NEW YORK CITY DEPARTMENT OF HEALTH AND MENTAL HYGIENE
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Commissioner

PREGNANCY-ASSOCIATED MORTALITY IN NEW YORK CITY, 2018

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INTRODUCTION

The New York City Department of Health and Mental Hygiene (Health Department) is responsible for ongoing surveillance of pregnancy-associated deaths in New York City in close collaboration with Office of the Chief Medical Examiner (OCME). This report is responsive to Local Law 188, which requires annual reporting on population level pregnancy-associated mortality and severe maternal morbidity, and recommendations to reduce pregnancy-associated deaths[1]. Data are disaggregated by information about the pregnant person where such data are available and statistically reliable. Due to ongoing delays in the receipt of a clean linked dataset needed to produce the severe maternal morbidity report, and to enable the Health Department to provide timely annual reporting of the pregnancy-associated deaths, moving forward, this report will be divided into two reports: Part 1 will provide data and recommendations from the review of pregnancy-associated deaths by the NYC Maternal Mortality Review Committee (formerly named the M3RC), and Part 2 will provide annual data on severe maternal morbidity[2]. We will submit Part 2 as soon as the data becomes available and is analyzed.

Each year since 2001, the Health Department has conducted surveillance of pregnancy-associated deaths to develop five-year pregnancy associated mortality reports. The Health Department reports annual pregnancy-associated data on the NYC open data source portal and in this City Council report, which is posted on the Health Department's website. From 2001-2018, we have seen a statistically significant decline in the citywide pregnancy-related mortality ratio from 25.6 deaths per 100,000 live births in 2001-2003 to 16.8 deaths per 100,000 live births in 2016-2018. However, unacceptable disparities among racial/ethnic groups remain. Over this same time, the ratio of pregnancy-related mortality is on average 9.4 times higher for Black compared to White mothers. We know that disparities in health outcomes rarely occur in isolation, and communities of color in our city face differential access to power and resources such as generational wealth, access to healthy food, and access to parks and public spaces, as well as overexposure to harmful conditions such as environmental damage, over policing and disproportionate incarceration. Together these factors lead to chronic stress and disease among communities of color, which drive the health disparity in pregnancy-associated mortality across the city.

In January of 2018, in response to this crisis, the Health Department convened the first-ever **NYC Maternal Mortality Review Committee** to conduct a multi-disciplinary committee review of all pregnancy-associated deaths[1] to mothers residing in NY State who died in NYC. The NYC Maternal Mortality Review Committee follows the Center for Disease Control's (CDC) best practice guidelines for Review Committees used by 31 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 guidelines.

The purpose of the NYC Maternal Mortality Review Committee 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. The NYC Maternal Mortality Review Committee members serve two-year terms, and meet monthly for day-long reviews, typically discussing 5-10 deaths per meeting. The 2020-2021 NYC Maternal Mortality Review Committee consists of forty members from all five boroughs and includes community activists, doulas, midwives, nurses, maternal-fetal medicine specialists, cardiologists, oncologists, OB/GYNs, case managers, public health workers, and police. Half of members self-identify as Black and 15% as Latina – the two groups most affected by the maternal death crisis. Sixty percent have clinical expertise, 33% are community representatives, and 7% have both types of expertise. All Committee members agree to acknowledge structural racism as a root cause of racial and ethnic disparities and inequities; consider the social determinants

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[1] pregnancy-associated death: death of a person from any cause during pregnancy or birth, 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.

[2] severe maternal morbidity (SMM): Life-threatening complications of labor and delivery that result in significant short- or long-term consequences to a woman's health, such as heavy bleeding, blood clots, serious infections, or kidney failure

of health as critical factors and when making recommendations (e.g., housing, employment, racism, bias and gender oppression); and share expertise, including lived experience, in support of constructing a holistic view of the event from both a clinical and social determinants of health perspective.

To date, the NYC Maternal Mortality Review Committee has reviewed 133 pregnancy-associated deaths that occurred during the period 2016-2018. The Health Department posted the 2016-2018 data on the Open Data platform and presented the data and recommendations during a citywide webinar on October 28, 2021. On December 2, 2021, the NYC Maternal Mortality Review Committee completed its review of all 2019 pregnancy-associated deaths. Data cleaning and analysis of the 2019 dataset is underway. The Committee will begin review of the 2020 cohort of deaths starting April 12, 2022.

This report provides pregnancy-associated maternal mortality data based on the NYC Maternal Mortality Review Committee's 2020 review of 42 maternal deaths that occurred in 2018, and recommendations based on those deaths.

DATA SUMMARY

In 2018, there were 114,296 live births and 42 pregnancy-associated deaths[3] identified in NYC. The pregnancy-associated mortality ratio was 36.7 deaths per 100,000 live births. Mental health conditions (n=8), cardiovascular conditions (n=6), and hemorrhage (n=5) were the most common causes of pregnancy-associated deaths. Of these 42 deaths, 23 were pregnancy-related[4] and the pregnancy-related mortality ratio was 20.1 deaths per 100,000 live births. Hemorrhage and mental health conditions were the most common causes of pregnancy-related deaths (n=4 each) followed by embolism and cardiovascular conditions including cardiomyopathy (n=3 each). Cardiovascular and coronary conditions and unintentional injury were the most common cause of pregnancy-associated but not related death[5] (n=3). 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. Causes of pregnancy-associated death, New York City, 2018

	2018	
Cause of death	**n**	**%***
Pregnancy-related		
Mental health conditions	4	17.4
Suicide (4)		
Overdose/Substance Use (0)		
Hemorrhage	4	17.4
Cardiovascular conditions	3	13.0
Cardiomyopathy (2)		
Other cardiovascular conditions (1)		
Embolism	3	13.0
Cancer	2	8.7
Blood Disorders	2	8.7
Unknown Cause of Death	2	8.7
Other pregnancy-related causes	3	13.0
Subtotal pregnancy-related	**23**	**54.8**
Pregnancy-associated but not related		

[3] Pregnancy-associated death is 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.
[4] Pregnancy-related Death: a subset of pregnancy-associated death: death of a person 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
[5] Pregnancy-Associated but Not-Related Death: Death of a woman during pregnancy or within one year from the end of pregnancy due to a cause not related to the pregnancy.

Cardiovascular conditions	3	27.3
Unintentional injury	3	27.3
Cancer	2	18.2
Other not pregnancy-related causes	3	27.3
Subtotal pregnancy-associated but not related	**11**	**26.2**
Unable to determine relation to pregnancy		
Mental Health Conditions	4	50.0
Suicide (1)		
Overdose/Substance Use (3)		
Cardiovascular conditions	2	25.0
Hemorrhage	1	12.5
Unknown Cause of Death	1	12.5
Subtotal unable to determine relation to pregnancy	**8**	**19.1**
Total pregnancy-associated deaths	**42**	**100.0**

* Percent of each category; subtotal percentages are percent of total pregnancy-associated deaths.

Table 2. Characteristics of pregnancy-associated deaths, New York City, 2018

Characteristic	Pregnancy-associated deaths n (%)	Pregnancy-related deaths n (%)
Total	**42 (100.0)**	**23 (100.0)**
Race/ethnicity		
Black non-Latina	20 (47.6)	13 (56.5)
White non-Latina	10 (23.8)	5 (21.7)
Latina	7 (16.7)	2 (8.7)
Asian/Pacific Islander	5 (11.9)	3 (13.0)
Borough of residence		
Brooklyn	14 (33.3)	10 (43.5)
Bronx	10 (23.8)	5 (21.7)
Queens	8 (19.1)	4 (17.4)
Manhattan	3 (7.1)	1 (4.3)
Staten Island	2 (4.8)	0 (0.0)
Non-resident of NYC	5 (11.9)	3 (13.4)

RECOMMENDATIONS UPDATE (2020)

In the 2020 report, the Health Department recommended to continue to report pregnancy-associated mortality data on an annual basis through the NYC OpenData platform, continue the NYC Maternal Mortality Review Committee, post the annual report to City Council on its website, and present a webinar with the data. The Health Department entered the 2018 data on to the OpenData platform in July 2021. The Health Department conducted a webinar on October 28, 2021 to disseminate the 2016-2018 dataset and committee recommendations more widely. The Health Department continues to participate in the statewide Maternal Mortality and Morbidity Steering Committee and contribute to the statewide report that includes the city's data. An implementation update on the recommendations related to severe maternal morbidity and the Maternity Hospital Quality Improvement Network will be provided in Part 2 of this report when the population-level severe maternal morbidity data becomes available.

CURRENT 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 maternal mortality data on an annual basis through the NYC OpenData platform
- Providing annual data and Committee recommendations in the City Council report
- Posting these reports on the Health Department website
- Presenting data annually in a citywide webinar
- 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.

REVIEW COMMITTEE RECOMMENDATIONS

The below recommendations were made by the NYC Maternal Mortality Review Committee following their annual review and analysis of the 2018 deaths. To identify the key recommendations presented below, the NYC Maternal Mortality Review Committee considered the frequency of the recommendation and cause of death, levels of care, expected impact of the recommendation if implemented, and feasibility of the recommendation, balancing this against aspirations with longer time horizons. Following each recommendation, we present fictitious case composites – or cases that were developed based on general patterns in data to preserve the privacy of individuals and the confidentiality of Committee work in accordance with NYS public health law.

The NYC Maternal Mortality Review Committee offers these citywide recommendations as a collective call-to-action for all stakeholders who are working to eliminate preventable maternal mortality and end racial/ethnic disparities in these deaths.

SYSTEMS LEVEL: *Develop programs to diversify the clinical workforce to ensure culturally matched care that facilitates effective communication between patients and providers.*

Case scenario: Jaden, a Black 45-year-old mother of three from Haiti develops hypertension for the first time in her life during her fourth pregnancy. At her prenatal visit, her doctor prescribes her an anti-hypertensive medication. She is afraid of the medication's side effects but does not feel comfortable raising this to her doctor whom she views as too different from her to understand her apprehension. Soon after this diagnosis, a family member consults a traditional healer from her home country who tells him that the medication might not be safe for her baby. Her family member relays this information to her, and she stops taking the medication. She continues her prenatal care appointments, but fearing judgment, does not tell her doctor. Her blood pressures remain elevated, so her doctor increases the dosage. Six months into her pregnancy, she has a sudden excruciating headache after dropping her children at school. As she is walking back to her home, she collapses in the street. She is taken to the closest hospital where she is found to have a large brain hemorrhage. She dies two days later.

FACILITY LEVEL: *Ensure that patients have access to critical medication upon discharge from emergency or inpatient care and provide follow up to promote patient access and adherence to medication.*

Case scenario: Esther, a Black 32-year-old mother of two, works throughout her pregnancy as a home health aide. She works up to her due date and develops mild hypertension during labor and childbirth. After giving birth to a baby boy, her blood pressure remains mildly elevated; two days later she is discharged home from the hospital. The discharge instructions include returning to her doctor in three days for a blood pressure check, as well as checking her blood pressure at home using a machine. The hospital sends a prescription to her pharmacy for the blood pressure machine and advises her to schedule an appointment with her prenatal care provider. When she tries to pick up the machine from the pharmacy, she discovers her insurance does not cover the cost. The machine is too expensive for her, so she is unable to monitor her blood pressure at home. She calls to make an appointment with her provider and is told the earliest availability is in nine days. Five days later, she has an eclamptic seizure at home and dies several hours later in the same hospital.

PROVIDER LEVEL: *Ask people with mental health conditions and substance use disorder about reproductive health needs and evaluate and refer them to preconception care as needed.*

Case scenario: Sherry, a White 31-year-old woman struggling with bipolar depression and suicidal thoughts, seeks out regular therapeutic and psychiatric services at a local clinic. At intake, her mental health providers do not ask her about reproductive health needs, despite completing an otherwise thorough biopsychosocial assessment. She attends regular appointments where contraception is never addressed, despite being on multiple psychiatric medications. After falling on an icy sidewalk outside of her home, she goes to the emergency department for persistent ankle pain. At the hospital, a urine pregnancy test is done as part of routine tests for all reproductive-age women, and she finds out she is 14 weeks pregnant. She is found dead by her friend two days later from accidental overdose.

COMMUNITY/FAMILY/INDIVIDUAL LEVEL: *Receive support and funding for general education programs to destigmatize substance use and perinatal mental health disorders.*

Case scenario: Georgia, a Latina mother of six who is active in her community has longstanding symptoms of depression and intermittent drug use. She discovers she is pregnant seven months after giving birth to her last child. She shares news of her pregnancy with her support system, initiates prenatal care immediately, and receives her first ultrasound soon after. As her pregnancy continues, her depressive symptoms worsen; she feels sad and hopeless and has difficulty connecting with her 7-month-old baby. She stops volunteering at her church and her children's schools. She is embarrassed by her own thoughts and behavior, and thus doesn't tell anyone how she feels. Three months after her first ultrasound appointment, her 9-year-old son finds her unresponsive in her bed. He calls 911 and first responders determine it is futile to attempt resuscitation. The autopsy reveals she died of the combined effects of alcohol and fentanyl.