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Early lessons from maternal mortality review committees on drug-related deaths – time for obstetrical providers to take the lead in addressing addiction

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Abstract

Problem: In the United States, maternal mortality review committees (MMRC) are providing compelling data that drug-related deaths are emerging as a leading cause of pregnancy-associated death (death during pregnancy or up to a year postpartum). Recommendations from the MMRC consistently highlight screening all pregnant and postpartum women for drug use and improving access to evidence-based substance use disorder and mental health treatment. Unfortunately, many providers lack the confidence, skills and necessary resources to screen for substance use, provide basic behavioral health services or facilitate referral to high-quality services in their clinical settings. Our profession's collective lack of response to a leading cause of maternal death represents a missed opportunity for potentially life-saving interventions.

A Solution: We call on our fellow obstetrician gynecologists to incorporate the lessons learned from MMRC and integrate addiction assessment and treatment into prenatal and postpartum care. Provider level integration of behavioral health services is, however, insufficient to fully address the

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magnitude of drug-related maternal deaths in the US. We, therefore, ask colleagues to address the structural/systemic barriers to care identified in MMRC. By doing so, we can prevent drug-related maternal deaths.

Understanding the problem

The United States is in the midst of a fatal drug crisis among pregnant and postpartum women – over the past two decade, the rates of opioid use disorder have quadrupled.[1] Among reproductive age women, drug-related death - death from poisoning caused by legal, illegal or medically prescribed drugs - has emerged as leading cause of death, however less is understood about the circumstance and preventability of these deaths in pregnant and postpartum women.[2] Maternal mortality review committees (MMRC) are one of three national surveillance mechanisms for maternal death in the United States.[3] Because the National Vital Statistics System and the Pregnancy Mortality Surveillance System rely primarily on birth and death certificates to capture maternal deaths, MMRCs are uniquely positioned to analyze root causes of maternal drug-related deaths. As of February 2020, there were 48 MMRC nationwide (46 states, 2 cities), which provide multi-disciplinary reviews of pregnancy-associated and pregnancy-related deaths (Table 1) including identification of contributing factors and recommended solution at the patient, provider, community, facility and systems. Multiple MMRC have recently reported that mental health conditions now account for a significant proportion of pregnancy-associated and pregnancy-related deaths.[3–7] While most drug-related deaths have been deemed pregnancy-associated, MMRC have recently developed criteria to determine if drug-related and mental health-related deaths are pregnancy-related.[8,9] Important sex and gender considerations including hormonal and physiological changes of pregnancy and postpartum, maternal mental health, demands of a newborn and social stressors may place postpartum women especially at increased risk of drug use, addiction recurrence, overdose and ultimately, maternal death.[10] However, much still remains unknown about the circumstances surrounding drug-related death of pregnant and postpartum women.

Through their detailed review of medical records and in-depth evaluation of individual cases, MMRCs can serve as a critical source of data to identify patient, provider, community, health care facility and system factors that contribute drug-related deaths among pregnant and postpartum women.[11] Publications highlight the work being done at the state and local level through MMRCs and state surveillance systems.[6, 11–20] We reviewed MMRC publications with attention to drug-related accidental deaths and suicides in order to summarize the addiction crisis impact on maternal deaths. We analyzed reports from MMRCs for recurring themes regarding contributing factors in individual deaths and recommendations at the patient, provider, facility, community and system levels. From this review, complemented by our own experiences serving on MMRCs, we provide the following summaries and proposed solutions for the prevention of drug-related maternal deaths.

Problem: Obstetrical providers are not screening systematically for substance use, misuse and addiction.

Many pregnant and postpartum women do not spontaneously disclose their substance use to their providers and multiple studies confirm that we are not asking.[21–24] While providers report that they are screening for drugs and alcohol,[25] only one in five routinely use a validated tool.[22, 26] In Colorado (2004–2012), only 17% of women who died of an overdose had documentation of the SUD in the prenatal records or during hospitalization for delivery.[13] Among women who died of drug-related deaths in Utah, only 25% had been screened for substance use during pregnancy care.[14] Results from the multiple MMRC suggest that systematic under-recognition of substance use among pregnant and postpartum women is a significant contributing factor in women's deaths.[13, 18, 27–29]

Solution:

Obstetrical care providers should adopt standard screening tools that can be administered at the onset and throughout prenatal and postpartum care to *all* women to reduce identification bias.[30] There are several screening tools for substance use validated among pregnant women (Table 3). Importantly, providers should be aware that race/ethnicity, literacy and economic status significantly impacts the accuracy of these screening tools.[31,32] There is no "perfect test" and if screening is instituted it should be done universally and not by "risk factors." Additionally, given that nearly 50% of pregnancies in the United States are unintended,[33] screening at well woman exams may aid in identifying women with substance use prior to pregnancy. Screening for substance use in pregnancy and postpartum period provides a potential opportunity for intervention and to reduce barriers to accessing addiction treatment. For example, when screening leads to a direct appointment, the early direct linkage to care improves engagement in addiction care.[34] When screening is performed using a non-judgmental and non-punitive approach (e.g. permission is obtained to perform screening from the patient, the purpose of screening and how the information will be used is explained), the act of universal person-centered screening can implicitly communicate that health care providers are interested in addressing perinatal substance use now, and in the future, even if women are not ready to disclose at that moment.[35] However, screening may also be harmful. When not linked to access to care or performed only among marginalized populations, screening may reinforce institutionalized racism and classism, increase disparities among poor and non-White women, increase referrals to child protective service involvement or lead to forcible detainment of pregnant women.[35–37] Finally, urine toxicology testing or other maternal biological assays should be used with caution and not as replacement for voluntary screening using a standardized tool.[30,38] If urine toxicology testing is utilized, it is incumbent upon the obstetrical provider to be knowledgeable about screening versus confirmatory testing and how the results will inform care. As obstetrical providers, we are direct care providers, leaders in our healthcare systems, and advocates for public policy. It is incumbent upon us to ensure that screening should be utilized universally, not selectively. Screening should not be punitive but rather a clear path to improved perinatal health. While there have been past recommendations for universal screening,[30] universal uptake of these recommendations have been lacking. National and state organization focused on quality improvement including Perinatal Quality Collaboratives, Joint Commission on

Accreditation of Healthcare Organizations and others may consider adopting universal screening among pregnant and postpartum women as a key quality metric.[39]

Problem: Obstetrical providers are not well prepared to treat women with substance use disorder (SUD).

MMRCs have repeatedly documented the lack of substance use treatment for pregnant and postpartum women as a contributing factor in drug-related deaths. In Virginia (1999–2007), only 14.6% were treated for substance use in the year before death.[20] In Utah (2005–2014), none of the 27 women with an opioid-related death had received either buprenorphine or methadone.[14] Many obstetrical providers receive no or minimal education on addiction in their training.[40,41] We lack an adequate number of obstetric providers knowledgeable in managing medications including buprenorphine, methadone and naltrexone or basic harm reducing interventions including motivational interviewing, naloxone co-prescription and anticipatory guidance about risk of drug relapse, overdose and death.[25, 42, 43] The collective lack of knowledge about addiction medicine in our field is likely one contributing factor to low rates of medication for OUD (MOUD) utilization and continuation in the obstetrical population.[44,45] Few medical curricula are teaching the fundamentals of opioid use disorder treatment. And even fewer are tailored to teaching obstetrical providers about specific considerations for this population, including dosing considerations,[46–49] recommendations against medication tapering or discontinuation in pregnancy.[30, 50]

Solution:

Behavioral health is an essential domain of prenatal care and obstetrical providers should be universally trained to prescribe buprenorphine. MOUD (and naloxone co-prescribing) are lifesaving.[10] If obstetric providers do not provide medication, they should develop a treatment agreement with an SUD clinic and ensure priority access throughout pregnancy. We need to closely engage with addiction medicine and psychiatry specialists.[51] Fellowship programs in addiction medicine and addiction psychiatry need to include training and competencies in the care of pregnant and parenting women. Multiple educational programs, safety bundles and state specific tools are available aimed at increasing obstetrical provider comfort with screening, referral to evidence-based treatment and reducing stigma[30, 52–54] (Table 2). Additionally MMRCs finding support primary prevention efforts to educate the public and providers on appropriate medication prescribing, proper storage of medications and naloxone co-prescription.[7] However, primary prevention is not enough. Addressing knowledge gaps of unprepared obstetrical providers is critical. Greater emphasis at all levels of medical education on substance use from medical school curricula to continuing medical education is necessary. Healthcare system and systems of care must work to address time and reimbursement and to provide necessary support to prepare and support providers in caring for pregnant and postpartum women with SUD.[39] With a multi-tiered approach, the goal is to increase access and capacity for obstetrical providers is achievable.

Problem: Primary attention to patient-level factors may blame women for their own deaths.

Recently, public discourse has highlighted that pregnant and postpartum women often blamed for their own deaths, while systems and policy factors contributing to these deaths are largely ignored.[55] This is particularly true for women who die of drug-related causes.

[56, 57] Punitive policies that define substance use as child abuse or neglect increase the likelihood of adverse outcomes including neonatal abstinence syndrome and preterm birth,[58] which in turn increases the risk of maternal overdose.[59] Women are frequently labeled as "non-compliant" when they miss appointments or are not completely abstinent during pregnancy.[60–62] These descriptions are often devoid of the context in which women's "non-compliance" occurs. Little attention is paid to women's fears of disclosure to medical providers, traumatic experiences with healthcare and social services providers, insurance coverage lapses, childcare issues, or simply transportation barriers. MMRCs have identified a myriad of non-patient related factors, including systemic stigma and shame of SUD, provider lack of knowledge of evidence-based approach to addiction treatment, lack of accessible SUD treatment and mental health care, and loss of insurance as contributing factors for pregnant and parenting women who die of drug-related causes.[3, 12, 18, 29, 63] The impact of women's death cannot be overstated; parental deaths from overdose has ripple effects on children including increased involvement in child welfare services, out-of-home placement and mental health diagnoses for years after the death has occurred.[64] We propose that providers, communities, health care facilities and systems are also non-compliant and fail to support these women prior to their death.

Solution:

In their Call to Action, Kramer and colleagues propose that MMRCs need a health equity framework in order to understand social determinants of maternal deaths and map them to potential interventions.[65] Six MMRCs (Massachusetts, North Carolina, Ohio, Tennessee, Utah, Wisconsin) have received additional funding to review all pregnancy-associated overdose deaths in their states.[66] Support of these in-depth MMRC reviews will provide valuable information about patient, provider, community, health care facility, system factors that contribute to drug-related deaths. It is incumbent upon our providers, community, health care facilities and systems to be responsive to the findings of MMRCs in order prevent future deaths. The Centers for Disease Control and Prevention advise that training and policy changes are imperative to address discrimination and bias at all levels against this population.[39] Implicit bias training and trainings on evidence-based addiction care is essential for addressing stigmatizing provider level attitudes and actions. At the community level, coordination of supportive and non-judgmental approaches about substance use must include pregnant and postpartum women. And at the health care facility and systems levels, standardization of family focused policies and practices across health care organization and state agencies are critical to assuring quality care.

Problem: Postpartum is a critical time for drug-related deaths and health care systems may be missing the warning signs.

Drug-related pregnancy-associated death are occurring primarily in the postpartum period, often after women have stopped seeing their obstetrical provider. In Massachusetts, Colorado and Utah, the vast majority of drug-related pregnancy-associated deaths occurred in the postpartum year.[10, 13, 14] Contact with the healthcare system is not uncommon prior to maternal death. In California and Massachusetts, prior to a drug-related death or overdose event, nearly two-thirds of women had at least one emergency department visit or inpatient

hospital admission suggesting many women offer the healthcare system an opportunity to intervene and potentially prevent their deaths.[15,59]

Medication discontinuation particularly in the postpartum period is recognized as a significant risk factor for overdose.[10, 67] Several studies found an association between loss of custody and discontinuation of treatment postpartum.[68–70] Multiple stresses such as high rates of postpartum depression, child protective service involvement, and other forms of patient-centered chaos are recognized as risk factors for treatment disengagement.[71, 72] MMRCs recognize the system barriers to continuity of addiction treatment includes loss of insurance in the postpartum period.

Solution:

Optimization of postpartum care is critically needed for women with substance use and mental health concerns, including frequent and early follow-up after delivery extending up to a year postpartum.[73] SUD is a lifelong condition requiring chronic care, rather than episodic, acute care. Frank conversations about postpartum stress including ensuring adequate postpartum support, education about signs of postpartum depression and anxiety, plan for sleep and medication management, creating a plan of safe care, and discussing the role of child protective services are imperative. Healthcare systems should support and fund care coordinators to assist in these critical transitions. Furthermore, healthcare systems need to extend the range of concerns beyond the not-strictly-medical issues. Virginia MMRCs offered this cogent insight: “Healthcare providers did not adequately assess for or identify the complexity of problems and life circumstances experienced by their patients… a fragmented health care system and the need for care coordination, consultation, and training for providers were identified as major gaps in services among the women whose deaths were reviewed”.[20] Our systems of care must be responsive to the needs of pregnant and postpartum women. In 2013–2015, postpartum women in Colorado which expanded Medicaid through the Affordable Care Act, were much more likely to obtain timely postpartum care compared to Utah, which did not expand Medicaid during this time period.[74] Indeed, states with Medicaid expansion had a 6% decrease in opioid overdose deaths compared to rates in non-expansion states.[58] Expansion of Medicaid coverage to a year postpartum to ensure uninterrupted mental health and substance use care is quite literally life-saving.[75]

Call to Action

Early results from MMRCs indicate that pregnant and postpartum women must be considered in the solutions to this crisis. We call upon our fellow provider to universally screen pregnant and postpartum women for drug use, understand evidence-based addiction treatment, be knowledgeable about and link to local resources, and assume a central advocacy role for development of services for women with SUD in pregnancy and the postpartum period. The gap between increasing demand for obstetricians trained in addiction and the current supply must be closed if we hope to prevent the leading cause of pregnancy-associated deaths. Deaths do not occur in a vacuum – every MMRC’s fundamental charge is to learn about the common themes from the stories of women who have died. We owe it to

the women who have died to learn from findings of MMRCs and achieve our collective goal – the prevention of future maternal death from avoidable causes.

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Table 1:

Centers for Disease Control and Prevention definition of maternal death

Pregnancy-associated death	Death of a woman while pregnant or within one year of the termination of pregnancy, regardless of the cause.[1,2]
Pregnancy-related death	Death of a woman during pregnancy or within one year of the end of pregnancy, from a pregnancy complication, a chain of events initiated by pregnancy, or the aggravation of an unrelated condition by the physiologic effects of pregnancy.[2]

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Table 2:

Selected resources for pregnant and parenting women with substance use disorders

Source	
American College of Obstetricians and Gynecologists	https://www.acog.org/About-ACOG/ACOG-Departments/Tobacco--Alcohol--and-Substance-Abuse/Opioids?lsMobileSet=false
National Partnership for Maternal Safety: Consensus Safety Bundle on Obstetric Care for Women with Opioid	https://journals.lww.com/greenjournal/fulltext/2019/08000/National_Partnership_for_Maternal_Safety_.23.aspx
Use Disorder	
Massachusetts Perinatal Quality Collaborative	http://www.healthrecovery.org/maternal-opioid-use/
Ohio Perinatal Quality Collaborative	Neonatal Abstinence Syndrome and Maternal Addiction https://www.opqc.net/node/270
Substance Abuse and Mental Health Services Administration	Clinical guidance for treating pregnant and postpartum women with opioid use disorder and their infants https://store.samhsa.gov/system/files/sma18-5054.pdf
World Health Organization	Guidelines for identification and management of substance use and substance use disorders in pregnancy https://www.who.int/substance_abuse/publications/pregnancy_guidelines/en/

Table 3:

Validated screening tools for substance use among pregnant women

Tool	Questions	Test Performance	Additional consideration
NIDA Quick Screen/ ASSIST[5]	In the past year, how often have you used the following? a. Five or more alcohol drinks in a day for men or 4 or more alcohol drinks in a day for women b. Tobacco products c. Prescription drugs for nonmedical reasons d. Illegal drugs 1. In your lifetime, which of the following substances have you used? (response options of yes or no) 2. In the past 3 months, how often have you used the substances you mentioned? (response options of never, once or twice, monthly, weekly, and daily or almost daily for items 2–5) 3. In the past 3 mo, how often have you had a strong desire or urge to use (each substance)? 4. (During the past 3 mo, how often has your use of (each substance) led to health, social legal or financial problems? 5. During the past 3 mo, how often have you failed to do what was normally expected of you because of your use of (each substance)? 6. Has a friend or relative or anyone else ever expressed concern about your use of (each substance)? 7. Have you ever tried to control, cut down o stop using (each substance)? 8. Have you ever used any drug by injection	Accuracy 0.87 (0.85–0.89)[1]	Requires two step process Discriminates between casual use, dependence and potential substance use disorder
4P's Plus/5 P's[6,7]	1. **Parents:** Did either of your parents ever have problems with drugs or alcohol? 2. **Peers** Do any of your friends have problems with alcohol or drug use? 3. **Partner** Does your partner have a problem with alcohol or drugs? 4. **Past** Before you were pregnant did you have problems with alcohol or drug use? 5. In the month before you knew you were **Pregnancy**, how many beers/how much wine/how much liquor did you drink?	Accuracy 0.44 (0.41–0.47)[1]	Requires permission to use
CRAFFT[3]	During the PAST 12 MONTHS, did you: **1**. Drink any alcohol (more than a few sips)? **2**. Smoke any marijuana or hashish? **3**. Use anything else to get high? ("anything else" includes illegal drugs, over the counter and prescription drugs, and things that you sniff or "huff")	Accuracy 0.70 (0.69–0.73) [1]	Validated for women ages 15–24
SURP-P[4]	1. Have you ever used marijuana? 2. How many alcoholic drinks have you consumed in the month before knowing you were pregnant? 3. Do you feel the need to cut down on your alcohol or drug use?	Accuracy 0.63 (0.61–0.66)[1]	Specifically for pregnant women
WIDUS[1]	10. I am currently married 20. In the past year, I have been bothered by pain in my teeth or mouth 30. I have smoked at least 100 cigarettes in my entire life 40. Most of my friends smoke cigarettes 50. There have been times in my life, for at least 2 weeks straight, where I felt like everything was an effort 60. I get mad easily and feel a need to blow off some steam	Accuracy 0.75 (0.72–0.78) [1]	Specifically for perinatal women

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