



**INTIMATE PARTNER VIOLENCE
& PREGNANCY-ASSOCIATED DEATHS
IN CONNECTICUT**

APRIL 2023

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Connecticut Coalition Against Domestic Violence

Connecticut Coalition Against Domestic Violence

Intimate Partner Violence

Among Pregnancy-Associated Deaths in Connecticut, 2015-2021

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Submitted on:

April 3, 2023

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Funding acknowledgement:

This report was supported by WH-AST-21-003, issued by the Office of the Assistant Secretary for Health of the U.S. Department of Health and Human Services (DHHS) as part of a financial assistance award totaling \$324,639.00, with 100 percent funded by the DHHS. The contents are solely the responsibility of the authors and do not necessarily represent the official views of, nor an endorsement by, the DHHS or the U.S. Government.

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Acronyms

ACES	Adverse Childhood Experiences
ACOG	American College of Obstetricians and Gynecologists
ADHD	Attention Deficit Hyperactive Disorder
CCADV	Connecticut Coalition Against Domestic Violence
CDC	Centers for Disease Control and Prevention
CT	Connecticut
CT MMRC	Connecticut Maternal Mortality Review Committee
CT PRAMS	Connecticut Pregnancy Risk Assessment Monitoring System
DCF	Department of Children and Families
ED	Emergency Department
L&D	Labor & Delivery
MHC	Mental Health Conditions
MMR	Maternal Mortality Review
MMRC	Maternal Mortality Review Committee
OB	Obstetric Provider
PRAMS	Pregnancy Risk Assessment Monitoring System
PTSD	Posttraumatic Stress Disorder
SDoH	Social Determinants of Health
SUD	Substance Use Disorder

Findings Summary

The National Coalition Against Domestic Violence defines domestic violence as “the willful intimidation, physical assault, battery, sexual assault, and/or other abusive behavior as part of a systematic pattern of power and control perpetrated by one intimate partner against another. It includes physical violence, sexual violence, psychological violence, and emotional abuse.”¹ The prevalence of intimate partner violence (IPV) is difficult to accurately capture as it often goes undisclosed or varies in definition.² About four-in-ten women in the United States (US)³ and nearly one-third of women in Connecticut (CT)⁴ experienced physical violence at the hands of an intimate partner at some point in their adult lives.* When the lens is narrowed to a yearlong period, an estimated 4.5% of US women surveyed in 2016-2017 experienced physical violence perpetrated by an intimate partner in the 12 months before the survey.³ Among those who delivered a liveborn infant between 2017 and 2021 in

Connecticut, about 1.9% reported intimate partner physical violence in the year before pregnancy, and 1.1% reported intimate partner physical violence during pregnancy.⁵

This report relies on Connecticut Maternal Mortality Review Committee (CT MMRC) case narratives and IPV service data to explore perinatal IPV among Connecticut residents who died between 2015 and 2021, whose deaths occurred during pregnancy or within one year after the end of pregnancy (pregnancy-associated deaths). For the purpose of this report, lifetime IPV is defined as violence at the hands of an intimate partner that occurs at any point in life, and perinatal IPV is defined as violence at the hands of an intimate partner that occurs during pregnancy or within one year after pregnancy.[†] Following are the primary findings regarding IPV among pregnancy-associated deaths in Connecticut in 2015-2021.

Finding 1. A considerably greater proportion of decedents experienced lifetime IPV than was previously reported based on CT MMRC case narratives alone (32% vs. 19%).⁷

Finding 2. A greater proportion of decedents experienced IPV during the postpartum period than during pregnancy (20% vs. 13%).

* With an expanded definition of intimate partner violence, which includes contact sexual violence and stalking in addition to physical violence, lifetime estimates extend to nearly half of US women (47.3%) in 2016-2017³ and nearly four-in-ten Connecticut women (37.7%) in 2010-2012.⁴ Furthermore, nearly half of all US women (49.4%) in 2016-2017³ and four-in-ten Connecticut women (44.8%) in 2010-2012⁴ reported any psychological aggression by an intimate partner in their lifetime.

† Perinatal IPV is typically defined to include the year before pregnancy, in addition to pregnancy and the year after the end of pregnancy.² Because this report focuses on pregnancy-associated deaths, which occur during pregnancy or after the end of pregnancy, the use of the term “perinatal IPV” in this report does not cover the period before pregnancy.

SUMMARY

- Finding 3.** Most of those who experienced perinatal IPV (86%) died in the late postpartum period, on average 6.5 months after the end of pregnancy.
- Finding 4.** Demographic risk factors for lifetime IPV included use of Medicaid insurance, lower levels of education, unstable housing, and being unmarried.
- Finding 5.** There were interconnections between lifetime IPV and substance use disorders, mental health conditions, and adverse childhood experiences.
- Finding 6.** There was a high occurrence of stressful life events during pregnancy and the postpartum period among those who experienced perinatal IPV.
- Finding 7.** There was a lack of universal IPV screening by health care workers during pregnancy and the postpartum period.
- Finding 8.** A current or past intimate partner perpetrated five out of eight homicides that occurred during pregnancy or the postpartum in 2015-2021.
- Finding 9.** Two out of six persons who died by suicide in the perinatal period, in 2015-2021, experienced perinatal IPV.
- Finding 10.** There was a pattern of missed opportunities within the healthcare system to provide support for those experienced perinatal IPV.

IPV and Pregnancy-Associated Deaths in Connecticut

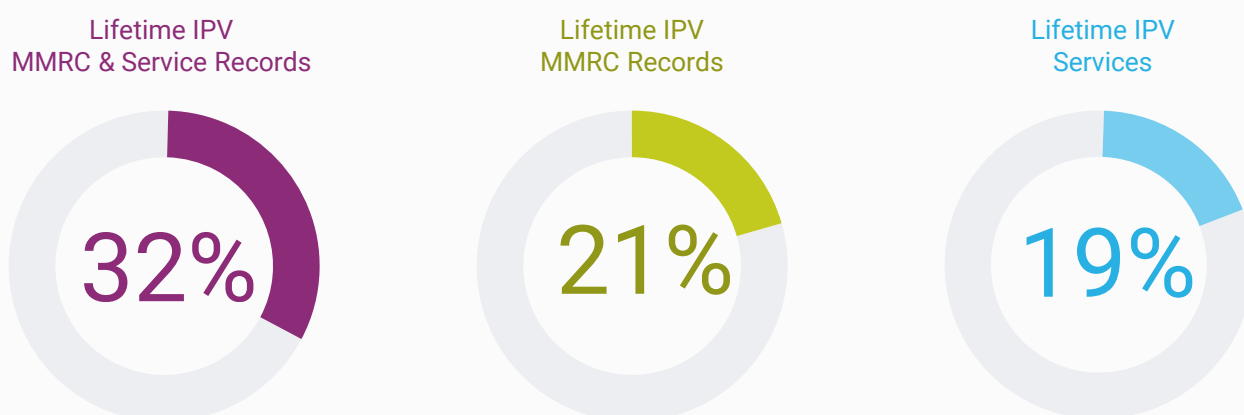
Pregnancy-associated deaths bear a temporal relationship to pregnancy: all deaths that occur during pregnancy or within one year of the end of pregnancy, regardless of the cause, are considered pregnancy-associated. In the period between 2015 and 2021, there were 102 pregnancy-associated deaths among Connecticut residents. Nearly one-third of these decedents ($n = 33$, 32%) experienced intimate partner violence (IPV) at some point in life. All 33 pregnancy-associated deaths in which lifetime IPV could be detected are included in this report to provide as broad a picture as possible of IPV and maternal mortality in Connecticut.

Case narratives made available to the Connecticut Maternal Mortality Review Committee (CT MMRC) focus primarily on medical health records and typically include few details about a pregnant or postpartum person's mental health or

relational wellbeing. Health records reference IPV screenings when they occur in a medical setting, as well as screening results, which are reported as negative or positive. Not all pregnant persons are screened, however, and the accuracy of negative results for those who are screened is questionable given the tendency to not report IPV.⁶ The type and manner of IPV screening is not included in case narratives and it is often unclear specifically who administered the screen.

Combining CT MMRC case narratives with IPV service data reveals that IPV is more widespread among those who died during pregnancy or the postpartum period than was previously reported.⁷ As noted in Figure 1, medical records and other sources of information available to CT MMRC indicate that about one-in-five decedents experienced IPV at some point in life ($n = 21$, 21%).

Figure 1. Intimate partner violence among pregnancy-associated deaths, Connecticut, 2015-2021 ($n = 102$)



Note: IPV = intimate partner violence. MMRC = Maternal Mortality Review Committee. *The percentage of those who experienced IPV in the postpartum period was computed among those who died in the postpartum period ($n = 70$). **Data Sources:** MMRC case narratives and IPV service records.

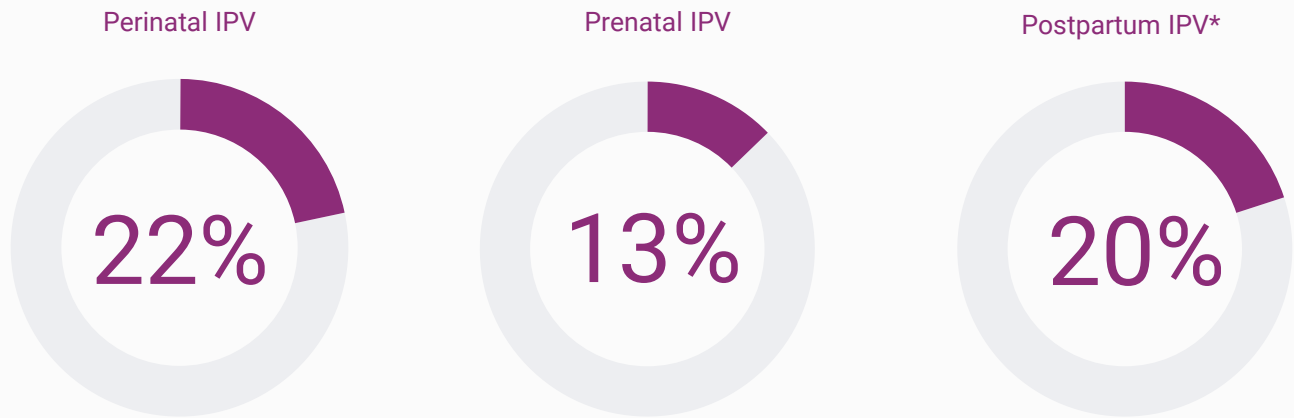
KEY FINDINGS

Similarly, IPV service data indicate that nearly one-in-five of those who suffered a pregnancy-associated death received IPV services at some point ($n = 19, 19\%$). When these sources of information are combined, nearly one-third of those Connecticut residents who died during or within one year of pregnancy between 2015 and 2021 experienced IPV at some point in life ($n = 33, 32\%$). Notably, this estimate is based on administrative records that do not include mental health treatment notes (for all decedents who sought such treatment), records from the child welfare system, or interviews with surviving family members. As such, it is most likely an underestimate of lifetime IPV among pregnancy-associated deaths in Connecticut.

Timing of IPV

Not all of those with lifetime IPV experienced IPV during the sentinel perinatal period. CT MMRC's case narratives and IPV service data indicate that about one-in-five persons experienced perinatal IPV ($n = 22, 22\%$), among all pregnancy-associated deaths in Connecticut between 2015 and 2021, as shown on Figure 2. About one-in-eight decedents experienced IPV during pregnancy ($n = 13, 13\%$). Lastly, one-in-five persons experienced IPV during the postpartum period ($n = 14$ out of $70, 20\%$), among those who died after the end of pregnancy.

Figure 2. Timing of intimate partner violence, Connecticut, 2015-2021 ($n = 102$)



Note: IPV = intimate partner violence. MMRC = Maternal Mortality Review Committee. *The percentage of those who experienced IPV in the postpartum period was computed among those who died in the postpartum period ($n = 70$). Data Sources: MMRC case narratives and IPV service records.

Timing and Manner of Death

IPV has been associated with numerous negative health outcomes during pregnancy and delivery, including high blood pressure, vaginal bleeding, placental abruption, fetal demise, stillbirth, preterm birth, insufficient and/or late entry to prenatal care, inadequate weight gain, and poor nutrition.^{2,8} Among Connecticut decedents who experienced perinatal IPV, about a small proportion died during pregnancy ($n = 3$, 14%), as shown on Figure 3. A large majority died in the postpartum period, on average 6.5 months after the end of pregnancy ($n = 19$, 86%).

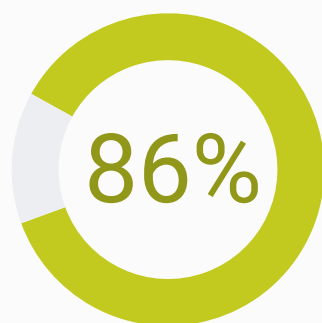
Accident, homicide, and suicide were the most common manners of death among those Connecticut residents who experienced perinatal IPV and whose deaths were determined to be pregnancy-associated, as shown on Figure 4. Accidental overdose was the manner of death of 9 out of 22 (41%) of decedents. Natural manner of death, suicide, and motor vehicle accident accounted for all other deaths ($n = 6$, 27%).

Between 2015 and 2021 there were eight pregnancy-associated deaths in Connecticut due to homicide. Six out of eight victims were persons who experienced perinatal IPV. Five out of these six homicides were perpetrated by an intimate partner: two by current partners, two by current husbands, and one by a past partner.

There were six suicides among pregnancy-associated deaths between 2015 and 2021; two of these were committed by persons who experienced perinatal IPV.

Injuries among those who experienced perinatal IPV were not consistently reported as resulting from IPV; however, case narratives include likely indicators or “flags” of IPV such as abdominal pain, decreased fetal movement, periorbital hematoma, back pain, ruptured uterus, and facial pain in the context of repeated emergency department visits for concerns such as slipping in the shower, falling down the stairs, or accidentally hitting the pregnant belly.

Figure 3. Timing of death among decedents who experienced IPV during pregnancy or the postpartum period, Connecticut, 2015-2021 ($n = 22$)

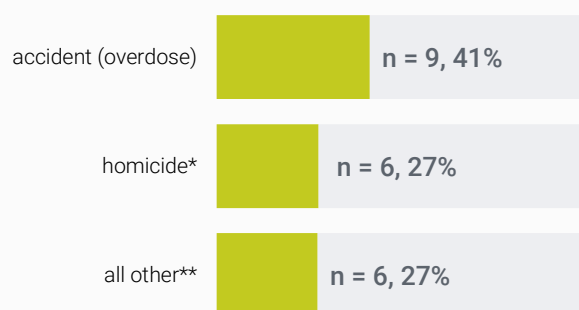


of deaths occurred in the postpartum period

Note: IPV = intimate partner violence.

Data Sources: CT MMRC Case Narratives and IPV service records.

Figure 4. Manner of death among decedents who experienced IPV during pregnancy or the postpartum period, Connecticut, 2015-2021 ($n = 22$)



Note: *Five out of six of those who died by homicide were killed by a current or former partner.**The "all other" manner of death category includes those who died by suicide, motor vehicle accident, or natural death.

KEY FINDINGS

Demographic Risk Factors

Demographic data for pregnancy-associated deaths in CT between 2015-2021 in which there was perinatal IPV are in keeping with previous research and literature on Social Determinants of Health (SDoH) and IPV, including economic, housing, and food insecurity,^{9,10} low socioeconomic status, younger age, being unmarried, fewer years of education, and using Medicaid insurance.²

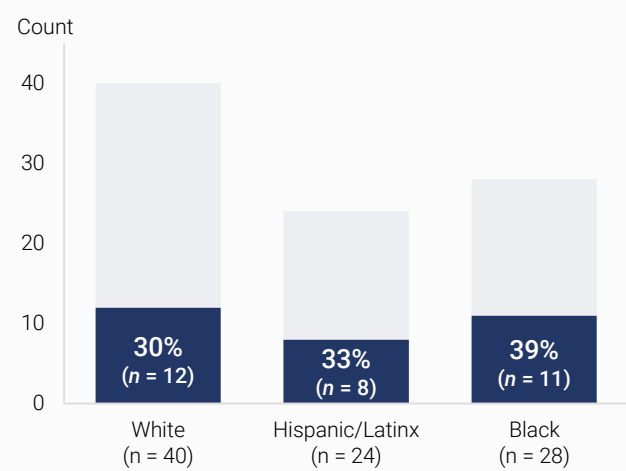
As shown on Figure 5, among pregnancy-associated deaths in CT in which lifetime IPV was detected, nearly three out of four ($n = 24$, 73%) used Medicaid insurance, nearly half ($n = 15$, 45%) were service workers, and nearly a third ($n = 10$, 30%) were not employed: all potential indicators of low socioeconomic status. Very few held a college degree, one-in-five ($n = 6$, 18%) experienced housing instability, and the majority ($n = 28$, 85%) were unmarried. As shown in Figure 5, most decedents ($n = 28$, 85%) were between 20 and 34 years of age, as may be expected of reproductive age persons. DCF involvement ($n = 16$, 49%), incarceration or arrests ($n = 8$, 24%), and having resided in congregate care facilities ($n = 7$, 21%) are further indicators of living difficult lives.

The demographic breakdown was similar for the subset of those with perinatal IPV.

Figure 6 shows a breakdown by race/ethnicity and lifetime IPV. Among all pregnancy-associated deaths in Connecticut between 2015 and 2021, lifetime IPV was present among nearly one in three ($n = 12$ out of 40, 30%) of

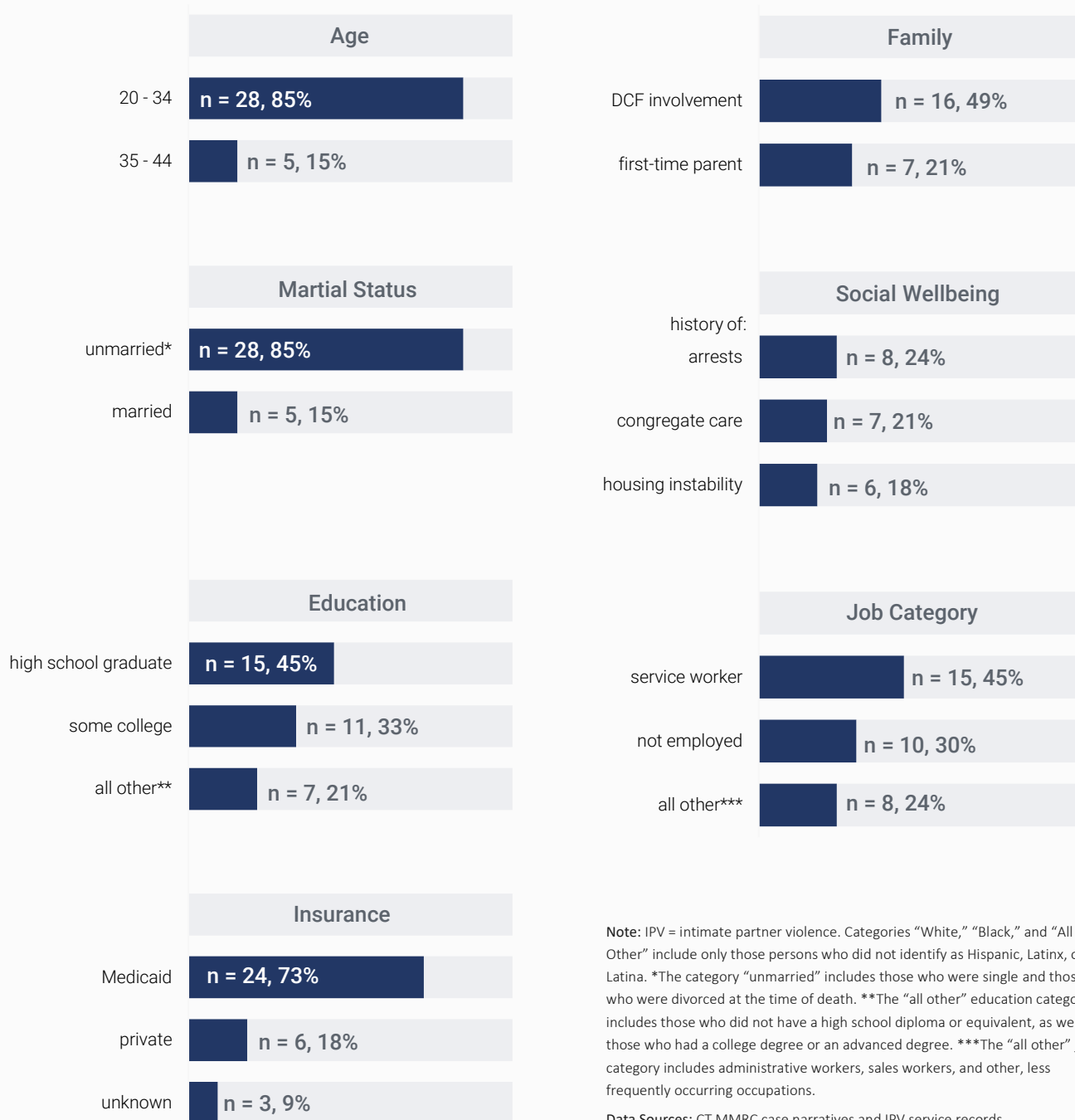
those who identified as White, one-third ($n = 8$ out of 24, 33%) of those who identified as Hispanic/Latina/Latinx, and just over one-third ($n = 11$ out of 28, 39%) of those who identified as African American. While this appears to reflect the results of studies showing persons of color and those in historically marginalized groups being at greater risk for lifetime IPV,¹¹ it is difficult to draw definitive conclusions about differences among racial/ethnic groups due to small counts. Persons of color suffered all homicides and 5 out of 6 suicides, among pregnancy-associated deaths in Connecticut between 2015 and 2021 in which lifetime IPV was present.

Figure 6. Lifetime intimate partner violence among those who died during pregnancy or the postpartum period, by race/ethnicity, Connecticut, 2015-2021



Data Source: MMRC case narratives.

Figure 5. Demographic background characteristics of those who experienced lifetime intimate partner violence (IPV) and who died during pregnancy or the postpartum period, Connecticut, 2015-2021 (*n* = 33)



KEY FINDINGS

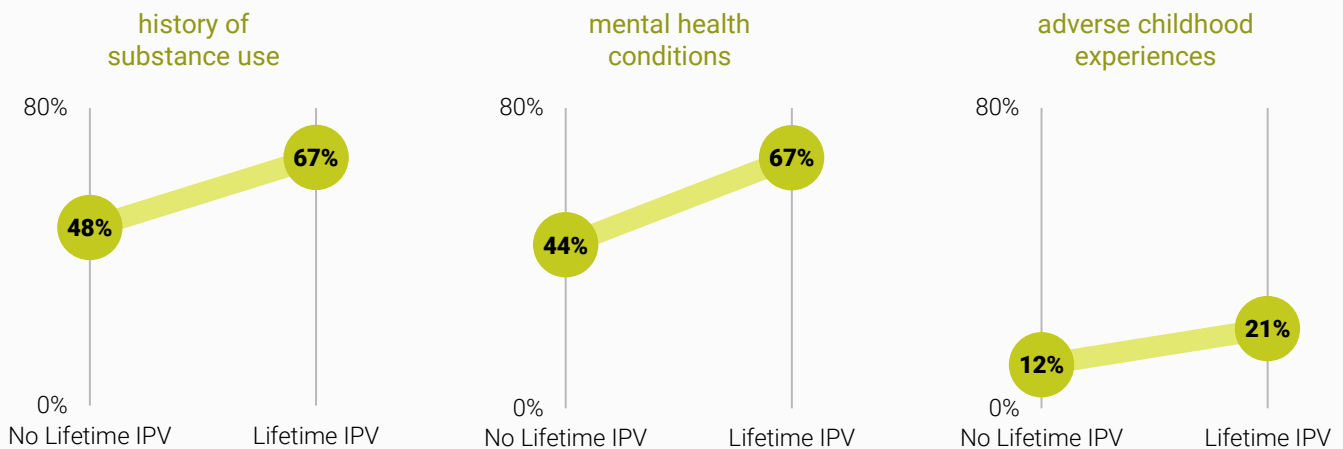
IPV, Mental Health, Substance Use, and Adverse Childhood Experiences

IPV can have a significant impact on mental health, potentially contributing to anxiety, depression, posttraumatic stress disorder (PTSD), substance use, risky behaviors such as smoking, excessive stress, self-harm, psychosomatic conditions, and suicidality.^{2,6,8,12,13} Trauma associated with IPV is often extensive due to the nature of ongoing threats and victimization occurring in a close relationship over time.² Consequences of IPV often co-occur (eg, anxiety and/or depression and substance use) creating even greater potential harm. Likewise, lifetime IPV that occurred prior to pregnancy

can have a lasting effect that carries over into pregnancy and the postpartum period even if abuse is no longer occurring.^{2,14} It is also common for multiple types of violence to be present at the same time, often intensifying the impact. For example, there is a strong correlation between physical and psychological violence with varying degrees of each or both at any given time.¹⁵

The percentage of decedents with substance use disorders, mental health conditions, or adverse childhood experiences (ACEs) was greater among those with lifetime IPV than among those without any IPV, as shown on Figure 7.

Figure 7. Psychosocial background of those who experienced lifetime intimate partner violence ($n = 33$) and those who did not ($n = 69$) among pregnancy-associated deaths, Connecticut, 2015-2021



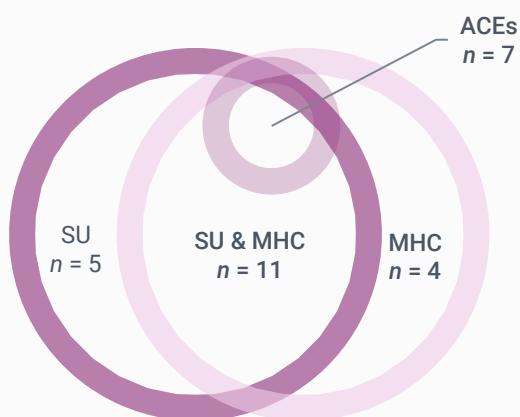
Note: IPV = intimate partner violence. Data Sources: Case Narratives and IPV service records.

Risk factors for mental health disorders among those who experience IPV may be greater when they are exposed to trauma across the lifespan¹⁶ and/or ACEs.⁶ Of the 33 decedents who experienced lifetime IPV, a large majority ($n = 27$, 82%) experienced either substance use disorders,

mental health conditions, or ACEs. Half experienced both substance use disorders and mental health conditions ($n = 17$, 51%); one-fifth experienced both ACEs and mental health conditions ($n = 7$, 21%), and nearly one-fifth ($n = 6$, 18%) experienced all three—that is, substance use disorders,

mental health conditions, and ACEs, as shown on Figure 8. These data point to a co-occurrence of IPV, mental health conditions, and substance use disorders, which, in turn, connects with death by overdose, suicide, or homicide,¹² as discussed in the preceding section.

Figure 8. Intersecting psychosocial factors among decedents who experienced lifetime intimate partner violence, Connecticut, 2015-2021 ($n = 33$)



Note: SU = substance use; MHC = mental health conditions; ACE = adverse childhood experiences. Data Source: CT MMRC case narratives.

Among decedents with lifetime IPV, two-thirds experienced mental health conditions at some point in life ($n = 22$, 67%). Mood disorders, including depression ($n = 11$ out of 22, 50%) and bipolar disorder ($n = 5$ out of 22, 23%), were the most commonly reported mental health conditions, followed by anxiety disorders ($n = 13$ out of 22, 59%), posttraumatic stress disorder ($n = 4$ out of 22, 18%), and attention deficit and hyperactive disorder ($n = 3$ out of 22, 14%). Suicide attempts ($n = 3$ out of 22, 14%) and self-injury/cutting ($n = 4$ out of 22, 18.2%) were not uncommon. Over half of decedents reported cooccurring mental health conditions, that is, more than one mental health condition ($n = 12$ out of 22, 55%).

Stressful Life Events

Among the 22 decedents who experienced perinatal IPV, nearly three-quarters ($n = 16$, 72%) experienced at least one life stressful life event during pregnancy or the postpartum period. Nearly a third reported one stressful life event ($n = 7$, 32%), one-in-seven experienced 2-3 stressful life events ($n = 3$, 14%), and a quarter ($n = 6$, 27%) experienced 4-6 stressful life events such as the following:

- ◆ family violence ($n = 2$),
- ◆ loss of housing ($n = 2$),
- ◆ father of the baby incarcerated ($n = 3$),
- ◆ father of the baby substance use disorder ($n = 3$),
- ◆ father of the baby mental health condition ($n = 1$),
- ◆ break up with father of the baby ($n = 3$),
- ◆ COVID-19 infection during pregnancy ($n = 1$),
- ◆ sexually transmitted infection in pregnancy ($n = 2$),
- ◆ forced pregnancy ($n = 1$),
- ◆ overwhelmed by pregnancy diagnosis ($n = 1$),
- ◆ caring for a child with a disability ($n = 2$),
- ◆ family medical issues ($n = 1$),
- ◆ the moving away of a supportive parent ($n = 1$),
- ◆ discharge from hospital without the baby ($n = 7$), and
- ◆ loss of child custody ($n = 6$).

While stressful life events are included in case narratives when available, no formal screening is done to routinely gather this type of information. It is interesting to note that findings from CT PRAMS for the period of 2017-2021 indicate that those who experienced IPV during pregnancy were more likely (94.2%) than those who did not experience IPV during pregnancy (65.1%) to report one or more stressors during the year before the baby was born. This included greater likelihood of emotional stress (47.4% v 31%), financial stress (76.2% v 43.5%), stress in relationship to partner (62.6% v 18.8%), and trauma (42.7% v 10.2%).⁵

Medical System Interventions

Screening for IPV

The American College of Obstetricians and Gynecologists (ACOG) recommends universal screening for IPV at periodic intervals, including during the prenatal period at the first prenatal visit, at least once per trimester, and during the postpartum checkup.¹⁷ Universal screening refers to asking about violence with all patients, regardless of perceived risk factors.¹⁸ There is evidence that prenatal IPV screening falls short of this universal screening standard in the United States¹⁹ and that the decision to screen may at times be subjective based on profiling those assumed to be at greater risk due to race/ethnicity, age, socioeconomic status, type of insurance, and/or marital status.²⁰ Providers should not only screen, but be prepared to offer ongoing support and referral options.^{17,21}

Those who are screened often do not report IPV due to numerous factors, including, but not limited to, fear of retribution, disrupting the family, police action, and/or involvement of child welfare; shame, self-blame, and disempowerment; stigma and victim blaming; limited choices and barriers to independence.^{22,23}

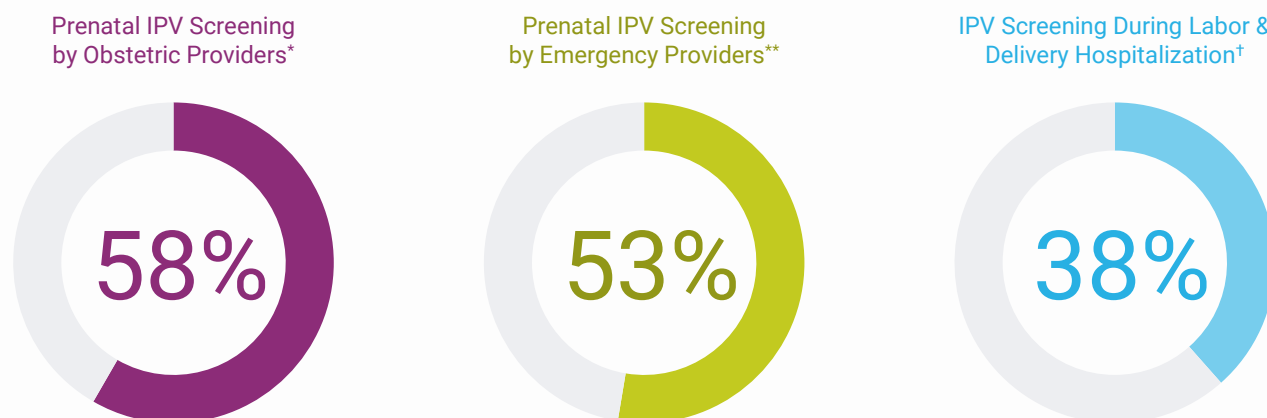
Prenatal, labor and delivery, and emergency department care offer numerous opportunities to screen and intervene in IPV;^{8,16,19} however, CT MMRC case narratives reveal inconsistent screening for IPV during these healthcare visits. Complete prenatal care records were available to CT MMRC for about two-thirds of those who suffered a pregnancy-associated death in 2015-2021 ($n = 69$, 68%). Nearly two-thirds of those were screened for IPV by their prenatal

provider ($n = 44$, 64%). Among those who were screened, about one-in-ten reported lifetime IPV ($n = 5$, 11%) and only one reported IPV during pregnancy ($n = 1$, 2.3%). Other sources of information (ie, IPV service records, police reports) indicate that at least nine other decedents experienced IPV during pregnancy (among those who received prenatal care and whose complete prenatal care records were available to CT MMRC). In other words, fewer than 2% of decedents reported recent or ongoing IPV to their prenatal care provider ($n = 1$ out of 69, 1.4%), but at least one-in-seven experienced IPV in pregnancy ($n = 10$ out of 69, 14%).

Among those with lifetime IPV ($n = 33$), two-thirds were screened at least once prenatally by a health care provider ($n = 22$, 67%). As shown on Figure 9, nearly six-in-ten were screened by obstetric providers ($n = 14$ out of 24, 58%), about half were screened by emergency room providers ($n = 10$ out of 19, 53%), and just over a third were screened during their hospitalization for labor and delivery ($n = 10$ out of 26, 38%).

Lastly, similar to those with lifetime IPV, about two-thirds of those with perinatal IPV ($n = 22$) were screened prenatally by a health care provider ($n = 15$, 68%), according to the medical records available to CT MMRC. These findings are generally consistent with Connecticut PRAMS data, which show that about three-quarters of those with a liveborn infant in 2017-2021 had discussions with a health care worker about being physically or emotionally harmed by someone (regardless of relationship to the patient) in the 12 months before and during pregnancy, which is to say that about one quarter of respondents did not have such discussions with a health care provider.

Figure 9. Screening for intimate partner violence (IPV) among those who experienced lifetime IPV and who died during pregnancy or in the postpartum period (pregnancy-associated death), Connecticut, 2015-2021



Note: IPV = intimate partner violence. *Percentage of those who were screened for IPV by obstetric providers was computed among those who sought prenatal care and for whom prenatal care records were available for review ($n = 24$). **Percentage of those who were screened for IPV by emergency room providers was computed among those who had at least one emergency room visit during pregnancy ($n = 19$). †Percentage of those who were screened for IPV during labor and delivery hospitalization was computed for those who were hospitalized for labor and delivery or for pregnancy termination ($n = 26$). **Data Sources:** MMRC case narratives and IPV service records.

Missed Opportunities for Care

One of the most disturbing findings from the analysis of CT MMRC case narratives and IPV service data is the frequency of missed opportunities to intervene in the lives of those experiencing perinatal IPV. Figures 9 and 10 reflect missed opportunities for IPV screening and intervention on a case-by-case basis. These figures provide individual and collective stories about IPV screening and referral – or lack thereof – among decedents who experienced IPV during pregnancy and/or the postpartum period.

As shown on Figure 9, among 13 persons who experienced IPV during pregnancy, 10 (78%) participated in prenatal visits. Of these 10, six (60%) were screened for IPV and none were referred for support. Two of the 13 persons died before engaging in prenatal care (Persons 11 and 12), and one did not enter care prior to labor and delivery (Person 13).

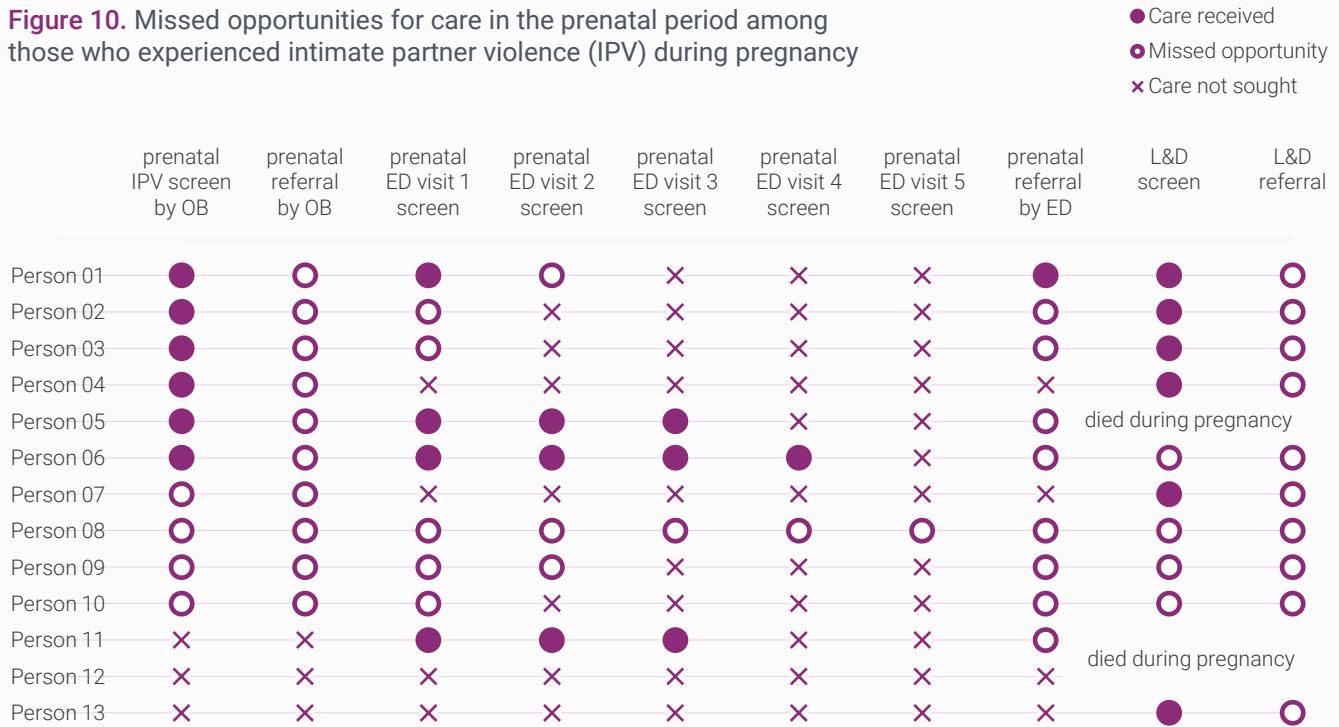
Emergency department visits were not uncommon, with nine decedents having had at least one emergency department visit during the prenatal period. Four of these nine (45%) were screened for IPV during at least one emergency department visit. One person with a positive IPV screen was referred to IPV services by staff in the emergency department.

Among those who experienced IPV during pregnancy, ten sought hospital care for labor and delivery (Persons 5, 10, and 11 died during pregnancy). As reflected in Figure 10, six (60%) were screened and none were referred for IPV services.

Figure 11 shows opportunities for IPV screening and referral among those experienced IPV in the postpartum period. Of the 14 persons, only 5 (36%) were screened for IPV during labor and delivery. Seven of the 14 persons (50%) sought emergency room care at least once during the postpartum period. Of these, over half were screened ($n = 4$, 57%) and none were referred for IPV services.

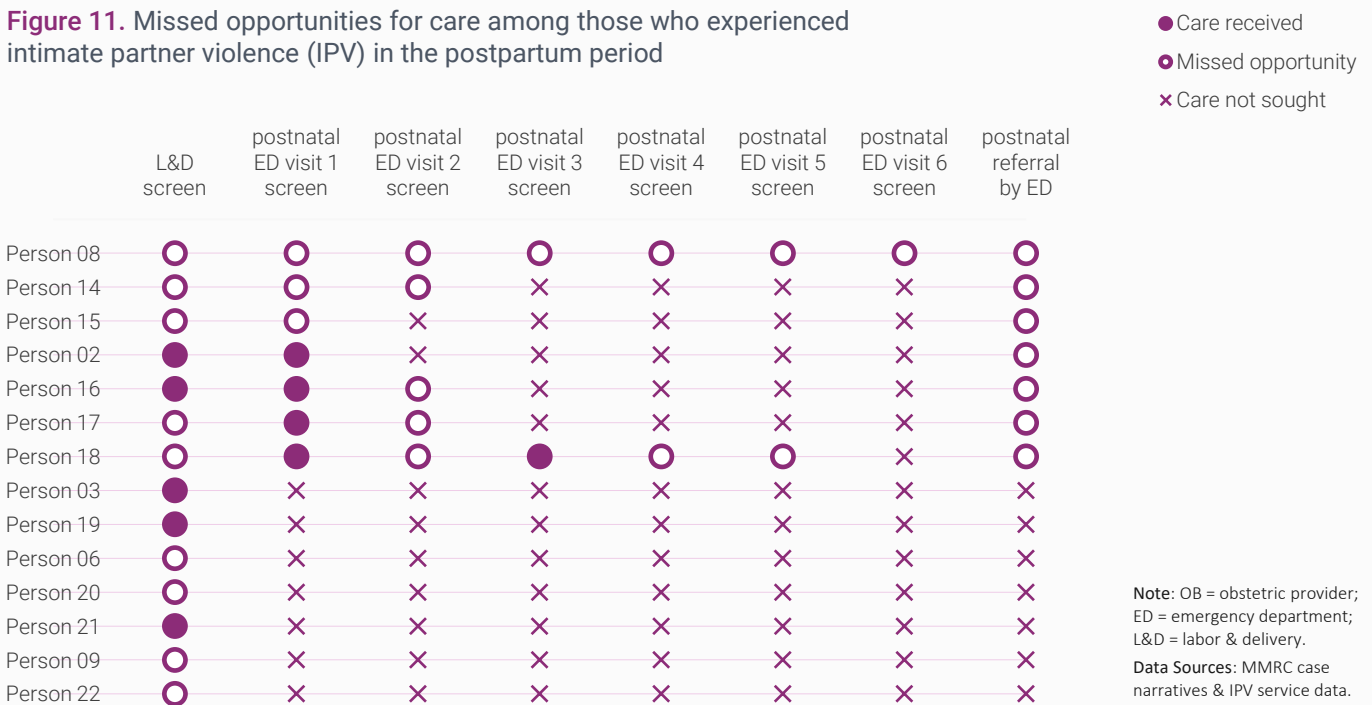
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Figure 10. Missed opportunities for care in the prenatal period among those who experienced intimate partner violence (IPV) during pregnancy



Note: OB = obstetric provider; ED = emergency department; L&D = labor & delivery.
Data Sources: MMRC case narratives & IPV service data.

Figure 11. Missed opportunities for care among those who experienced intimate partner violence (IPV) in the postpartum period



Note: OB = obstetric provider; ED = emergency department; L&D = labor & delivery.
Data Sources: MMRC case narratives & IPV service data.

Future Considerations

The findings in this report suggest the need for more research and information-gathering about perinatal IPV in Connecticut in relation to the following areas:

1. **Screening Protocols.** What we know about perinatal IPV screening is limited by the lack of information about screening protocols.²⁴ CT MMRC's case narratives do not include which screening tools were used by medical providers; the relationship, level of rapport, and trust built between the health care professional and person being screened; the setting in which the screening took place and if confidentiality was assured; whether or not screenings were normalized and presented as standard procedure; if information was woven into conversations to ensure those being screened understood the breadth of IPV; and so on. Qualitative research is needed to better understand perinatal IPV screening and referral protocols used by healthcare providers in Connecticut.
2. **Screener Readiness.** Information needs to be gathered on the readiness of health care professionals to effectively screen and refer for IPV²⁵⁻²⁷ and how screening can be better integrated into the demands of perinatal care.²⁸ There is minimal information in CT MMRC's case narratives about those doing the screening, for example their comfort with it and their knowledge about IPV and their ability to integrate cultural considerations.²⁹ Again, qualitative research is needed to explore the readiness of Connecticut healthcare providers to screen, be receptive to disclosure, engage in safety planning, and refer those in need to IPV-specific resources.²
3. **Breadth of Screening.** It is unclear how perinatal IPV is being defined in health care settings, and therefore, what is, or should be, included in screening. CT MMRC's case narratives include quotes from medical records such as "[They] were asked if they felt safe at home," which appears to refer to physical violence. Information is sparse regarding other forms of IPV, including sexual violence, stalking, and psychological aggression. Reproductive coercion^{30,31}—limiting a pregnant person's control over reproductive decisions—may be particularly salient during the perinatal period as stress is likely to be greater if pregnancy is coerced or unwanted.⁶ PRAMS surveys include questions on pregnancy intention and family planning;⁵ however, there is no indication in CT MMRC's case narratives that these concerns are being addressed by health care professionals during the perinatal period.
4. **Pathways for Care.** CT MMRC's case narratives indicate that only one referral was made among 13 persons who experienced IPV during pregnancy. No referrals were made among 14 persons who experienced IPV during the postpartum period. This points to the need to identify possibilities for collaboration and to build stronger pathways for care. Current efforts on the part of the Connecticut Coalition Against Domestic Violence (CCADV) to provide training to medical professionals is an excellent example of strengthening pathways for care by building connections between health care institutions/providers and community organizations that provide support for perinatal IPV.^{32,33} Increasing

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and strengthening collaboration between medical systems, agencies that offer support for IPV, mental health agencies, and addiction treatment centers is also important given the level of cooccurring mental health conditions, stressful life events, and substance use disorders among those experiencing perinatal

IPV. Resources for demographic risk factors associated with perinatal IPV (eg, housing, education, parenting, employment) and sources of informal social support that may mitigate IPV⁹ might also be included.

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Appendix : Methods

This report is based on analyses of Maternal Mortality Review Information Application (MMRIA) data, CT MMRC case narratives, and intimate partner violence (IPV) service records. Developed by the Centers for Disease Control and Prevention (CDC) and the CDC Foundation, MMRIA is housed on a secure server and is available, free of charge, to all state maternal mortality review committees. Connecticut Maternal Mortality Review (MMR) Program staff use MMRIA to store vital records data, including birth/fetal death certificates and death certificates; autopsy reports; medical records; police reports; and Committee decisions for all pregnancy-associated deaths. Case narratives are prepared by the MMR abstractors, with assistance from the MMR Program staff, based on medical records, autopsy reports, police reports, news and social media, and, starting with deaths that occurred in 2021, community of last residence metrics.

MMRIA Data

For the purpose of this report, data were extracted from MMRIA by CT MMR project evaluators and analyzed using SAS software. Analysis included calculation of mortality ratios and descriptive statistics pertaining to maternal demographic characteristics, circumstances of death, and Committee decisions. Mortality ratios were calculated as the number of deaths per 100,000 live births, as reported by the Connecticut Department of Public Health Vital Records Office, for the seven-year period between 2015 and 2021, for pregnancy-related deaths from all causes (16.0 per 100,000 live births with a 95% confidence interval from 11.3 to 21.8); pregnancy-related deaths from medical disease (8.6 per 100,000 live births, with a 95% confidence interval from 5.3 to 13.1); and pregnancy-related deaths from mental health

conditions, including substance use disorder (7.0 per 100,000 live births, with a 95% confidence interval from 4.1 to 11.1). Confidence limits were computed using the gamma method.

Additionally, the analysis of MMRIA data included descriptive statistics (counts, percentages, crosstabulation tables) pertaining to decedents' demographic characteristics (race/ethnicity, health insurance, education); circumstances of death (manner and timing); and committee decisions (pregnancy-relatedness, preventability, cause of death, and contribution of mental health conditions, substance use disorder, obesity, and discrimination). Data on race and ethnicity were obtained from birth or fetal death records, and in cases in which such information was not available, from decedents' death records. All deaths in which ethnicity was coded as "Hispanic" were classified as Hispanic/Latinx. Birth and death record data were checked against medical records, and in one instance, CT MMR leadership in consultation with CT MMR project evaluators decided to report on data from sources other than birth and death records (one person was listed as "White" in the birth record, but "African American" on all medical records).

Data on educational attainment were obtained from birth and death records, and also checked against other available information. For one person education was listed as "Master's degree" in the birth record; this was re-coded as "unknown" based on other available information. Another person's education was re-coded as "Some college" based on the birth record rather than a lower level of education attainment that was listed on the death record. For three persons, the slightly higher level of education listed on the death record was used in place of the lower level of education listed on the birth record.

APPENDIX

Data on health insurance were obtained from the birth records for those who died in postpartum and from medical records for those who died in pregnancy. For all postpartum deaths, birth data were checked against medical records. In three instances in which health insurance was listed as “unknown” or was missing in the birth record, it was recoded as “Medicaid” based on medical records; in one instance it was recoded as “private” based on medical records; and in one instance it was changed from “other” to “Medicaid” based on medical records.

For deaths that occurred during pregnancy, timing of death relative to pregnancy was based on CT MMR abstractors’ timing assignments, which were informed by medical records and autopsy reports. For deaths that occurred in the postpartum, timing of death was calculated by comparing the date of death listed on the death record and the date of delivery listed on birth or fetal death record. Cause of death was obtained from CT MMRC’s Committee Decision Forms, as entered into MMRIA.

In one case, the cause of death was coded as “injury” on the Committee Decision Form and CT MMRC determined that substance use disorder contributed to the death. For the purpose of this report, the cause of death for this decedent was recoded as death from substance use disorder.

Percentages for each contributing factor presented in Figures 7 and 8 were computed for those for whom CT MMRC’s determination was “yes,” “no,” or “probably.” Those with the “unknown” Committee determination were excluded from total counts and from the computation of percentages.

Case Narrative Data

Two CT MMRC evaluators who have extensive research experience completed a qualitative analysis of case narratives pregnancy-related deaths that occurred between 2015 and

2021. The analysis centered on pregnancy-associated deaths in which there was documentation of lifetime IPV.

Recent literature on maternal mortality was consulted prior to and throughout the analysis. All case narratives were read and re-read to develop deep understanding and to identify themes. Case narratives were imported into Atlas.ti software, re-read, and coded to track the frequency of each theme across all case narratives. Identifiers were removed and the use of rich text in results was condensed to maintain anonymity.

The analysis of these retrospective case narratives was limited by lack of available information, inconsistency between the amount and type of information provided across case narratives, and absence of the voices of those whose experience researchers were attempting to represent. The low number of pregnancy-associated deaths also limit confidence in identifying themes. Results are shared in this report in terms of themes despite low numbers, however, to provide readers with as much insight into the data as possible.

IPV Service Records

IPV service records included data on the receipt of IPV services, timing of services (in months) relative to the death, and whether the courts provided a referral to services. A listing of pregnancy-associated deaths for 2015-2021, provided by the Vital Records Office, was used to identify decedents who had received IPV services at some point in life. Decedents’ names were removed from the list prior to it being shared with CT MMRC evaluators, who used the date and the manner of death to match IPV service records with MMRIA data. The matched dataset informed qualitative analyses of case narratives and was used to compute descriptive statistics pertaining to IPV among those who died during pregnancy or in the postpartum.

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