	1.9
Gastrointestinal	1	1.9
Hemorrhage	1	1.9
Infection	1	1.9

Recommendations

These recommendations represent the insights of the maternal mortality committee and are intended to build upon the previous report, with the aim of further developing recommendations for action in the realm of maternal health. The highlighted recommendations from the previous report are still applicable to all recommendations regarding pregnancy-associated deaths, they are:

1. Support statewide improvements for birthing people who have substance use disorders (SUD) or mental health conditions, including adequate identification of substance use and mental health conditions in the birthing population, referral to behavioral health services and support groups, and increased funding to expand treatment and access to treatment throughout the state.
2. Develop standardization of referral network within systems and regions to refer birthing people to locations for appropriate level of care, and to decrease delay in needed diagnostics, interventions, or elevation of care.
3. Improve the postpartum period by assuring that birthing people have access to care team no later than three weeks postpartum.
4. Address bias in systems perpetuating disparities in the birthing population. Acknowledge historical trauma and racism and the impacts on birthing people.
5. Fund community lead networks and support systems to provide culturally informed care to fit birthing person's needs.
6. Listen and support birthing people. Listen to concerns, provide a network of support during and after the postpartum period.

Additional recommendations (at a high level) from the 2019 reviewed pregnancy-associated deaths revolved around improving access to and availability of services throughout the pregnancy and postpartum stages. Furthermore, it emphasized the critical need for seamless care for individuals with a substance use condition and/or mental health condition throughout this pivotal period of their lives. The action step outlined in the majority of recommendations from the MMRC is leveraged toward systems. Interacting entities that support services before, during, or after a pregnancy - ranges from health care systems and payors to public services and programs.

- Support health care teams' ability to screen for anxiety and mood disorders during pregnancy and in the postpartum period. Create mechanisms of referral support through care coordination, integrating doulas, community health workers, family home visitors, social work, or other birth work practices to cultivate support systems.
- Health care teams and facilities working with birthing people with substance use, mental health, or a history of these medical morbidities should have priority to access to care early in pregnancy with coordinated support through the postpartum period.
- Facilities and systems should coordinate to establish pathways allowing consultation between rural providers and providers in the metro area (in specialties such as psychiatry, cardiology, substance use, and high-risk pregnancies). Along with creative solutions to improve options for medications and treatments during pregnancy and postpartum.
- During the pregnancy and postpartum period, health systems and social services need to coordinate to assist the birthing person with correct placement in SUD treatment/ housing, working with birthing person to support their needs during this time.

- Systems should expand access for community outreach and programs to work with individuals in the postpartum period to have basic needs met, family- centered safe housing, and access to quality care.
- State and systems should enhance funding for increased access to SUD and MH services. Expanding telehealth capabilities and physical facilities, increasing the number of waivered providers, improving access to treatment, implementing Harm Reduction and Overdose Prevention practices statewide.
- Systems should prioritize the identification and mitigation of implicit bias as well as discriminatory policies and protocols in the domains of insurance, health care, and systematic policies. It is crucial to provide training and ongoing education aimed at addressing the historical presence of racism within these systems.
- Systems should invest in inclusive models to provide comprehensive support to individuals during childbirth. The implementation of promising practices lead by communities impacted by maternal mortality can serve as a valuable resource for families, enabling their involvement in the birthing experience and facilitating opportunities for patient education and community-building during pregnancy and postpartum.

Definitions

There are multiple definitions of what is classified as a pregnancy-associated death. In Minnesota, we use the definitions from the American College of Obstetricians and Gynecologists (ACOG) and the CDC.

Pregnancy-associated death: A death during pregnancy or within one year of the end of pregnancy, irrespective of cause.

Pregnancy-related death: A death during pregnancy or within one year of the end of pregnancy from a pregnancy complication, a chain of events initiated by pregnancy, or the aggravation of an unrelated condition by the physiologic effects of pregnancy.

Pregnancy-associated but NOT related death: A death during pregnancy or within one year of the end of pregnancy from a cause that is not related to pregnancy.

Pregnancy-associated but unable to determine pregnancy relatedness: A death during pregnancy or within one year of the end of pregnancy from a cause that could not be determined as pregnancy-related or not pregnancy-related. Maternal Mortality Review Committee Facilitation Guide. (2021)

Health care team: A group of professionals contributing to the care of birthing people. This includes all provider types and ancillary staff birthing people may encounter during their pregnancy journey. Examples include but are not limited to: family medicine provider, obstetrician, maternal fetal medicine provider, nurse practitioner, physician assistant, midwife, registered nurse, social worker, doula, occupational therapist, phlebotomist, pharmacists, rooming staff, and lactation consultant.