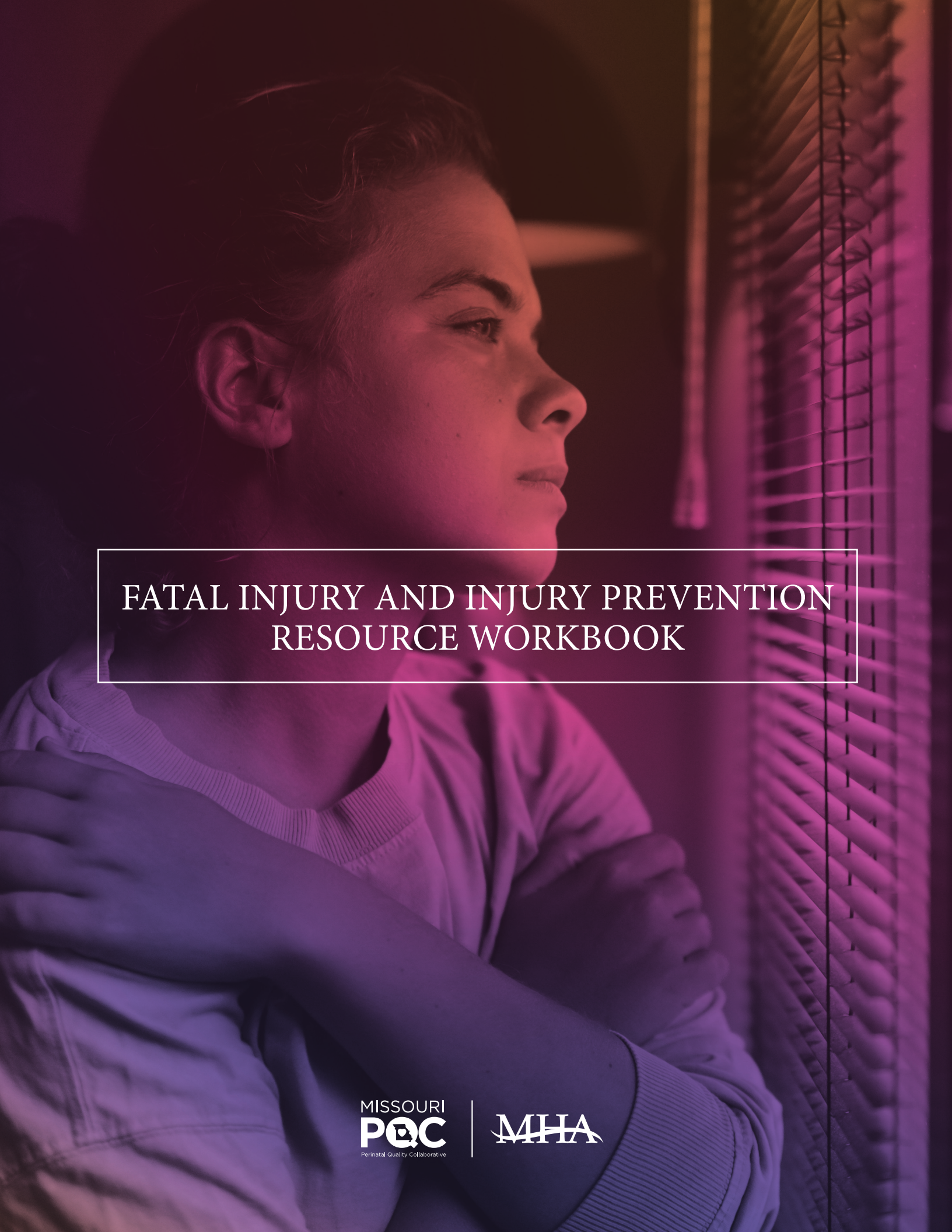

FATAL INJURY AND INJURY PREVENTION RESOURCE WORKBOOK

MISSOURI PQC Perinatal Quality Collaborative | MHA

Acknowledgements

Improving the health outcomes of maternal and infant populations is a critical priority in Missouri. The Missouri Perinatal Quality Collaborative serves as a statewide convener, resource, and change agent to support decreased variations in care and outcomes, support optimized use of evidence-based practice, and support clinical-community integration — all noted gaps in achieving equitable and improved health.

These efforts would not be possible without the collective vision and collaboration of the Missouri Department of Health and Senior Services, Missouri Hospital Association, and members of the Missouri Maternal-Child Learning and Action Network. MC LAN members represent a diverse group of stakeholders from clinical backgrounds, professional associations, government agencies, community-based organizations and community representatives who have committed support to reducing maternal morbidity and mortality in Missouri, including the March of Dimes, Missouri Section of the American College of Obstetricians and Gynecologists, Missouri Chapter of the American Academy of Pediatrics, Missouri Primary Care Association, Missouri DHSS, Missouri Department of Social Services MO HealthNet Division, Missouri Foundation for Health, Missouri Chapter of the Association of Women's Health, Obstetric and Neonatal Nurses, Nurse Practitioners in Women's Health Association, Missouri Chapter of the Amniotic Fluid Embolism Foundation, Generate Health, St. Louis Integrated Health Network, Bootheel Perinatal Network, Healthy Blue MO, Home State Health, United Healthcare, Nurture KC, Promise 1000, M-Brace Birthing, SafiMoms365, the Doula Foundation and Simply Strategy. These partners successfully aligned efforts to bring Alliance for Innovation on Maternal Health initiatives to Missouri in 2019 and connect directly to the Missouri Pregnancy-Associated Mortality Review Board, which identifies leading causes of morbidity and mortality.

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The Evidence

Intimate partner violence, homicide, suicide and motor vehicle collisions are significant contributors to maternal mortality by fatal injury, particularly in the context of pregnancy-associated deaths. Together, IPV, homicide, suicide, and MVCs illustrate the complex and multifaceted nature of maternal mortality and morbidity, stressing the need for social and mental health support, violence prevention and public safety measures to protect pregnant and postpartum people.

Homicide is nationally recognized as one of the leading causes of pregnancy-related deaths due to injury, frequently perpetrated by a current or former intimate partner.[1] The U.S. homicide rate for pregnant or postpartum women in 2020 was 5.23 deaths per 100,000 live births, compared to 3.87 deaths per 100,000 live births for nonpregnant and nonpostpartum women. This means that pregnant and postpartum women had a 35% higher risk of homicide. In the two years prior, the risk was 16% greater, demonstrating the known impacts of the first year of the COVID-19 pandemic on violence-related outcomes.[2] Homicide rates are highest for adolescents and non-Hispanic Black women and most cases involved firearms.[2] Maternal mortality and violent maternal deaths stem from common root causes. Factors contributing to both include income inequality, community violence and structural racism.[2,3,4]

With suicide being a leading cause of maternal mortality across the U.S., it is crucial to understand the full range of risk factors that can lead to suicide in order to develop and implement effective prevention and treatment strategies.[5] The leading risk factor is behavioral health, which includes personal or family history of psychiatric disorders, previous suicide attempts and suicidal ideation. Anxiety and bipolar disorder increase the risk, and birthing people with a postpartum psychiatric admission were 70 times more at risk of suicide in their first postpartum year.[5] Reports by the CDC conclude that 34% of pregnancy-related suicides were carried out by people

with previous attempts, while other general population studies show that 45% visit their primary care physician within a month and 84% have a health care visit within a year of dying by suicide.[5] Evidence also shows that abuse, including IPV, at any point in a woman's life increases the risk of suicide during pregnancy and the first postpartum year. Additionally, a lack of support in the perinatal period is strongly linked to experiencing suicidal thoughts. Environmental factors such as social and gender inequalities, racial discrimination, minority status, overcrowded or inadequate housing, and living in rural areas also can increase the risk of suicide.[5] Mental health screenings, including education and referrals, are critical to identify risk factors during touchpoints within medical settings.

Although IPV affects individuals across all racial, ethnic, gender and socioeconomic groups, low-income populations, particularly those in under-resourced communities, face greater challenges in escaping abusive relationships and may be more susceptible to adverse health outcomes.[1] A birthing person suffering IPV may experience several detrimental conditions, such as maternal depression, anxiety, post-traumatic stress disorder, and even death.[6] Although there are differences in demographic characteristics among victims, interpersonal violence is associated with both pregnancy-associated homicides and suicides where a firearm was involved.[2] Among pregnancy-related deaths with information on manner of death, data from Maternal Mortality Review Committees in 36 states, including Missouri from 2017 to 2019, concluded 2.9% of maternal deaths to be a homicide, and 8.4% to be a suicide, while also concluding that 80% of pregnancy-related deaths were preventable.[7]

MVCs are another significant cause of fatal injury deaths. Pregnant people may face additional risks in MVCs due to physiological changes in the body that can complicate injuries. Failure to use seat belts and other safety measures can increase the likelihood of fatal outcomes in these collisions, making MVCs a significant factor in maternal mortality statistics. Pregnant people who experience physical trauma tend to suffer complications caused by an increase in soft-tissue edema and fluid response. Due to blood volume, fluid changes and cardiac output during pregnancy, vital signs may be difficult to correctly interpret. Additionally, surgical interventions for pregnant people involved in MVCs may be challenging due to changes in anatomy. Each of these factors make trauma, specifically that caused by MVCs during pregnancy, a significant contributor to adverse outcomes.[8] Pregnant people involved in MVCs are at higher risk for preterm labor, placental abruption and fetal demise.[9,10]

Missouri's Call to Action

The Missouri PAMR Board reviews all deaths of women and birthing people while pregnant or within one year of the end of the pregnancy. Pregnancy-associated death is the overarching term used when referring to maternal deaths. Within this broad categorization are more specific terms to describe the cause of death, including pregnancy-related death; pregnancy-associated, but not related (PANR) death; and pregnancy-associated, but unable to determine relatedness.[11] See definitions below.

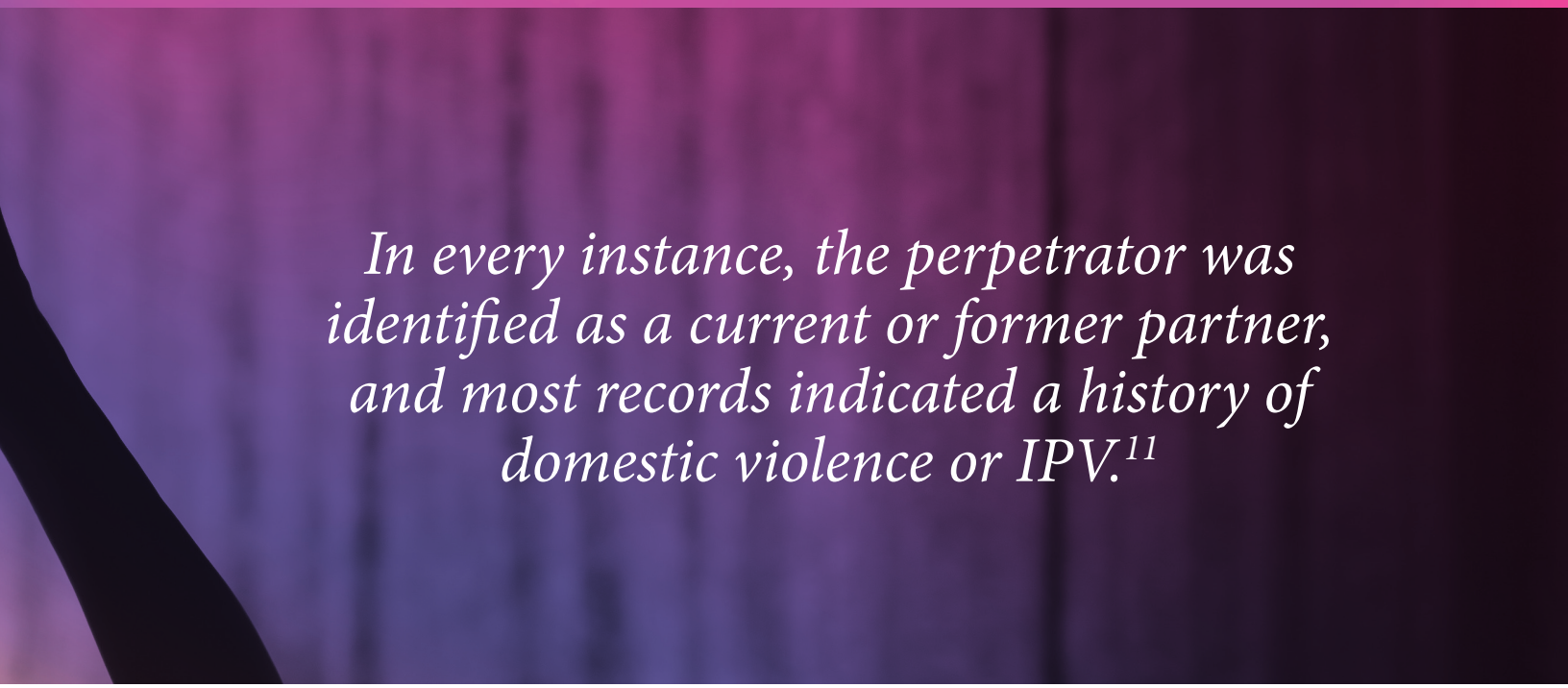
Pregnancy-related death: Death occurring during or within one year of the end of pregnancy from a pregnancy complication, a chain of events initiated by pregnancy, or the aggravation of an unrelated condition by the physiological effects of pregnancy[11]

PANR: Death during or within one year of pregnancy from a cause that is not related to pregnancy[11] (e.g. pregnant person who dies in a natural disaster)

Pregnancy-associated, but unable to determine relatedness: Cases when the board was unable to determine if a death was pregnancy-related or PANR[11]

Maternal morbidity: Any health condition attributed to and/or aggravated by pregnancy and childbirth that negatively impacts women's health short-term or long-term (Updated June 2024).[11]

Maternal mortality: The World Health Organization defines a maternal death as "a death while pregnant or within 42 days of the end of the pregnancy from any cause related to or aggravated by pregnancy or its management, but not from accidental or incidental causes."[12] In Missouri, the term maternal mortality is used to describe the death of a person during pregnancy, childbirth and postpartum period up to 365 days from the end of a pregnancy. (Updated June 2024).[11]



In the 2024 Missouri PAMR report, pregnancy-related injury deaths, all classified as homicides, emerged as the fourth leading cause of maternal mortality, constituting 8% of all pregnancy-related deaths.[11] Notably, firearms were involved in 67% of cases. The demographic profile of these victims reveals a stark reality.

- All occurred in metropolitan counties.[11]
- Sixty-seven percent of these incidents occurred between 43 days and one year postpartum.[11]
- In every instance, the perpetrator was identified as a current or former partner, and most records indicated a history of domestic violence or IPV.[11]
- Firearms, prevalent in **one in 10** pregnancy-related deaths, were predominate in homicides (67%) with suicides (44%) falling closely behind, and the majority occurring in metropolitan areas.[11]
- While firearm homicides predominantly impacted Black women, firearm suicides were more prevalent among white women.[11]

Pregnancy-related suicides accounted for a significant portion of fatal injuries, comprising 14% of cases, according to the findings of the PAMR report.[11] Cases classified as "probably" suicide by the board were included in this statistic. Notably, instances where determination proved elusive were not categorized as suicides for the report's purposes. The data revealed that 44% of suicides were inflicted using firearms. Additionally, a demographic pattern emerged, with a vast majority (94%) of pregnant people who died by suicide being white women and 69% of the cases occurring in metropolitan counties. Equally significant is the timing, with the majority occurring between 43 days to one year postpartum, shedding light on the critical importance of postpartum mental health support.

While the primary focus of the PAMR program is to prevent pregnancy-related deaths, valuable insights also can be drawn from PANR deaths, such as MVCs, which were identified as the second most common cause of PANR deaths.[11] A deeper analysis of these cases revealed several key factors contributing to the fatalities, including the circumstances surrounding the collisions and the presence or absence of safety measures like seat belts. Further analysis indicated the following.

- Fifty-four percent of victims were not wearing seat belts (excluding pedestrians struck by a vehicle).[11]
- Thirty-three percent of these incidents occurred during pregnancy.[11]
- Sixty-six percent of victims were between the ages of 20 and 29.[11]
- Fifty-seven percent of the victims involved had a Medicaid-covered pregnancy.[11]
- Sixty-six percent lived in metropolitan counties.[11]

The PAMR Board has identified key recommendations for both providers and community agencies to steer efforts to improve maternal health outcomes related to IPV, homicide, suicide and MVCs.[11]

Providers:

- Perform a full assessment for depression and anxiety utilizing a standardized, validated tool at least once prenatally and at least once during the comprehensive postpartum visit, adding screenings as indicated. Assessments should include inquiries about the presence of firearms in the household.
- Provide guidance on secure firearm storage methods.
- Prioritize early intervention and collaboration among social workers and community health workers.
- Facilitate warm referrals or seamless transfers of care within the health care team.
- Use social workers and community health workers, during pregnancy and postpartum, to increase continuity of care for referrals, follow-up care, and communication and to identify social determinants of health.
- Make referrals to mental health professionals, social workers, community health workers and substance use disorder treatment programs as appropriate. Recognizing the challenges of this approach, ensure that pregnant and postpartum patients have a scheduled appointment with a referral agency before concluding their health care appointment.
- Educate during pregnancy and postpartum about the importance of using seat belts.
- Health care facilities and providers should maintain standards of care regardless of surrounding circumstances.

Community-based Organizations:

- Collaborate with health care facilities and providers to educate their community on DV and IPV and provide resources and assistance for pregnant people affected by DV or IPV.
- Increase public awareness of the importance of seat belt safety during the perinatal period.
- Implement community violence intervention programs with a focus on reducing homicides during pregnancy and the postpartum period.

Resources Section

Educational

IPV Health: Educate Health Providers on How to Respond to Intimate Partner Violence
National Health Resource Center on Domestic Violence: Addressing Intimate Partner Violence during Pregnancy and Beyond (slide deck)
ACOG: Implementing Perinatal Mental Health Screening

Risk Assessments

British Journal of Psychiatry: Edinburgh Postnatal Depression Scale (EPDS)
Pfizer Inc.: Patient Health Questionnaire-9 (PHQ-9)
Pfizer Inc.: General Anxiety Disorder-7 Screen (GAD-7)
Sigma Assessment Systems Inc.: Psychological Screening Inventory-2 (PSI-2)

Hotlines

National Domestic Violence Hotline: 1-800-799-7233(SAFE)
Missouri Suicide and Crisis Hotline (call, text or chat): 988

Toolkits

Futures Without Violence®: A Train the Trainer Curriculum on Addressing Intimate Partner Violence, Reproductive and Sexual Coercion
Futures Without Violence®: Is Your Relationship Affecting Your Health? Addressing Intimate Partner Violence in Primary Care Settings (slide deck)

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