Maternal Suicide in the United States: Opportunities for Improved Data Collection and Health Care System Change

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Maternal suicide, once overlooked in mortality rates, is now recognized as a major contributor to pregnancy-related deaths in the United States. Recent data highlighting a surge in general population suicides underscores the urgency of addressing maternal suicide. It ranks among the top three causes of pregnancy-related deaths, accounting for up to 20% of maternal fatalities. While data collection challenges persist, state Maternal Mortality Review Committees are enhancing consistency in reviewing and documenting maternal deaths. Mental health conditions, particularly suicide, are identified as a key underlying cause, contributing to nearly 23% of pregnancy-related deaths, with 80% considered preventable. Recognizing the lasting societal impact, preventive efforts for maternal suicides should be prioritized. The effects of maternal mental distress and suicidality on child development emphasize the need for interventions across clinical, systemic, and policy domains.

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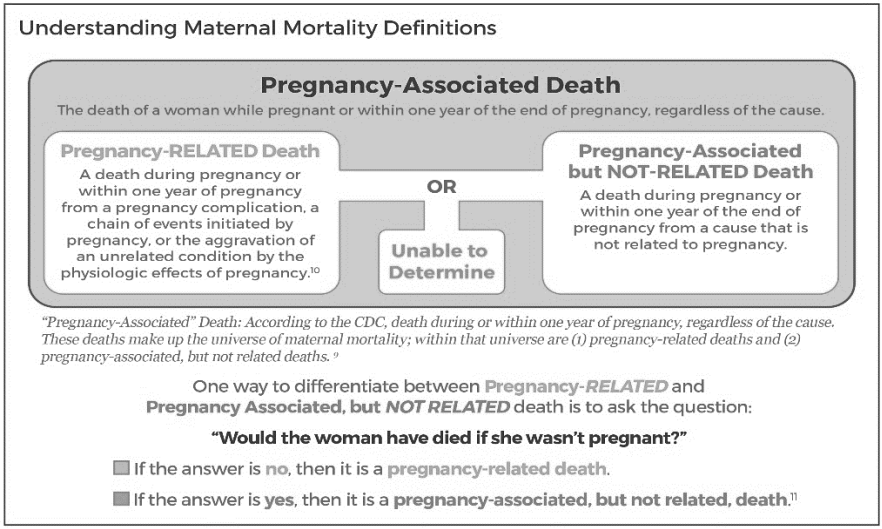
Maternal suicide is a leading cause of maternal mortality in the United States (Orsolini et al., 2016). While maternal mortality has rightfully garnered increasing attention in recent years, maternal suicide has been historically overlooked as a cause of maternal mortality because national maternal mortality rates previously excluded suicides as pregnancy-related deaths, instead classifying maternal suicide deaths as incidental or accidental deaths (Mangla et al., 2019). According to the provisional data from the Centers for Disease Control & Prevention (CDC, 2023), there was a record-high number of deaths in 2022 from suicide for the general US population. As national and state efforts to address maternal mortality through improved public health data collection have increased, maternal suicide has emerged as one of the top three causes of *pregnancy-associated deaths* (see Figure 1) (Campbell et al., 2021). It is estimated that up to 20% of maternal deaths are due to suicide (Campbell et al., 2021), making maternal suicide deaths more common than deaths caused by postpartum hemorrhage or hypertensive disorders (Palladino et al., 2011).

While challenges to standardizing and improving public health data collection from state to state still exist, state Maternal Mortality Review Committees (MMRCs) are increasing consistency regarding how they review and document maternal deaths. The CDC has determined, using the data from 36 state MMRCs, that mental health conditions are a leading underlying cause of pregnancy-related death (Trost et al., 2022a). The CDC defines Maternal Mental Health Conditions as "suicide, overdose/poisoning related to substance use disorder, and other deaths determined by the MMRC to be related to a mental health condition, including substance use disorder" (Trost et al., 2022a). Maternal Mental Health Conditions account for almost 23% of pregnancy-related deaths, and 80% of pregnancy-related deaths are determined to be preventable. As maternal suicides have a lasting and far-reaching societal impact, it is important to prioritize maternal suicide prevention efforts. The negative impact of maternal mental distress and illness on child development is well-documented, as well as the impact of maternal suicidality on child wellness. Thus, it is important to further examine how to prevent maternal suicides through clinical, systems, and policy shifts.

Figure 1

Understanding Maternal Mortality Definitions



Risk Factors and Correlations

As the causes of maternal suicide are complex and multifaceted, an understanding of the spectrum of maternal suicide risk factors is necessary to formulate and adopt appropriate preventive and treatment measures (Review to Action, n.d.).

Behavioral Health Risk Factors

The most potent risk factors are a personal or family history of psychiatric disorders, a prior suicide attempt, or suicidal ideation (Campbell et al., 2021). Increased symptoms of anxiety have been linked to frequent thoughts of self-harm in depressed postpartum women (Wisner et al., 2013). A bipolar disorder diagnosis puts a woman at increased risk for postpartum psychosis, thus also increasing the risk for maternal suicide (California Task Force on the Status of Maternal Mental Health Care, 2019). According to the CDC, 34% of pregnancy-related suicides had a documented prior suicide attempt (2020 Mom, 2020). Women with a postpartum psychiatric admission were 70 times more at risk of suicide in their first postpartum year (Appleby et al.,

1998). Studies on the general population have shown that 45% of those who die by suicide have seen their primary care physician within a month before their death (Raue et al., 2014).

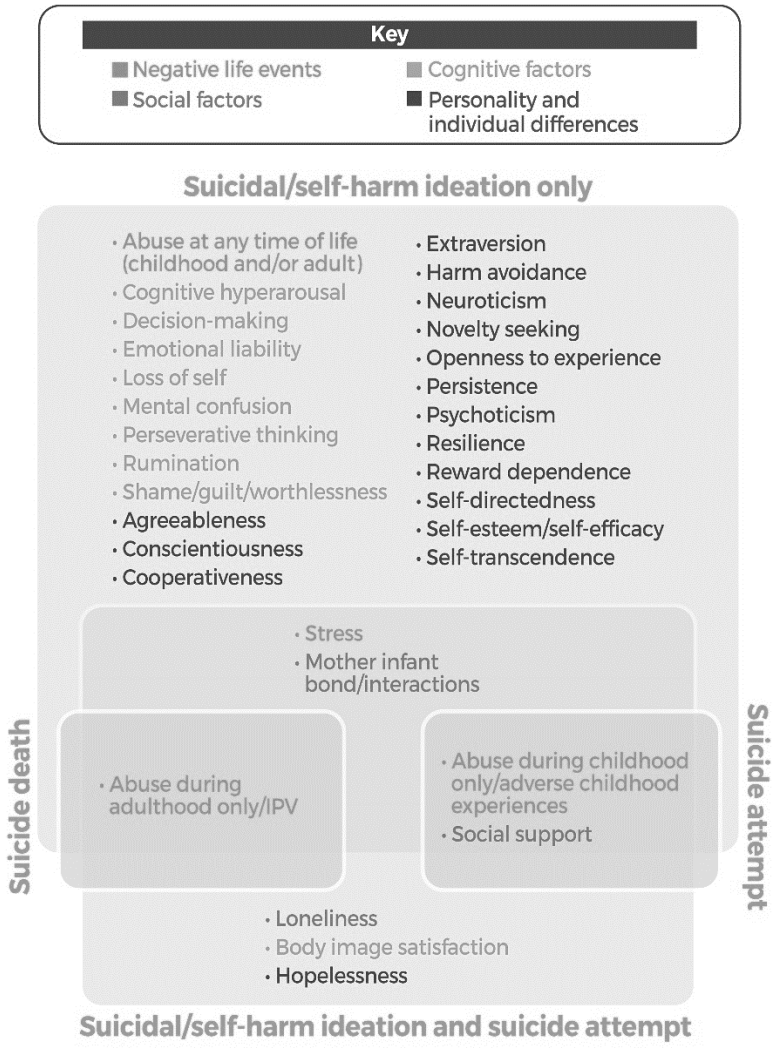
Eighty-four percent of those who die by suicide have had a healthcare visit in the year before their death (Ahmedani et al., 2014). Almost 40% of individuals who died by suicide had been to the emergency room but did not have a prior mental health diagnosis (Ahmedani et al., 2015). The perinatal and postpartum population generally has significantly more contact with healthcare providers, which increases touchpoints for screening and referral to appropriate treatment. This data continues to reinforce the importance of universal screening for all maternal mental health disorders, as well as ongoing support and care for women in the postpartum period as an initial step to preventing maternal suicides.

Environmental and Social Risk Factors

There is strong evidence that abuse experienced at any time in a woman's life increases the risk of suicidality (suicidal ideation, attempted suicide, death from suicide) during pregnancy and the first postpartum year (Reid et al., 2022) (see Figure 2). Lack of social support during the perinatal period is also strongly associated with suicidal behavior. Further, sleep disturbances significantly increase the likelihood of suicide attempts and suicidal thoughts in adults (Pigeon et al., 2012) and exacerbate thoughts of self-harm in depressed postpartum moms (Sit et al., 2015). Other risk factors for maternal suicide or *suicidal ideation* (see Figure 2) include young age, family conflict, loneliness, and unwanted or unplanned pregnancy (Orsolini et al., 2016). Environmental risk factors such as exposure to disaster, conflict, or war, social and gender inequalities, racial discrimination, belonging to an ethnic or religious minority, having crowded or inadequate housing, and living in rural areas can also elevate the risk for maternal suicide (Orsolini et al., 2016).

Figure 2

What is Suicidal Ideation?



Note. Adapted from "Maternal Suicide Ideation and Behaviour During Pregnancy and the First Postpartum Year: A Systematic Review of Psychological and Psychosocial Risk Factors" by Reid, H. E., Pratt, D., Edge, D., & Wittkowski, A. (2022). *Frontiers in Psychiatry, 13*, 765118. (https://doi.org/10.3389/fpsyt.2022.765118)

Timing of Maternal Suicides

Research shows that certain times during the perinatal and postpartum periods have elevated risks for maternal suicide. While maternal suicides can happen during pregnancy, most maternal suicides occur in the postpartum period. Sixty-two percent of pregnancy-related suicides occur between 43-365 days postpartum, followed by 24% during pregnancy, and 14% within 42 days postpartum (2020 Mom, 2020). Another study conducted in California yielded a similar result, showing that maternal suicides occur most frequently between 6-12 months (151-365 days) postpartum (Goldman-Mellor & Margerison, 2019). The data reveals critical periods and areas for suicide prevention techniques, mental health and suicide risk screening, and other social and behavioral interventions that can help lower maternal suicide risk. Signs of impending maternal suicide exist and should be utilized in future research to develop effective interventions for preventing maternal suicides.

Race, Ethnicity, and Maternal Suicidal Ideations and Suicide

Studies show that Black, Indigenous, and People of Color (BIPOC) women have a higher risk for suicidal ideations, while non-Hispanic White women have a higher risk of suicide (Tabb et al., 2020). Women who self-report as "other race" are almost three times more likely than white women to report suicidal ideation in the postpartum period (Tabb et al., 2020). In the immediate postpartum period, Asian women are nine times more likely to report suicidal ideation than their white counterparts. Hispanic and Black women are two times more likely to report suicidal ideation than white women (Tabb et al., 2020).

Recent research reveals that American Indians and Alaska Natives have much higher rates of pregnancy-associated drug-related death and suicide compared with all other racial or ethnic groups. A recent report from the CDC showed that mental health conditions are the top underlying causes of pregnancy-related death among American Indian or Alaska Native persons, accounting for 31.3% of deaths with a known underlying cause (Trost et al., 2022b). Non-Hispanic White people have the second highest rates of pregnancy-associated drug and suicide death. Non-Hispanic Asian and Pacific Islander people, who have the lowest pregnancy-associated death ratio for both drug-related deaths and homicide, have the third highest ratio for

suicide. Pregnancy-associated drug-related deaths are most common among those aged 35 years or older, whereas suicide and homicide are most common among the youngest birthing people (Margerison et al., 2022).

Suicide Prevention and Treatment

Screening for Maternal Suicide Risk

Screening has been a recent focal point in maternal mental health (2020 Mom, 2022). In the last decade, most government entities and professional associations have prioritized and endorsed screening for maternal mental health disorders, mainly maternal depression, and anxiety. In February 2023, the Alliance for Innovation on Maternal Health (AIM) issued a safety bundle addressing perinatal mental health. AIM defines patient safety bundles (PSB) as "...collections of evidence-informed best practices, developed by multidisciplinary experts, which address clinically specific conditions in pregnant and postpartum people…[and] includes actionable steps that can be adapted to a variety of facilities and resource levels" (AIM, 2023). The bundle addressed screening maternal suicide stating that when "...concern exists for suicidality due to response in depression screening tool or interaction with patient, further assessment is required. This is done with a clinical interview and can include a suicidality-specific screening instrument" (AIM, 2023).

In June 2023, the US Preventive Services Task Force (USPSTF) issued a recommendation on depression and suicide screening. While screening for depression was recommended for all adults, including pregnant and postpartum persons, the task force concluded that "the current evidence is insufficient to assess the balance of benefits and harms of screening for suicide risk in the adult population, including pregnant and postpartum persons" (USPSTF, 2023). The most commonly used screeners for maternal depression and anxiety are the Patient Health Questionnaire (PHQ 2 or 9), the Generalized Anxiety Disorder screener (GAD 3 or 7), and Edinburgh Pregnancy/Postnatal Depression Scale (EPDS) (2020 Mom, 2022). There is a single question on both the PHQ-9 and EPDS screening tools asking if a person has had suicidal thoughts. While this is a good first step to screening for suicide risk, having suicidal thoughts does not necessarily mean someone is acutely suicidal or at immediate risk of imminent harm.

Screening for Suicide Risk—A Critical Step to "Do No Harm"

If a person answers yes to having had suicidal thoughts, then the Columbia-Suicide Severity Rating Scale (C-SSRS) and Suicide Assessment Five-Step Evaluation and Triage (SAFE-T) screeners or the Ask Suicide-Screening Questions (ASQ) Tool should be used to assess for suicide risk (About Zero Suicide, n.d.; Screening tools, 2020 Mom, n.d.). The Patient Safety Screener (PSS) is another screening tool used for identifying patients in the acute care setting who may be at risk of suicide. The PSS-3 can be administered to all patients who come to the acute care setting, not just those presenting psychiatric issues (PSS, n.d.). All of these are prominent evidence-based suicide screening and risk assessment tools that should be used in the perinatal and postpartum period by front-line providers like OB-GYNs.

It is important to note that screening for suicide risk is only one part of the process used to identify suicide risk. If a person is identified as being at risk for suicide, a clinical workflow needs to be followed that all staff are trained in that emphasizes reducing access to lethal means, developing a collaborative safety plan, initiating treatment that targets suicidal thoughts and behaviors directly, and providing caring contacts that include warm hand-offs to skilled providers (Zero Suicide Framework, n.d.). Providers are encouraged to look at Zero Suicide to learn more about effective suicide care.

Treatment

Evidence-based Interventions

Historically, clinicians have sought to treat patients with suicidal behavior and thoughts solely by treating their mental health problems (such as depression, anxiety, and substance use disorder). Recent research shows that effective treatment for suicide risk must target suicidal ideation and behaviors specifically through evidence-based models of treatment designed to reduce suicidal behavior or attempts. If other mental health issues are presented, treatment for these mental health issues should also be administered, not as a treatment for suicide, but as a concurrent treatment (Brown & Jager-Hyman, 2014). Evidence-based intervention and treatment for suicide risk are designed to target suicide risk specifically. The following interventions have been shown to be effective in reducing suicidal thoughts and behaviors:

- Cognitive Behavioral Therapy for Suicide Prevention (CBT-SP) (Stanley et al., 2009)
- Dialectical Behavioral Therapy (DBT) (Linehan et al., 2006)
- Collaborative Assessment and Management of Suicidality (CAMS) (Jobes et al., 2017; Jobes et al., 2005)

Least Restrictive Care

Recent research has suggested that treatment should be carried out in the least restrictive setting possible for the patient. The clinician needs to be adequately trained to develop an outpatient intervention with an abundance of appropriate support and avoid hospitalization if possible. Currently, the recommended model of care for suicide prevention is called the Stepped Care Model, where patients are "offered numerous opportunities to access and engage in effective treatment, including standard in-person options as well as telephonic, interactive video, web-based, and smartphone interventions" (Ahmedani & Vannoy, 2014). The least restrictive care model also means that treatments tend to be more accessible and cost-efficient. Concerns regarding access to childcare and caretaking responsibilities are a major barrier to suicide care for the perinatal and postpartum population. Thus, the least restrictive care model may offer more reasonable and accessible treatment methods for moms.

Brief Intervention and Follow-up

Brief interventions are focused on helping the patient increase awareness and insight regarding their behavior and motivate them towards behavioral change. Widely used in substance abuse prevention, generalizing the use of brief interventions in suicide prevention has shown promising outcomes. The Stanley-Brown Safety Plan is a validated brief intervention that is widely used by clinicians to collaboratively mitigate acute suicide risk with a suicidal individual (Stanley-Brown, 2022). The intervention can be used in most environments and adapted for specific populations (Stanley & Brown, 2011), such as women in the perinatal and postpartum periods.

Hospitalizations

As psychiatric hospitalizations are increasingly being recognized by the suicide prevention community as an intervention of last resort, respite centers that are usually located in residential facilities are an alternative to hospitalization. Research shows that individuals in crisis may prefer a respite care setting to hospitalization. Respite centers may also employ peer support specialists as staff. Recent pilot training peer support specialists specializing in maternal mental health have garnered significant interest and support for the use of peers with lived experience to support the perinatal and postpartum population. Research shows that respite care may yield better outcomes than acute psychiatric hospitalization (Zero Suicide Framework, n.d.).

Partial hospitalization provides a structured program of outpatient psychiatric services as an alternative to inpatient psychiatric care. The patient receives intensive treatment during the day but does not need to stay overnight. Inpatient hospitalization is the most restrictive and expensive treatment for suicide risk. Most inpatient patients do not receive suicide-specific treatment aimed at reducing suicide attempts and risk after they are discharged.

The Zero Suicide Framework

As suicide is a complex problem, effective suicide prevention requires a range of interdisciplinary strategies, policies, and interventions. In 2012, the US Surgeon General and the National Action Alliance for Suicide Prevention issued a National Strategy for Suicide Prevention. In this strategy report, a concept known as Zero Suicide was identified as a framework for systemwide transformation towards safer suicide care within the healthcare system (US Department of Health and Human Services [HHS], 2012). Today, the Zero Suicide model (see Figure 3) is considered the gold standard for suicide care in the United States health care system. Recent research has shown that implementation of Zero Suicide reduces suicide in patients (Layman et al., 2021).

Figure 3

Zero Suicide Model

Note. From *Zero Suicide toolkit*, by Zero Suicide. (n.d.) (https://zerosuicide.edc.org/toolkit/zero-suicide-toolkitsm).

Data Collection on Maternal Suicide in the United States

Developing a process and method for data collection on maternal suicides has only recently begun in many states. Collecting national data on maternal suicide has been a challenge over the years due to the lack of standardization in measurement, methodology, and definition (Chin et al., 2022). The United States currently does not require states to report maternal suicide rates. In addition, the state-based healthcare infrastructure has caused additional challenges as data collection benchmarks and definitions vary from state to state, and death by suicide may not be reviewed or reported in some states. If a state does review and report data on maternal suicide, the state may not

utilize standardized criteria for independently reviewing and categorizing maternal suicide data.

Overview of Maternal Mortality Data Collection Methods

Maternal Mortality Review Committees

To standardize the definitions, methodology, and measurement of maternal mortality in the United States, the Preventing Maternal Deaths Act was passed in 2018 to fund and support state Maternal Mortality Review Committees (MMRCs) (Chin et al., 2022). MMRCs identify, review, and characterize pregnancy-associated deaths and identify prevention opportunities. These committees are multidisciplinary and are formed at the state and sometimes at the city levels. Each committee performs a comprehensive review of maternal deaths during pregnancy and within a year of the end of a pregnancy.

Pregnancy Mortality Surveillance System

Before the increase in MMRCs due to the passage of The Preventing Maternal Deaths Act, the CDC had conducted national pregnancy-related mortality surveillance using only the Pregnancy Mortality Surveillance System (PMSS). This system relies on the use of death records and defines a pregnancy-related death as the death of a woman while pregnant or within one year postpartum from any cause related to or aggravated by the pregnancy.

Perinatal Quality Collaboratives

Perinatal Quality Collaboratives (PQCs) are state or multistate networks of teams working to improve the quality of care for mothers and babies. Committee members identify healthcare processes that need to be improved and use the best available methods to make changes as quickly as possible.

Discussion and Recommendations

Suicide has consistently been a complex public health problem within the general US population, with suicide rates on the rise until 2018, when suicide

rates modestly dropped for the first time in a decade (CDC, 2020). Despite the overall drop-in suicide rates, maternal suicidality has tripled over the last decade (Admon et al., 2021). As the maternal healthcare system has only recently begun to look into the epidemiology of maternal suicide, more research is needed to better understand the intricate causes of maternal suicide, and better data collection methods can help close the evidence gap.

As the Zero Suicide framework has been the gold standard for suicide prevention since 2012 and has shown to be effective across various healthcare settings and populations, maternal healthcare settings should begin adopting the Zero Suicide framework to prevent and reduce maternal suicides. As part of the Zero Suicide model to reduce the burden on patients to talk about suicide, clinicians should be adequately trained in suicide prevention-specific strategies to initiate and follow through on discussions about suicide. Research suggests that most providers have little to no training in suicide prevention and care, and most report feeling uncomfortable and unprepared (Zero Suicide Framework, n.d.).

As there are recent reports of a shortage of providers trained in DBT therapy for suicide prevention in adolescents, similar shortages are likely to exist for the adult and maternal populations (Richtel, 2022). Therefore, having more maternal healthcare workers trained in suicide prevention would be beneficial. Clinicians (OB-GYNs, reproductive psychiatrists, maternal-fetal specialists) and non-clinicians (doulas, peer-support specialists, midwives) should receive suicide-specific training appropriate for their level of patient engagement.

As maternal suicides often involve a violent method of death, it may also be beneficial to train clinicians and social services providers on how to counsel on access to lethal means. In addition, professional organizations and associations should develop a recommended pathway for their members to receive suicide-specific training and develop core competencies and recommended best practices for preventing maternal suicide and treating suicide risk in the perinatal and postpartum population. As many national and professional organizations have released depression and anxiety screening recommendations for the perinatal and postpartum population, these recommendations should be amended to include suicide screening recommendations and protocols.

1. Congress and state legislatures should adequately fund state Perinatal Quality Committees (PQCs), the bodies that lead maternal mortality efforts.
2. State PQCs should look at how they can incentivize or hold health systems accountable for the implementation of the Zero Suicide Framework, as well as for the promotion of maternal mental health screening efforts in obstetric settings.
3. The National Committee for Quality Assurance (NCQA) should champion the development of a measure to assess suicide screening in primary care and obstetric settings.

Furthermore, the maternal population should be integrated into mainstream suicide prevention discussions. While many leading suicide prevention organizations and task forces highlight special populations at high risk for suicide, the maternal population has often been overlooked. Including the maternal population as a special risk population in mainstream suicide prevention work can highlight and further the development and recognition of interventions, risk factors, and issues that are unique to preventing maternal suicide.

Conclusion

Maternal suicide is a tragedy that has rippling societal consequences as well as a lasting impact on families and communities. As public health systems shift to prioritize maternal suicide prevention efforts, research into causes and interventions for maternal suicidality must also be expanded. Efforts to nationally standardize and improve public health data collection initiatives through Maternal Mortality Review Committees (MMRCs) and Perinatal Quality Collaboratives (PQCs) must continue to be bolstered to better understand how to prevent suicides. Maternal healthcare systems should prioritize the integration and adoption of the Zero Suicide framework, and efforts should be made to standardize suicide prevention training and screening protocols within the maternal healthcare system. As new and emerging data continues to affirm maternal suicide as a leading cause of maternal death, the recent momentum and interest surrounding maternal suicide must be leveraged into clinical, systems, and policy shifts that propel actionable change and, ultimately, prevent maternal suicides.

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