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Overview

The Ohio Department of Health (ODH) established the Ohio Pregnancy-Associated Mortality Review (PAMR) to identify and review pregnancy-associated deaths with the goal of developing interventions to reduce maternal mortality, particularly for pregnancy-related deaths.

A pregnancy-related death is the death of a woman while pregnant or within one year of pregnancy from any cause related to or aggravated by the pregnancy or management, excluding accidental or incidental causes. A pregnancy-associated death is the broader category and includes the death of a woman while pregnant or anytime within one year of pregnancy regardless of cause.

PAMR makes these key decisions for each death reviewed:

- 1. Was the death pregnancy related?
- 2. What was the underlying cause of death?
- 3. Was the death potentially preventable?
- 4. What were the factors that contributed to the death?
- 5. What are the recommendations and actions that address those contributing factors?

While all questions are essential, the last three questions highlight the unique and critical role of PAMR: preventability, contributing factors, and recommendations for improvement.

The purpose of this PAMR special topics data brief is to supplement the comprehensive report, A Report on Pregnancy-Associated Deaths in Ohio 2008-2016, with additional information about the impact of intimate partner violence on pregnancy-associated deaths.

Background on Intimate Partner Violence and Pregnancy

Intimate partner-violence (IPV) includes physical violence, sexual violence, stalking and psychological aggression by a current or former intimate partner. An intimate partner can be a spouse, boyfriend or girlfriend, dating partner, or ongoing sexual partner (Breiding, 2015).

IPV is a significant public-health issue that exposes women to a range of health problems that can either directly or indirectly lead to maternal death. Data from the Centers for Disease Control and Prevention (CDC) on violence suggests that nearly half of female homicide victims in the U.S. are killed by a current or former male intimate partner.

Pregnancy and the postpartum period are times of increased risk for homicide among women and girls of reproductive age. IPV has been associated with inadequate utilization of prenatal care (Musa, 2019), increased risk of prenatal hospitalizations (Lipsky 2004), higher rates of depression symptoms (Bonomi 2006), and increased drug and alcohol dependence (Echo, 2015).

Research on IPV suggests that violence increases during stressful events (Moreira, 2020), such as the COVID-19 pandemic. In addition to anxiety about the illness itself, the social measures implemented to reduce the transmission of COVID-19, including self-isolation, the increased amount of time victims are isolated in their homes with their aggressors as a result of the pandemic, and the change of employment status due to rising unemployment may add to family stress and foster an environment that could trigger violence (Barnawi, 2017, Gupta 2020). Other harmful impacts of the pandemic include the lack of privacy survivors have to access support and resources (Gupta 2020, Moreira 2020). The magnitude and nature of the impact of COVID-19 on IPV cannot be fully determined at this time. This data brief covering maternal deaths from 2008 to 2016 provides a baseline to monitor changes in maternal deaths related to IPV over time, including during the pandemic.

PAMR Case Identification

The PAMR multidisciplinary committee of experts reviews pregnancy-associated deaths. One of the unique roles of the committee is to determine contributing factors, or steps along the way that, if altered, may have prevented her death. The focus of this report will be pregnancy-associated deaths with IPV contributing factors.

Contributing factors are broken down by Level, Class, and Description.

Level: Patient/family, provider, facility, systems that influence the lifestyle, care, and health services for the woman, and community.

Class: Delay, adherence, knowledge, cultural, religious, environmental, violence, mental health conditions, substance-use disorder (alcohol, illicit/prescription drugs), tobacco use, chronic disease, childhood abuse/trauma, access/financial, unstable housing, social support/isolation, equipment/technology, policies/procedures, communication, continuity of care/care coordination, clinical skill/quality of care, outreach, law enforcement, referral, assessment, legal, and other.

Description: A free text description to further clarify or explain the contributing factor, which are grouped into themes.

Findings from PAMR committee reviews, including contributing factors, are entered into the Maternal Mortality Review Information Application (MMRIA). MMRIA (pronounced Maria) is a national system that is managed by the CDC that provides a common language for maternal mortality review committees across the country and facilitates maternal mortality data analyses.

To identify pregnancy-associated deaths with IPV contributing factors, we searched MMRIA for deaths with contributing factors in the violence class and identified 72 cases where violence was a contributing factor. Incidence of violence other than IPV were also captured by the violence contributing factor, for example incidents of assault or a history of IPV. We restricted our analysis of IPV to cases with abuse during or after the end of the sentinel pregnancy. The PAMR committee only has records related to the sentinel pregnancy. Using information from these records, the committee is able to evaluate the effect of IPV related to the sentinel pregnancy. Though IPV that occurred prior to the sentinel pregnancy may have long-term impact on maternal health and affect maternal mortality (Stockman 2015), the PAMR committee does not have the information necessary to assess the impact of a history of IPV. This report, therefore, provides a conservative estimate of the impact of IPV on maternal mortality.

We reviewed the Contributing Factor Description and Case Narrative data fields in MMRIA to pinpoint cases where IPV was identified during the sentinel pregnancy. These fields have descriptive data that we used to confirm IPV contributing factors in 48 pregnancy-associated deaths between 2008 to 2016.

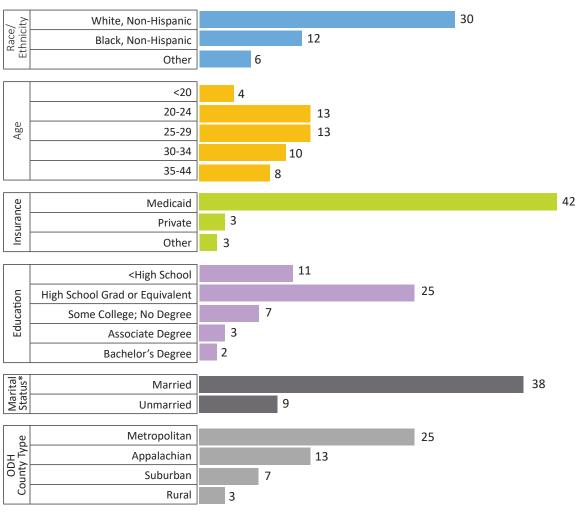
Pregnancy-Associated Deaths with IPV Contributing Factors, 2008-2016

There were 48 instances of IPV contributing factors among 610 pregnancy-associated deaths from 2008 to 2016. Therefore, 8% of women who died while pregnant or within one year of the end of pregnancy had at least one documented IPV contributing factor.

Demographics

Characteristics of the women comprising the 48 pregnancy-related deaths with IPV cited as a contributing factor are represented in Figure 1. The highest number of maternal deaths with IPV contributing factors occurred in Non-Hispanic white women, followed by non-Hispanic Black women and women of other racial/ethnic groups. The majority of maternal deaths with IPV contributing factors occurred in women in the 20-24 and 25-29 age groups. Geographically, metropolitan and Appalachian counties had the highest number of maternal deaths with IPV contributing factors.

Pregnancy-Associated Deaths with Intimate Partner Contributing Factors by Maternal Demographics, Ohio 2008 - 2016 (n=48)



Number of Deaths

^{*}Marital status unknown for 1 individual

Cause of Death

The leading cause of pregnancy-associated deaths among women who experienced IPV was homicide (29), followed by injury (12), mental-health conditions, including depression (3), hypertension (1) and cardiomyopathy (1) (Table 1).

Table 1: Pregnancy-Associated Deaths with Intimate Partner Violence Contributing Factors by Description, Ohio 2008-2016

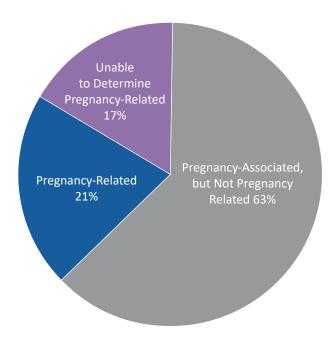
Committee Determination of Cause of Death	Count
Homicide	29
Unintentional Injury (PMSS code 88.2)*	5
Unknown Injury/NOS (PMSS code 88.9)*	5
Mental Health Conditions	3
Injury (PMSS code 88)*	2
Depression	2
Chronic Hypertension with Superimposed Preeclampsia	1
Postpartum/Peripartum Cardiomyopathy	1
Total	48

^{*} PMSS codes refer to codes developed by the CDC for its Pregnancy Mortality Surveillance System (PMSS) and the American College of Obstetricians and Gynecologists (ACOG) Maternal Mortality Study Group as a standard approach for classifying pregnancyassociated death. Unintentional injury (88.2) classifications include causes of death such as overdose, car accidents, injuries caused by falling and similar injuries. Unknown injuries (88.9) are used for injuries where no cause is specified. Injury (88) is used to identify suicide deaths.

Pregnancy-Relatedness

Of 48 pregnancy-associated deaths with IPV contributing factors, the PAMR committee determined that 63% of deaths (n=30) were pregnancy-associated but not related and 21% of deaths (n=10) were pregnancy-related. The committee was not able to determine pregnancy-relatedness for 17% of deaths (n=8) with IPV contributing factors (Figure 2).

Figure 2. Pregnancy-Associated Deaths with Intimate Partner Violence Contributing Factors by Pregnancy-Relatedness, 2008-2016

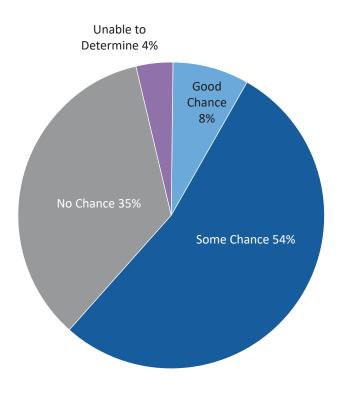


There were a total 186 pregnancy-related deaths from 2008 to 2016, 10 of which had IPV contributing factors; five of these deaths were due to homicide committed by the partner of the deceased.

Chance to Alter Outcome

The Ohio PAMR committee determined that there was some chance (n=16) or a good chance (n=2) to alter the outcome in over half (62%) of deaths with IPV. There was no chance to alter the outcome in 10 cases, and the committee was unable to determine the chance to alter outcome in 3 cases (Figure 3).

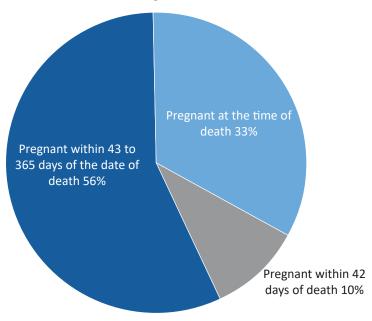
Figure 3. Chance to Alter Outcome Among Pregnancy-Associated Deaths with IPV as a Contributing Factor, 2012-2016



Timing of Death

Almost one-third of deaths (n=16) with IPV contributing factors occurred during pregnancy, and five deaths occurred within 42 days after the end of pregnancy. More than half of deaths (n=27) occurred within 43 to 365 days after the end of pregnancy (Figure 4).

Figure 4. Timing of Death Among Pregnancy-Associated Deaths with IPV as a Contributing Factor, 2012-2016



Contributing Factors

Cases with IPV contributing factors had, on average, an additional 4.8 contributing factors that led to these deaths. Most of the contributing factors (n=114) were at the patient and family level, with additional factors at the provider (n=25), system (n=62), and community (n=1) levels. The community-level contributing factor was lack of social support/isolation. Additional contributing factors are listed below in Table 2.

Table 2: Contributing Factors of Pregnancy-Associated Deaths with Intimate Partner Violence, 2008-2016

Factor Class	Count*	Representative Themes
Patient/Family		
Adherence	14	Non-adherence with medical recommendations
Knowledge	11	Inadequate knowledge of treatment
Access/Financial	8	Lack of financial resources and lack of insurance
Delay	8	Failure to seek care
Childhood Abuse/Trauma	6	History of childhood sexual abuse and violence
Chronic Disease	5	Chronic medical conditions, obesity
Social Support/Isolation	5	Lack of friend/family support system
Substance Use Disorder- Alcohol, Illicit/Prescription Drugs	4	Alcohol, illicit and prescription drug use
Mental Health Conditions	3	Depression and anxiety
Other	3	Multiple stressors and risk factors
Tobacco Use	2	
Unstable Housing	2	Lack of housing
Provider		
Assessment	7	Lack of/inadequate screening
Referral	6	Failure to seek consultation
Clinical Skill/Quality of Care	2	Misdiagnosis, managing mental health issues
Delay	2	Delay in diagnosis or treatment
System		
Continuity of Care/Care Coordination	18	Lack/Inadequate case management
Access/Financial	15	No insurance, transportation, provider shortage
Communication	7	Poor communication
Policies/Procedures	5	Lack of standardized procedures
Law Enforcement	3	Inadequate law enforcement response
Outreach	3	Inadequate community outreach
Personnel	2	Inadequate personnel
Violence	2	Access to firearms

^{*} Contributing factor classes with fewer than 2 are not shown.

Amanda's story: Intimate Partner Violence

At the time of her death, "Amanda" was 6 weeks pregnant. Her family contacted police when they were unable to contact her. Amanda was found dead when her residence was entered for a wellness check.

According to friends and family members, Amanda and her husband were arguing about whether to continue the pregnancy, with her husband wanting her to have an abortion. A positive home pregnancy test was found at the scene. Amanda and her husband had a history of intimate partner violence in their relationship.

The cause of death on her death certificate was strangulation and the manner was homicide. An autopsy was performed by a forensic pathologist.

Amanda's husband pleaded guilty to aggravated murder and was sentenced to life with the possibility of parole.

Key Questions Answered by the Review Committee

Was the Death Pregnancy-Related? If She Had Not Been Pregnant, Would She Have Died? Yes. Pregnancy is a trigger for multiple forms of violence, including intimate partner violence. In this case, the committee felt there was a clear indication that Amanda's pregnancy was a factor that led to her death.

What was the Cause of Death?

Homicide. Strangulation has recently been identified as a particularly lethal form of intimate partner violence. Strangulation or choking places the aggressor in control of the victim's breathing and is a form of power and control. Women are often strangled multiple times prior to the lethal event. Having been strangled once increases the risk of homicide by 750% over women who have never been strangled (Glass, 2008). About 9% of strangled women are pregnant (Glass, 2008).

Was There Some Opportunity to Alter Outcome?

No. The committee determined there was not an opportunity to alter the outcome in the immediate time period. However, standardized screening for intimate partner violence is known to lead to increased identification. Provision of a safety plan is an important first step in preventing deaths for women identified at risk and should be part of the standard assessment of pregnant and postpartum women at every encounter with the healthcare system. Pregnant and postpartum women with disparate burden of homicide include women with young maternal age, non-Hispanic Black race, lower education, and unmarried status (Wallace, 2016; Koch, 2016).

Amanda was a 32-year-old, non-Hispanic, white woman in her second pregnancy who had 1 child and was 6 weeks pregnant when she died.

What Were the Factors That Contributed to This Death?	What Are the Recommendations and Actions That Address Those Contributing Factors?
Intimate partner violence (patient/family level)	If intimate partner violence is even suspected, the healthcare provider should give the woman quick suggestions for safety. The Ohio Domestic Violence Network website offers resources: https://www.odvn.org/downloadable-resources/ downloadable-resources/.
	Ensure medical professionals and first responders are trained on intimate partner violence and human trafficking.
	Partner with ODH's Violence and Injury Prevention Program to develop and disseminate resources for victims of intimate partner violence.
	Standardize screening and documentation by providers for intimate partner violence.

Case is fictitious but based on real events.



Recommendations of Committee

The PAMR committee developed 15 recommendations to address IPV. A representative list is shown in Table 3. These recommendations focus on improving care coordination to address medical and social issues, improved screening protocols for identifying IPV, and training providers to recognize IPV. Experts in IPV also suggest that establishing screening policies for healthcare offices (Sprague, 2013) and expanding social support for women through community support groups and community health workers.

We found that the highest proportion of pregnancy-associated deaths with IPV contributing factors occurred 43 to 365 days after the end of pregnancy. Post-partum and pediatric visits that occur during this period may provide opportunities for healthcare practitioners to intervene in IPV.

Table 3: Committee Recommendations of Reviewed Pregnancy-Associated Deaths with Intimate Partner Violence Contributing Factors, Ohio 2008-2016

Category	Themes
Case Coordination	Better coordination of care for complex medical, mental, and social issues.
	Social services should follow-up after ED visit from intimate partner violence.
	Increase wraparound services, including availability of safe alternative housing.
Protocols and Procedures	Ensure screening and referrals; standardize screenings and document intimate partner violence.
	All healthcare providers should conduct universal screening for intimate partner violence.
Provider training	Ensure medical providers and first responders are trained to screen for intimate partner violence.
	Make sure Medicaid service providers are trained in recognizing intimate partner violence and human trafficking.

Initiatives

PAMR established The Ohio Council to Advance Maternal Health (OH-CAMH) in the spring of 2020. OH-CAMH is a statewide task force to identify state-specific gaps in maternal healthcare and to translate knowledge and recommendations into practice. In order to improve care coordination for people experiencing IPV across clinical and non-clinical settings, OH-CAMH brings clinical and non-clinical organizations together to facilitate multidisciplinary collaboration to address priorities impacting maternal health, such as IPV. Member organizations in OH-CAMH that promote IPV screening share their expertise with other member organizations and increase the ability to address IPV across Ohio.

More broadly, IPV is linked to inequities in economic and social structures. PAMR special topic reports provide detailed data on the circumstances surrounding IPV deaths to inform statewide programmatic work that addresses these inequities.

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