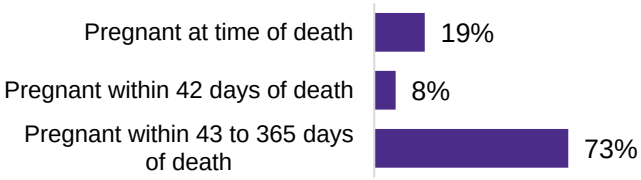
Pregnancy-Associated Overdose Deaths:

Data from 6 States in the Rapid Maternal Overdose Review Initiative, 2015-2019

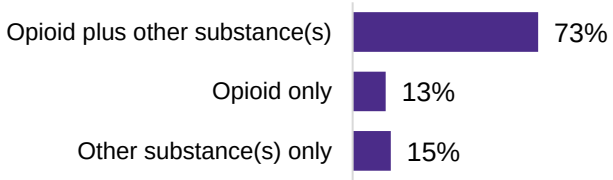
MMRIA MATERNAL MORTALITY REVIEW INFORMATION APP

89% **of 104 overdose deaths during or within one year of pregnancy were potentially preventable.**

Most (73%) pregnancy-associated overdose deaths occurred in the late postpartum period.

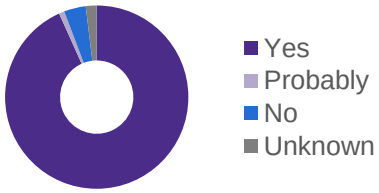


Most (86%) pregnancy-associated overdose deaths had an opioid present in autopsy toxicology.

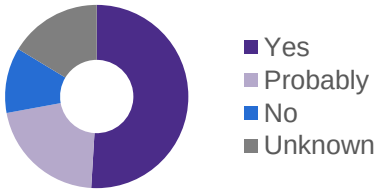


Autopsy toxicology results were missing for 9 deaths (4 with no autopsy, 4 with autopsy but missing toxicology, 1 unknown). Other substances included alcohol, benzodiazepines, buprenorphine/methadone, cocaine, amphetamines, cannabinoids, and other substances.

Substance use disorder contributed* to nearly all (94%) pregnancy-associated overdose deaths.†



Mental health conditions other than substance use disorder contributed* to nearly three-fourths (72%) of pregnancy-associated overdose deaths.†



** Contributed is defined as the MMRC responding "yes" or "probably" to whether the circumstance contributed to the death.*
†For nearly two-thirds (66%) of pregnancy-associated overdose deaths, the MMRC responded that both substance use disorder and mental health conditions other than substance use disorder contributed to the death.

Individual characteristics of pregnancy-associated overdose deaths N = 104

Race/Ethnicity	N	%
Hispanic	7	7%
Non-Hispanic Black	12	12%
Non-Hispanic White	83	80%
Other	2	2%
Age at death (years)		
15-19	2	2%
20-24	20	19%
25-29	41	39%
30-34	27	26%
35-39	13	13%
≥40	1	1%
Education		
Less than high school	24	23%
Completed high school	49	47%
Some college	22	21%
Associate, Bachelor, or Advanced degree	9	9%
Medicaid during prenatal care or delivery		
Yes	68	65%
No	16	15%
Unknown	20	19%

Percentages may not sum to 100 due to rounding. Demographic information such as education and Medicaid participation are relevant for MMRCs as they develop recommendations for prevention (e.g., strategies to address gaps in healthcare access following loss of pregnancy-related Medicaid eligibility).

National Center for Chronic Disease Prevention and Health Promotion
Division of Reproductive Health
CDC

About the Data

Maternal Mortality Review Committees (MMRCs) are multidisciplinary committees that convene at the state or local level to comprehensively review individual deaths that occur during or within one year of pregnancy. MMRCs have access to clinical and non-clinical information (e.g., vital records, medical records, social service records) to more fully understand the circumstances surrounding each death, and to develop recommendations for action to prevent similar deaths in the future.

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Data Sources and Methods

As part of the Centers for Disease Control and Prevention (CDC)'s response to the US opioid crisis, the Division of Reproductive Health, in partnership with CDC Foundation, collaborated with Maternal Mortality Review Committees (MMRCs) in 6 states (Massachusetts, North Carolina, Ohio, Tennessee, Utah, and Wisconsin) on the Rapid Maternal Overdose Review (RMOR) initiative in 2018-2021. This initiative supports these states to review all pregnancy-associated overdose deaths during and within one year of the end of pregnancy, including determining contributing factors and recommendations for action to prevent future deaths.

Data shared by 6 RMOR states through the Maternal Mortality Review Information Application (MMRIA) were analyzed. This analysis includes 104 overdose deaths that occurred in 2015-2019. These deaths were reviewed in September 2018-July 2020 for Massachusetts, North Carolina, Tennessee, Utah, and Wisconsin, and reviewed in August 2019-July 2020 for Ohio. All deaths where the committee indicated the means of fatal injury was "Poisoning/Overdose" were included in the analysis (n=95). An additional 9 deaths were identified by author review [AS, ST] of data entered into MMRIA by state abstractors for all other deaths where the committee determined the underlying cause of death to be Unknown, Unintentional Injury, or Mental Health Conditions or was missing, or where the committee indicated that mental health conditions or substance use disorder contributed to the death.

Race and ethnicity data were drawn from the infant's birth or fetal death record when available, and from a maternal death record if a birth or fetal death record was not available, such as if death occurred during pregnancy. Race and ethnicity were categorized consistent with Office of Management and Budget Race and Ethnic Standards for Federal Statistics and Administrative Reporting (Revisions 1997). However, available data did not support analysis beyond non-Hispanic white, non-Hispanic black, and Hispanic groupings. Age at death was based on data on the death record. Education data were used from the birth or fetal death record when available and from a maternal death record if a birth or fetal death record was not available. Information on Medicaid participation during prenatal care or at delivery was used from the birth record and data abstracted from prenatal records. Toxicology findings were from data entered by state abstractors into the corresponding MMRIA forms. Timing of death was determined by calculating the length of time between the date of death on the death record, and the date of birth or delivery on the infant birth record or fetal death record. If any elements of either date were missing (month, day, or year), then the pregnancy checkbox on the death certificate was used to identify timing of death in relation to pregnancy. For 6 deaths, information was missing to determine timing of death by either of these methods; these deaths did not have a linked birth or fetal death record and were marked as "unknown if pregnant in last year" or erroneously marked as "not pregnant" on the death certificate. For these deaths, timing of death was taken from the summary case narrative, where state abstractors typically include timing of death based on all available information.

Definitions

Pregnancy-Associated: A death during pregnancy or within one year of the end of pregnancy from any cause.

Preventability: A death is considered preventable if the committee determines that there was at least some chance of the death being averted by one or more reasonable changes to patient/family, community, provider, facility, and/or systems factors. MMRIA allows MMRCs to document preventability decisions in two ways: 1) determining preventability as a "yes" or "no", and/or 2) determining the chance to alter the outcome using a scale that indicates "no chance", "some chance", or "good chance". Any death with a "yes" response or a response of "some chance" or "good chance" to alter the outcome was considered "preventable"; deaths with a "no" response or "no chance" were considered "not preventable".

Substance Use Disorder (as defined on CDC's MMRC Committee Decisions Form version 20): Substance use disorder is characterized by recurrent use of alcohol and/or drugs causing clinically and functionally significant impairment, such as health problems or disability. The committee may determine that substance use disorder contributed to the death when the disorder directly compromised a woman's health status (e.g., acute methamphetamine intoxication exacerbated pregnancy induced hypertension, or woman was more vulnerable to infections or medical conditions).

Mental Health Conditions (as defined on CDC's MMRC Committee Decisions Form version 20): The patient carried a diagnosis of a psychiatric disorder. This includes postpartum depression.

Acknowledgements

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