NEW YORK CITY DEPARTMENT OF HEALTH AND MENTAL HYGIENE
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PREGNANCY-ASSOCIATED MORTALITY IN NEW YORK CITY, 2019

January 2023

INTRODUCTION

This report is responsive to Local Law 188, which requires annual reporting on population level pregnancy-associated mortality and recommendations to reduce pregnancy-associated deaths[1]. Each year since 2001, the NYC Health Department has conducted surveillance of pregnancy-associated deaths to develop five-year pregnancy associated mortality reports. Since 2018, the Health Department has reported the data annually on the Health Department's website and on the NYC open data source portal. From 2001-2019, there has been a statistically significant decline in the citywide pregnancy-related mortality ratio (PRMR) from 25.6 deaths per 100,000 live births in 2001-2003 to 21.3 deaths per 100,000 live births in 2017-2019. However, over this same time, the PRMR is on average 9.2 times higher for Black compared to white mothers driven by structural racism and discrimination coupled with inequities in care access and quality.

In January of 2018, in response to this crisis, the Health Department convened the NYC Maternal Mortality Review Committee (NYC-MMRC) to conduct a multi-disciplinary committee review of all pregnancy-associated deaths[1] to mothers residing in NYC and those residing in rest-of-state who died in NYC. The Committee follows the Center for Disease Control's (CDC) best practice guidelines for Review Committees used by 39 states and jurisdictions across the country. New York State Department of Health reviews deaths that occurred in rest-of-state through a second Committee using the same CDC guidelines. The NYC Health Department shares data annually with the NYS Health Department, which uses the NYC data to publish statewide reports.

The vision of the MMRC is to reduce preventable maternal mortality, and to eliminate inequities in this outcome. The mission is to gain a holistic understanding of the contributing factors leading to death by reviewing each mother's story; and to use the information gathered during the review to inform recommendations to prevent future deaths. This report provides pregnancy-associated maternal mortality data and MMRC recommendations based on the Committee's 2021 review of 57 maternal deaths that occurred in 2019.

DATA SUMMARY

In 2019, there were 106,097 live births and 57 pregnancy-associated deaths of women who resided in New York City or resided in rest-of-state but died in New York City. The pregnancy-associated mortality ratio was 53.7 deaths per 100,000 live births. Of these 57 deaths, 28 were pregnancy-related[2], 19 were pregnancy-associated but not related[3] and 10 were unable to determine[4]. The pregnancy-related mortality ratio was 26.4 deaths per 100,000 live births. In 2019, mental health conditions (n=10) were the top leading cause of underlying death (overdose

[1] Pregnancy-associated death: The death of a person from any cause during pregnancy or within one year from the end of pregnancy. These deaths are subset into 3 categories: pregnancy-related, pregnancy-associated, but not related, and unable to determine pregnancy-relatedness.
[2] Pregnancy-related death: The death of a person during pregnancy or within one year from the end of pregnancy that is due to a pregnancy complication, a chain of events initiated by pregnancy, or the aggravation of an unrelated condition by the physiologic effects of pregnancy. Pregnancy-related deaths are a subset of pregnancy-associated deaths.
[3] Pregnancy-associated, but not-related death: The death of a person during pregnancy or within one year from the end of pregnancy that is due to a cause that is not related to the pregnancy.
[4] Death where Committee was unable to determine relation to pregnancy.

caused 7 of the 10 deaths; the other 3 were suicides), accounting for 17.5% of all deaths. Cancer (n=6), cardiovascular conditions (n=6), asthma/pulmonary conditions (n=5) and hemorrhage (n=5) were the next four leading causes of death. Pregnancy-associated and pregnancy-related mortality ratios should be interpreted with caution as the numbers of deaths each year are very small. It is recommended to review a minimum of five years of data in one dataset to obtain more reliable mortality ratios, and to then compare trends over five-year intervals.

Table 1. Underlying causes of pregnancy-associated death, New York City, 2019

	2019	
Underlying Cause of Death[5]	**n**	**%**
Mental Health Conditions*	10	17.5
Accidental substance overdose (7)		
Suicide (3)		
Cancer	6	10.5
Cardiovascular Conditions[6]	6	10.5
Cardiomyopathy (3)		
Other Cardiovascular Conditions (3)		
Asthma/Pulmonary Conditions	5	8.8
Hemorrhage[7]	5	8.8
Embolism	4	7.0
Homicide	4	7.0
Infection/Sepsis	3	5.3
Metabolic/Endocrine Conditions	3	5.3
Seizure Disorders	3	5.3
Other**	8	14.0
Total pregnancy-associated deaths	**57**	**100.0**

* Mental health conditions include 3 deaths where the manner of death was classified as intentional (suicide) and 7 deaths where the MMRC determined the means of fatal injury to be unintentional overdose/poisoning.
** Other includes Amniotic Fluid Embolism, Unintentional Injury/Injury of Unknown Intent or Not Otherwise Specified, Cerebrovascular Accidents, and Unknown Cause of Death.

[5] The underlying cause of death refers to the disease or injury that initiated the chain of events leading to the death or the circumstances of the accident or violence which produced the fatal injury
[6] Cardiovascular conditions include cardiomyopathy and other cardiac and coronary conditions, including hypertensive cardiovascular disease and conduction defects/arrhythmias.
[7] Hemorrhage excludes aneurysms or cerebrovascular accident (CVA).

Table 2. Characteristics of pregnancy-associated deaths, New York City, 2019

Characteristic	Pregnancy-associated deaths n (%)	Pregnancy-related deaths n (%)
Total	**57 (100.0)**	**28 (100.0)**
Race/ethnicity[8]		
Black non-Latina	26 (45.6)	13 (46.4)
White non-Latina	11 (19.3)	6 (21.4)
Latina	20 (35.1)	9 (32.1)
Borough of residence		
Brooklyn	20 (35.1)	9 (32.1)
Bronx	12 (21.1)	7 (25.0)
Queens	12 (21.1)	6 (21.4)
Manhattan	6 (10.5)	4 (14.3)
Staten Island	4 (7.0)	1 (3.6)
Rest of State	3 (5.3)	1 (3.6)

*Percent may not total 100 due to rounding

MATERNAL MORTALITY REVIEW COMMITTEE RECOMMENDATIONS

Based on the review of 2019 deaths, the Committee ranked eight priority recommendations organized by top causes of death among Black and Latina women (mental health conditions, cardiac conditions, and hemorrhage), and addressing issues related to discrimination and racism – a key driver of the Black/white disparity in pregnancy-associated mortality. These eight Committee recommendations are a citywide call-to-action for all stakeholders working to eliminate preventable maternal mortality and end racial/ethnic disparities in these deaths.

SYSTEMS LEVEL

1. Governing bodies should establish and fund a network of maternal medical homes to coordinate care for postpartum women, with a focus on those with chronic conditions, mental health conditions, and substance use disorder (**mental health conditions**).
2. Governing bodies should fund and support NYC birthing hospitals and emergency departments to implement established bundles on preventing primary cesarean and increasing access to labor and Vaginal Birth After Cesarean (**hemorrhage**).
3. Professional organizations should include a mandatory checklist in the cardiac bundle with clear pathway for transfer to higher level of care, regardless of insurance status (**cardiovascular conditions**).
4. Regulatory agencies should create a system to audit facilities for a documented pattern in patient medical records of patients refusing care in that facility or as being described with negative patient descriptors (e.g.'non-compliant', 'frequent flyer', 'difficult'), and link facilities to training programs for patient-centered care and shared decision-making (**racism/discrimination**).

FACILITY LEVEL

5. All NYC birthing hospitals should create a dynamic referral list of financially accessible care centers for postpartum women with substance use disorder / mental health conditions (**mental health conditions**).

[8] We used race and ethnicity data from the birth or fetal death records, when available, and from death records when a birth record or fetal death record was unavailable.

6. All birthing hospitals should develop mechanisms to identify mothers who have a pattern of repeat emergency department visits and offer them intensive care management and local referrals for social services (**racism/discrimination**).

PROVIDER LEVEL

7. Prior to discharge, providers should screen all mothers for substance use disorders/mental health conditions and refer those with a positive screen to a maternal medical home with timely follow-up post discharge (**mental health conditions**).

COMMUNITY/FAMILY/INDIVIDUAL LEVEL

8. Funders should provide grants to community-based organizations to raise awareness of all postpartum warning signs, with a focus on cardiovascular disease (**cardiovascular conditions**).

DOHMH RECOMMENDATIONS

The Health Department will continue to conduct maternal mortality surveillance, which includes continuing to chair and support the functioning of the NYC Maternal Mortality Review Committee; reporting yearly maternal mortality data through the OpenData platform and in an annual report; reporting yearly maternal mortality data in an annual report and posting it to the Health Department website continuing to participate in the statewide Maternal Mortality and Morbidity Steering Committee; submitting a dataset to NYS DOH for production of a statewide maternal mortality report; and developing a new 5-year pregnancy-associated mortality report and presenting data in a public webinar (2016-2020).

DOHMH RECOMMENDATIONS UPDATE (January 2022)

In the 2021 report, the Health Department recommendations were to continue to chair and support the functioning of the NYC Maternal Mortality Review Committee (MMRC). Ten meetings were held throughout the year, and all 2019 deaths were reviewed by the end of 2021. The Health Department has reported the 2019 cohort of deaths on the NYC Open data platform and this report, posted to the website, contains 2019 data. A webinar with five years of data (2016-2020) will be implemented following the finalization of the 2020 data. Staff continued to participate in the NYS MMRC Steering Committee, and all 2019 data was made available to NYS DOH for a statewide report. A separate SMM report was not published as the Health Department is still waiting for the state hospitalization data (SPARCS) to become available.