Pregnancy-Associated Mortality in New York City, 2022

Annual Report, September 2025

New York City Department of Health and Mental Hygiene

New York City Maternal Mortality Review Committee

This report includes independent determinations and recommendations from the MMRC, which may not represent the official views of the New York City Health Department.

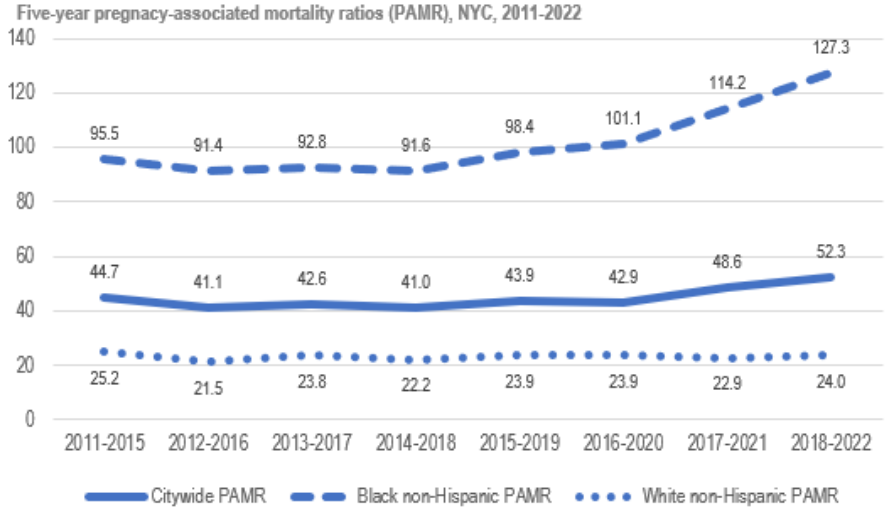
Executive Summary[1,2]

For the period 2018-2022, the citywide pregnancy-associated mortality ratio[3] (PAMR) was 52.3 deaths per 100,000 live births and the pregnancy-related mortality ratio[4] (PRMR) was 27.1 per 100,000 live births. **Figure 1** shows that the Black-White PAMR ratio, a measure of Black-White disparity, was 5.3 for 2018-2022, compared to 5.0 for 2017-2021, meaning that Black non-Hispanic women are about five times more likely to experience a pregnancy-associated death than white women. This inequity is driven by historical and current intentional underinvestment in neighborhoods where Black non-Hispanic women and birthing people live and receive health care, multigenerational trauma and interpersonal racism that epigenetically and physically weather the bodies of Black people earlier than white people, and anti-Blackness and modern-day medical apartheid in health care. This five-year time period also reflects the effect the COVID-19 pandemic on New Yorkers including widespread isolation, the citywide increase in overdose deaths, and the exacerbation of preexisting disparities in the health care system.

The Healthy NYC 2030[5] initiative seeks to reduce pregnancy-associated mortality ratio (PAMR) for Black people by 10 % by 2030. **Figure 1** shows that the PAMR for Black women and birthing people is worsening: the five-year average PAMR among Black women and birthing people showed an 11.5% **increase** from 114.2 per 100,000 live births in 2017-2021 to 127.3 per 100,000 live births in 2018-2022.[4] Overdose deaths were a main driver of this increase, changing from 9% of deaths among Black non-Hispanic women and birthing people in 2021 (two out of 23 deaths) to 29% in 2022 (eight out of 28 deaths). This aligns with mortality trends for Black non-Hispanic women in NYC overall, with overdose deaths increasing among Black women under the age of 65 from 2021 to 2022,[6] as well as the overall mortality trend citywide.

[1] Suggested citation: Litvak J, Jiang Y, Jessup J, Grant H, Searing H. Pregnancy-Associated Mortality in New York City, 2022. New York City Department of Health and Mental Hygiene. September 2025.
[2] Reviewers: Estelle Raboni, Dr. Leslie Hayes, Bibi Ndala
[3] Pregnancy-associated mortality ratio (PAMR) is the number of pregnancy-associated deaths per 100,000 live births.
[4] Pregnancy-related mortality ratio (PRMR) is the number of pregnancy-related deaths per 100,000 live births.
[5] HealthyNYC: New York City's campaign for healthier, longer lives. New York City Department of Health and Mental Hygiene. Accessed September 12, 2025. https://www.nyc.gov/health/healthynyc
[6] Li W, Castro A, Gurung S, Maduro G, Sun Y, Seil K, Van Wye G. Summary of Vital Statistics, 2022. New York City Department of Health and Mental Hygiene. https://www.nyc.gov/assets/doh/downloads/pdf/vs/2022sum.pdf

Figure 1. The PAMR for Black non-Hispanic women and birthing people increased between the 2013-2017 to 2018-2022 time periods, while the PAMR for white non-Hispanic women and birthing people remained stable



Background

Since 2001, the New York City Department of Health and Mental Hygiene (NYC Health Department) has conducted surveillance of pregnancy-associated deaths and developed and posted five-year pregnancy-associated mortality reports on its website. As part of the commitment to reducing inequities in pregnancy-associated mortality, in 2018 the NYC Health Department created the first-ever citywide Maternal Mortality Review Committee (MMRC) to review all pregnancy-associated deaths that occur in NYC, starting with deaths that occurred in 2016, and began posting annual reports to the website and data to the NYC Open Data source portal. The NYC Health Department also posts pregnancy-associated mortality ratios as five-year averages within the Healthy NYC 2030 report and the Mayor's Management Report (MMR).

Pregnancy-associated deaths[7] include deaths from any cause during pregnancy or any cause within one year from the end of pregnancy, regardless of the outcome of the pregnancy. **Pregnancy-related deaths** — a subset of pregnancy-associated deaths — are deaths that occur during pregnancy or within one year from the end of pregnancy that are caused by a pregnancy complication, a chain of events initiated by pregnancy, or an aggravation of an unrelated condition by the pregnancy.

[7] These deaths are subdivided into three categories: pregnancy-related, pregnancy-associated but not pregnancy-related, and unable to determine pregnancy relatedness.

In January 2018, in response to these inequities, the NYC Health Department convened the NYC MMRC to conduct multidisciplinary reviews of all pregnancy-associated deaths among all New York State (NYS) residents who died in NYC, starting with deaths that occurred in 2016. The MMRC is a diverse, multidisciplinary team, including midwifery, family medicine, nursing, psychology and psychiatry, anesthesiology, maternal-fetal medicine, and obstetrics and gynecology; doula services and patient advocacy; social work; health systems; addiction treatment; home visiting; and violence prevention. In total, 70% of members self-identify as Black or Hispanic (the two groups most affected by these deaths), and 65% of members identify as clinical and 35% identify as nonclinical. The NYC Health Department uses the same standards and protocols developed by the Centers for Disease Control and Prevention (CDC) that are used by most states and Philadelphia.[8]

The NYC MMRC's vision is to make recommendations to reduce preventable maternal mortality by eliminating racial inequities in this outcome. The mission is to gain a holistic understanding of the contributing factors leading to death by reviewing the story of each woman and birthing person and to use the information gathered during the review to inform recommendations to prevent future deaths. The NYC MMRC's work to advance racial equity is grounded in the core concepts of racial, social, sexual, and reproductive justice. The NYC MMRC meets monthly to the review of each maternal death in NYC to understand the contributing factors leading to the death as well as opportunities for prevention. This report provides data and recommendations developed by the NYC MMRC through the review of 66 deaths that occurred in 2022 during 12 day-long meetings. It provides a list of 35 priority recommendations from the MMRC as well as an addendum with all recommendations developed for all deaths that they deemed preventable. It is supplemented by data from the NYC Health Department's Office of Vital Statistics to determine ratios and present demographic characteristics of the deaths.

Results

The number of pregnancy-associated deaths in NYC increased from 58 deaths in 2021 to 66 deaths in 2022, the highest number of pregnancy-associated deaths since 2016. In 2022, the citywide PAMR was 66.4 deaths per 100,000 live births and the PRMR was 32.2 deaths per 100,000 live births. However, the fluctuations of the annual numbers and ratios should be interpreted with caution due to the small number of maternal deaths each year.[9] Of these deaths, 32 (48.5%) were pregnancy-related,[10] 23 (34.9%)

[8] Enhancing reviews and surveillance to eliminate maternal mortality. Maternal Mortality Prevention. Centers for Disease Control and Prevention. Accessed September 12, 2025. https://www.cdc.gov/maternal-mortality/php/erase-mm/

[9] It is recommended to review a minimum of five years of data to obtain more reliable mortality ratios, and to then compare trends over five-year intervals.

[10] 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 an aggravation of an unrelated condition by the physiologic effects of pregnancy. Pregnancy-related deaths are a subset of pregnancy-associated deaths.

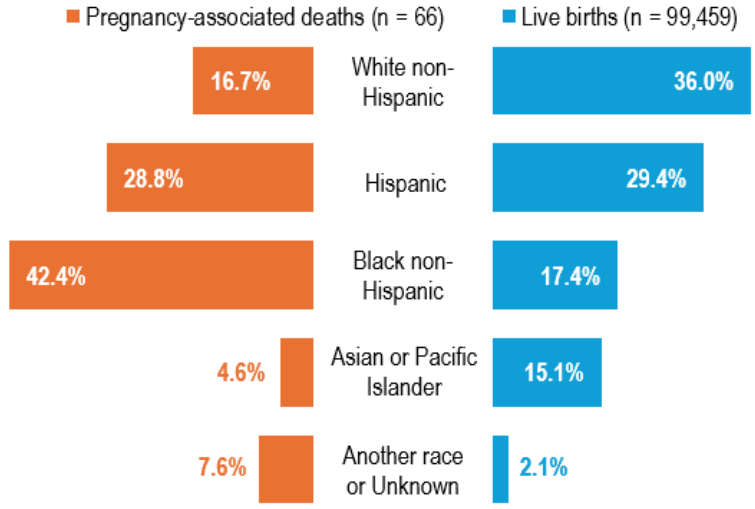
were pregnancy-associated but not pregnancy-related,[11] and for 11 (16.7%) the relationship to pregnancy could not be determined.[12]

Demographic Characteristics

In 2022, the percentage of pregnancy-associated deaths among Black non-Hispanic women and birthing people b (42.4%) was higher than their representation among live births (17.4%).[13] Conversely, white non-Hispanic women and birthing people accounted for 16.7% of deaths compared to 36.0% of live births (**Figure 2**).

Figure 2. Black non-Hispanic women and birthing people accounted for 42.4% of pregnancy-associate deaths compared to 17.4% of live births

Live births and pregnancy-associated deaths by race and ethnicity, NYC, 2022



The Bronx has the highest five-year (2018-2022) PAMR at 84.9 per 100,000 live births followed by Staten Island (72.2), Manhattan (50.4), Queens (44.2), and Brooklyn (43.3). The distribution of deaths by borough of residence should be interpreted with caution given the small number of pregnancy-associated deaths that occur each year. Among the 66 deaths that occurred in 2022, the Bronx had the most pregnancy-associated deaths (27.3%, n = 18), followed by Manhattan (22.7%, n = 15), Brooklyn (18.2%, n = 12), Queens (13.6%, n = 9), and Staten Island (10.6%, n = 7). The remaining 7.6% (n = 5) resided outside of NYC in the rest of NYS (**Table 1**). It is important to note that borough of residence does not always equate to the place of childbirth or the borough of death. Approximately 69.7% of pregnancy-associated deaths were U.S.-born and 28.8% were non-U.S.-born (**Table 1**).

Leading Causes of Pregnancy-Associated Deaths

[11] Pregnancy-associated but not pregnancy-related death: The death of a person during pregnancy or within one year from the end of pregnancy due to a cause not related to the pregnancy.
[12] Death where the Committee was unable to determine relation to pregnancy.
[13] Li W, Castro A, Gurung S, Maduro G, Sun Y, Seil K, and Van Wye G. Summary of Vital Statistics, 2022. New York City Department of Health and Mental Hygiene. https://www.nyc.gov/assets/doh/downloads/pdf/vs/2022sum.pdf

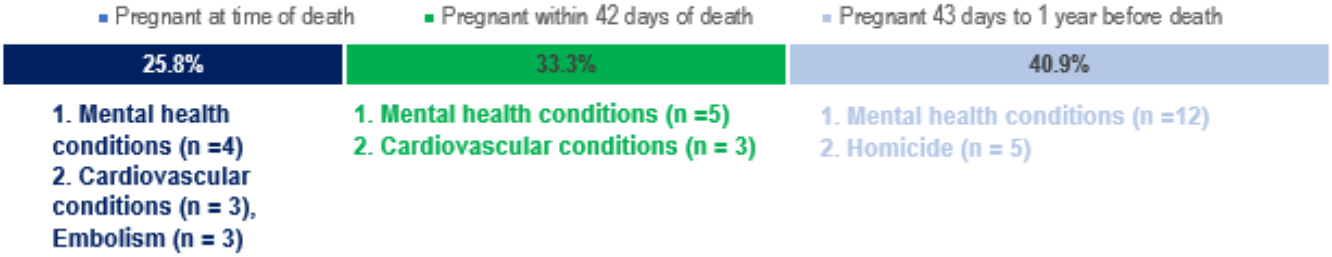
The leading cause[14] of pregnancy-associated deaths in 2022 were mental health conditions (n = 21, 31.8%), including 14 overdose deaths (12 involving an opioid[15]) and seven suicide deaths. Cardiovascular conditions (n = 8, 12.1%) were the second-leading cause. Cancer and homicide tied as the third-leading causes; each had six deaths (9.1%) (**Table 2**). The top two causes of death for non-Hispanic Black women and birthing people were mental health conditions and cardiovascular conditions. The top causes of death for Hispanic women and birthing people were mental health conditions, and cancer and unintentional injury were tied as the second-leading causes[16] (data not shown).

Timing and Location of Pregnancy-Associated Deaths

Two-thirds of pregnancy-associated deaths occurred between two and 365 days after the end of pregnancy: 6.1% within a week after the end of pregnancy, 21.2% between seven and 42 days after the end of pregnancy, and 40.9% from 43 to 365 days after the end of pregnancy. The remaining one-third (n = 21, 31.8%) occurred during pregnancy or within one day after end of pregnancy (**Figure 3**). Most pregnancy-associated deaths took place in a hospital setting, either in the inpatient facility (n = 25, 37.9%) or emergency department (n = 16, 24.2%) (**Table 2**).

Figure 3. 40.9% of women and birthing people are pregnant 43 days to 1 year before death

Timing of death and top two causes of death, NYC, 2022 (n = 66)



Prenatal and Clinical Characteristics of Pregnancy-Associated Deaths

The most common pregnancy outcome among pregnancy-associated deaths was a live birth (n = 32, 48.5%). Of these, 17 were vaginal births and 15 were cesarean births (**Table 2**). Mode of birth is not necessarily related to the death.

Among women and birthing people with a live birth, approximately one-third (34.4%) initiated prenatal care within the first trimester and two-thirds initiated prenatal care by the end of the second trimester. Almost half (46.9%) had a pre-pregnancy body mass index (BMI) less than 24.9, 28.1% had a BMI between 25 and 29.9, and 21.9% had a BMI of 30 or higher (**Table 3**).

[14] 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 that produced the fatal injury.
[15] Opioid includes substances such as fentanyl, heroin, oxycodone, oxymorphone, hydrocodone, hydromorphone, morphine, codeine, methadone, tramadol, and buprenorphine.
[16] There were eight pregnancy-associated deaths due to mental health conditions and four pregnancy-associated deaths for cardiovascular conditions among Black non-Hispanic women and birthing people. There were four pregnancy-associated deaths due to mental health conditions and three pregnancy-associated deaths for both cancer and unintentional injury among Hispanic women and people who can become pregnant.

Social and Emotional Stressors

Approximately 80.3% of women and birthing people experienced at least one social and emotional stressor. Overall, 22.7% experienced homelessness, either before, during, or after pregnancy. The most common social and emotional stressors included recent trauma[17] (57.6%), history of domestic violence (37.9%), and unemployment (34.9%). Involvement with Child Protective Services (CPS) or history of childhood trauma was present in 31.8% of these cases (**Table 4**). The complexity of these experiences demonstrate that a complex screening, referral, and support system is needed, so that experiencing domestic violence does not lead to suicide, for example.

Maternal Mortality Review Committee Determinations

The MMRC conducted in-depth reviews of all pregnancy-associated deaths, thoroughly examining each case to determine preventability. A death is considered preventable if the MMRC determines that there was at least some chance of death being averted by one or more reasonable changes to factors at any of five levels: system,[18] facility,[19] provider,[20] community,[21] and patient/family.[22] In 2022, the MMRC determined that 86.4% (57 out of all 66 deaths) of pregnancy-associated deaths had some chance (48.5%) or good chance (37.9%) of being prevented (**Figure 4**, **Table 5**).

Figure 4. The vast majority of pregnancy-associated deaths had at least some chance of being prevented

Preventability among pregnancy-associated deaths, NYC, 2022

[17] Experiencing a traumatic (shocking, dangerous, distressing) event within the year of death (for example, family member dying, surviving a car crash, experiencing a pregnancy loss or other significant loss, etc.).
[18] System: Interacting entities that support services before, during, or after a pregnancy, such as health care systems, payors, and public services and programs.
[19] Facility: A physical location where direct care is provided, such as small clinics and urgent care centers as well as hospitals with trauma centers.
[20] Provider: An individual with training and expertise who provides care, treatment, or advice.
[21] Community: A grouping based on a shared sense of place or identity, such as physical neighborhood, as well as communities based on common interests or other shared circumstance.
[22] Patient or family: An individual before, during, or after a pregnancy and their family, internal or external to the household, with influence on the individual.

The MMRC determined that discrimination,[23] obesity,[24] substance use disorder,[25] and mental health conditions other than substance use disorder definitely or probably contributed to 68.2%, 7.6%, 28.8%, and 37.9% of all pregnancy-associated deaths, respectively (**Table 5**).

For preventable deaths with recommendations (n = 56 [26]), the MMRC identifies key contributing factors to the death and specific feasible recommendations for action that should be taken to prevent future deaths. The most prominent contributing factor was clinical skill/quality of care, which was present in 64.3% of the 56 deaths. The next four top contributing factors were discrimination[27] (62.5%), lack of continuity of care or care coordination (42.9%), gaps in knowledge (37.5%), and mental health conditions (33.9%) (**Figure 5**, **Table 6)**.

Maternal Mortality Review Committee Recommendations

Based on the review of deaths that occurred in 2022, the MMRC made specific, actionable recommendations to prevent future deaths for those deaths that they determined were preventable and made recommendations (56 out of 66 deaths). Among these 56 deaths, the MMRC focused on recommendations for top causes of death of Black non-Hispanic and Hispanic women and birthing people (mental health conditions, cardiovascular conditions, homicide, hemorrhage, and blood disorders) and prioritized those that had the greatest chance of reducing inequities in pregnancy-associated mortality with a focus on the frequency of the recommendation, impact, and feasibility. All recommendations that the MMRC made for all preventable deaths are in the addendum to this report. The below recommendations are the MMRC priority recommendations presented by actor.

Policymakers and Government

[23] The MMRC determines whether discrimination contributed to the death, and not just whether the individual was exposed to discrimination. Discrimination is defined as treating someone less or more favorably based on the group, class, or category they belong to resulting from biases, prejudices, and stereotyping. Discrimination is evaluated as a contributing factor twice, once among all pregnancy associated-deaths and again among preventable pregnancy-associated with an associated recommendation. This number refers to all pregnancy-associated deaths.

[24] The MMRC determines whether obesity contributed to the death, and not just whether the person was obese. The Committee may determine that obesity contributed to the death when the condition directly compromised an individual's health or health care.

[25] The MMRC determines whether substance use disorder contributed to the death, and not just whether the individual had a substance use disorder. 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.

[26] For one preventable pregnancy-associated death with a cause of death of injury, the committee did not feel their expertise allowed them to make recommendations for how to prevent this death.

[27] Discrimination is evaluated as a contributing factor twice, once among all deaths and again among preventable pregnancy-associated deaths. This number refers to preventable pregnancy-associated deaths.

1. NYS Office of Children and Family Services should ensure that testing positive for an illicit and/or controlled substances or substance use should not be an indication for NYC Administration for Children's Services (ACS) intervention or a call to ACS through education of clinicians and hospital systems on the current state of law and what does or does not constitute neglect led by coalitions on informed consent, family policing, and harm reduction. (Mental Health Conditions)
2. Governing bodies should establish and fund a network of maternal medical homes to coordinate care for postpartum people, with a focus on those with chronic conditions, mental health conditions, and substance use disorder, regardless of race and social status. (Cardiovascular Conditions)
3. NYS and NYC government should provide funding for existing community health worker programs to provide follow-up evaluation and care to pregnant and postpartum women and birthing people with chronic health conditions after a birth hospitalization. (Cardiovascular Conditions)
4. NYS should legislate and enforce safe nurse-to-patient ratios in emergency departments. (Blood Disorders)
5. NYS Office of Children and Family Services should direct NYC ACS and hospital systems to stop the practice of notifying Child Protective Services (CPS) because of a history of a CPS case or an open CPS case at birth. (Hemorrhage)
6. The NYS legislature should mandate all obstetrical care clinicians and facilities to participate in electronic health record systems that integrate electronic medical records from other facilities that provide obstetric care, with patient consent, including from prior pregnancies. NYS legislature should also provide equitable funding for implementation. (Hemorrhage)
7. NYS should legislate all women and birthing people to have access to a maternal medical home and legal services when there is current or historical NYC ACS involvement in their lives. (Hemorrhage)

Health Departments

8. NYS Department of Health, NYS Office of Mental Health, and NYS Office of Addiction Services and Supports should work together to develop standards for compliance and algorithms for integration of substance use treatment and mental health care for pregnant and postpartum women and birthing people. (Mental Health Conditions)
9. NYC Health Department should share data on ACS involvement in maternal deaths with City Council and NYS Department of Health to support the creation of an oversight committee to investigate the connection between ACS involvement and maternal death and to explore avenues for legal accountability for harm to pregnant people, mothers and parents. (Mental Health Conditions, Hemorrhage)
10. NYS Department of Health, NYS Office of Mental Health, NYS Office of Addiction Services and Supports, and insurers should establish and fund a network of maternal medical homes to coordinate care for postpartum women and birthing people, with a focus on those with chronic conditions, mental health conditions, and substance use disorder (with a focus on evidence-based overdose prevention and harm reduction). (Mental Health Conditions)
11. NYS Office of Mental Health and NYS Department of Health should work with the NYS Office of Addiction Services and Supports to encourage substance use treatment programs to incorporate evidence-based practices and prioritize pregnant people experiencing mental illness, substance

use disorder, or domestic/intimate partner violence for resources, including greater access to wraparound services. (Mental Health Conditions)

12. NYS Office of Children and Family Services, NYC Health Department, NYS Department of Health and other agencies, including the criminal legal system, should convene a body of experts and impacted families to make collaborative assessments of ACS policy to improve policies around maternal mental health and substance use screening practices in hospitals and other perinatal clinician settings to provide support and end family separation. Then, create a citywide public awareness campaign aiming to destigmatize and normalize perinatal mood and anxiety disorders, substance use, and intimate partner violence using such policies. (Mental Health Conditions)
13. NYS Department of Health and NYC Health Department should have a public awareness campaign that reaches historically and purposefully underserved communities that are disproportionately impacted to raise awareness of all postpartum warning signs, with a focus on postpartum depression and cardiovascular disease, including hypertension (specifically with the use of baby aspirin). (Cardiovascular Conditions)
14. NYC Health Department in collaboration with American Academy of Pediatrics; adolescent health, primary care, and women's health clinicians; and Mayor's Office to End Domestic and Gender-Based Violence should examine existing public service announcements and/or create ongoing public service announcements and education campaigns for youth and young adults and onward on intimate partner violence that emphasize the points of increased risk, including accessible, publicly available safety planning checklists. (Homicide)
15. NYS Department of Health, NYC Health Department, and NYC Maternal Mortality Review Committee should provide closed-loop feedback to hospitals who have had maternal mortalities and morbidities. (Blood Disorders)
16. The Joint Commission, American College of Nurse-Midwives, American College of Obstetricians and Gynecologists (ACOG), Society for Maternal-Fetal Medicine, and NYS Department of Health should require every NYC hospital to train all staff at least quarterly in obstetric unit and simulate on the Massive Transfusion and Postpartum Hemorrhage protocols, including ACOG District II Maternal Safety Bundles, including the Obstetric Hemorrhage bundle. (Hemorrhage)
17. NYS Department of Health should regulate and enforce having an obstetric-guided massive transfusion protocol for all hospitals, including quarterly simulations. (Hemorrhage)
18. NYS Department of Health through the perinatal regulations should mandate integration of full-scope midwifery care services to support care for laboring people in all care settings. (Hemorrhage)

Hospital Systems

19. All hospital systems should ensure that birthing facilities integrate addiction services with mental health and obstetrics when substance use is identified during pregnancy and/or postpartum period. (Mental Health Conditions)
20. Hospitals, birthing facilities, and prenatal care clinicians should follow ACOG guidelines on evaluation and treatment of mental health and hypertensive management in pregnant people. (Cardiovascular Conditions)
21. All hospitals without obstetric services should perform a minimal assessment of obstetric patients the moment they walk into the emergency department including immediate blood pressure checks. (Blood Disorders)

Regulatory Agencies and Professional Organizations

22. National professional societies and accreditation bodies should support the creation of pathways to certification in perinatal mental health and substance use treatment for clinicians across disciplines caring for pregnant and postpartum people. (Mental Health Conditions)
23. Accreditation Council for Graduate Medical Education should strongly recommend that obstetric residency and family medicine residency programs include training by midwives on midwifery standard of care. (Hemorrhage)

Facilities[28]

24. All birthing facilities should ensure that perinatal care clinicians have adequate training and resources to recognize, refer, and assess maternal mental health conditions, substance use disorders, and intimate partner violence in the perinatal period that includes a plan of safe care. (Mental Health Conditions)
25. All birthing facilities should have holistic assessment and referral services to all clinician types, including peer specialists, who should be involved in the patient's care during pregnancy and postpartum with patient empowerment, voice, and choice. (Mental Health Conditions)
26. All emergency departments should establish and enforce mandated protocols that require clinicians to refer women and people who can become pregnant to needed services (for example, obstetrics, psychiatry, substance use treatment, peer specialists) and call back to confirm that a connection was made. (Mental Health Conditions)
27. All birthing facilities should ensure that perinatal care clinicians have adequate training and resources to recognize, refer, and assess hypertensive disorders in pregnancy (Cardiovascular Conditions)
28. Sexual and Reproductive health care service sites should receive training on screening and counseling regarding intimate partner violence for anyone seeking sexual and reproductive care and pregnancy choices. (Homicide)
29. All hospitals should have policies to ensure patients receive services according to their language needs, and clinicians should document interpretation services used. (Blood Disorders)

Clinicians[29]

30. All clinicians who care for women and birthing people should communicate with clients with limited English proficiency in the language and dialect that the client prefers and should document the client's wishes and understanding of what they are told. Clinicians should listen to clients in their preferred language and dialect and seriously address what the client says they need. (Mental Health Conditions)
31. Clinicians should educate families on visits around warning signs of perinatal mood and anxiety disorders, including psychosis, and resources to address the issue. (Mental Health Conditions)

[28] A physical location where direct care is provided, ranging from small clinics and urgent care centers to hospitals with trauma centers.
[29] An individual with training and expertise who provides care, treatment, or advice.

32. Primary care clinicians and specialists treating chronic illness or mental health disorders should ensure that women and birthing people are connected to clinicians offering comprehensive reproductive health care services. (Cardiovascular Conditions)
33. All clinicians should screen for a gun and other lethal weapons in the home during prenatal care and postpartum as part of intimate partner violence screening. (Homicide)
34. Prior to the conclusion of the cesarean birth, clinicians should always check the sterile area under the patient between the patient's legs for bleeding. (Hemorrhage)

Community

35. Community based organizers should educate families on visits around warning signs of perinatal mood and anxiety disorders, including psychosis, and resources to address the issue. (Mental Health Conditions)

NYC Health Department Update

In 2024, the NYC Health Department completed an annual report as well as a new five-year pregnancy-associated mortality report (for 2016-2020) and cohosted, with the New York Academy of Medicine, the event "Ending Maternal Mortality in New York City: The Blueprint" on September 25, 2024, presenting and discussing key findings and recommendations.

This year, the NYC Health Department continued to conduct pregnancy-associated mortality surveillance and supported the MMRC. The NYC Health Department convened 12 meetings throughout the year, enabling the MMRC to complete its review of all 66 pregnancy-associated deaths that occurred in 2022.

Table 1. Demographic characteristics of pregnancy-associated deaths, NYC, 2022

	Pregnancy-associated deaths n (%)	Pregnancy-related deaths n (%)
Total	66 (100.0%)	32 (100.0%)
Race and ethnicity[a]		
Black non-Hispanic	28 (42.4%)	12 (37.5%)
White non-Hispanic	11 (16.7%)	6 (18.8%)
Hispanic	19 (28.8%)	10 (31.3%)
Asian or Pacific Islander	3 (4.6%)	1 (3.1%)
Another race or unknown	5 (7.6%)	3 (9.4%)
Borough of residence[b]		
Brooklyn	12 (18.2%)	4 (12.5%)
Bronx	18 (27.3%)	10 (31.3%)
Queens	9 (13.6%)	4 (12.5%)
Manhattan	15 (22.7%)	6 (18.8%)
Staten Island	7 (10.6%)	6 (18.8%)
Non-NYC	5 (7.6%)	2 (6.3%)
Age at death (years)		
< 25	12 (18.2%)	4 (12.5%)
25-29	20 (30.3%)	7 (21.9%)
30-34	14 (21.2%)	11 (34.4%)
35-39	16 (24.2%)	8 (25.0%)
40+	4 (6.1%)	2 (6.3%)
Education[c]		
Less than high school	10 (15.2)	3 (9.4)
High school or GED	30 (45.5)	13 (40.6)
At least some college	26 (39.4)	16 (50.0)
Nativity[d]		
U.S.-born	46 (69.7%)	21 (65.6%)
Non-U.S.-born	19 (28.8%)	11 (34.4%)
Unknown	1 (1.5%)	-

Percentage may not sum to 100 due to rounding.

[a] White, Black, and Asian or Pacific Islander race categories exclude Hispanic ethnicity. Hispanic includes Latino of any race. 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.

[b] Borough of residence is based on the borough of residence at the time of death as listed on the death certificate. If this information was missing, the borough of residence listed on the birth or fetal death certificate was used to fill the missing value.

[c] Education is based on the total years of education completed at the time of death as self-reported on the birth or fetal death certificate. If there was no corresponding birth or fetal death certificate, or the data were missing, information recorded on the death certificate was used to fill the missing value.

[d] Maternal nativity is primarily derived from data recorded on the birth or fetal death certificate. If there was no corresponding birth or fetal death certificate, or these data were missing, information recorded on the death certificate was used to fill the missing value.

Table 2. Causes, timing, location, and pregnancy outcomes of pregnancy-associated deaths, NYC, 2022

	Pregnancy-associated deaths, n (%)	Pregnancy-related deaths, n (%)
Total	66 (100.0%)	32 (100.0%)
Causes of death[a]		
Mental Health Conditions	21 (31.8%)	7 (21.9%)
Overdose[b]	14	4
Suicide[c]	7	3
Cardiovascular Conditions[d]	8 (12.1%)	6 (18.8%)
Cardiomyopathy	1	1
Other Cardiovascular Conditions	7	5
Cancer[e]	6 (9.1%)	1 (3.1%)
Homicide[f]	6 (9.1%)	2 (6.3%)
Unintentional Injury[g]	6 (9.1%)	1 (3.1%)
Embolism	4 (6.1%)	2 (6.3%)
Hemorrhage	3 (4.6%)	3 (9.4%)
Infection/Sepsis	3 (4.6%)	3 (9.4%)
Blood Disorders	2 (3.0%)	2 (6.3%)
Seizure Disorders	2 (3.0%)	1 (3.1%)
Other[h]	5 (7.6%)	4 (12.5%)
Timing of death		
During pregnancy	17 (25.8%)	8 (25.0%)
Day after the end of pregnancy	2 (3.0%)	2 (6.3%)
1 day after end of pregnancy	2 (3.0%)	2 (6.3%)
2-6 days after end of pregnancy	4 (6.1%)	3 (9.4%)
7-42 days after end of pregnancy	14 (21.2%)	6 (18.8%)
43 days-1 year after end of pregnancy	27 (40.9%)	11 (34.4)
Location of death		
Hospital - inpatient	25 (37.9%)	16 (50.0%)
Hospital - emergency department	16 (24.2%)	9 (28.1%)
Home/Other	25 (37.9%)	7 (21.9%)
Pregnancy outcome		
Live birth	32 (48.5%)	23 (71.9%)
Vaginal	17	11
Cesarean	15	12
Undelivered	13 (19.7%)	5 (15.6%)
Induced termination (ITOP)	14 (21.2%)	2 (6.3%)
Spontaneous Abortion (< 20 weeks)	2 (3.0%)	-
Stillbirth or Fetal Death (> = 20 weeks)	3 (4.6%)	1 (3.1%)
Ectopic Pregnancy	2 (3.0%)	1 (3.1%)

Percent may not total 100 due to rounding.

[a] Cause of death cannot be further disaggregated by all racial and ethnic groups due to confidentiality reasons. This information is available for a larger number of deaths in the latest NYC Health Department five-year pregnancy-associated mortality report.

[b] Among the 14 pregnancy-associated overdose deaths, 12 involved an opioid. Among the four pregnancy-related deaths, four involved an opioid.
[c] Among the six pregnancy-associated deaths due to suicide, the means of injury were fall for two deaths, poisoning/overdose for two deaths, drowning for one death, hanging/strangulation/suffocation for one death, and unknown for one death.
[d] Among the eight pregnancy-associated deaths due to cardiovascular conditions, one was due to cardiomyopathy.
[e] Among the six pregnancy-associated deaths due to cancer, two were due to stomach cancer, one was due to leukemia, one was due to skin cancer, one was due to pancreatic cancer, and one was due to oral cancer.
[f] For all six pregnancy-associated deaths due to homicide, partners or ex-partners were identified as the perpetrators. The means of fetal injury were sharp instrument for three deaths, fall for one death, firearm for one death, and hanging/strangulation/suffocation for one death.
[g] Among the pregnancy-associated deaths due to unintentional injury, the means of fetal injury were fire or burn for three deaths, poisoning/overdose for two deaths, and motor vehicle for one death.
[h] Other cause of death includes autoimmune disease, cerebrovascular accidents, metabolic/endocrine conditions, preeclampsia and eclampsia, and unknown causes of death.

Table 3. Number of previous live births, trimester of prenatal care initiation, and pre-pregnancy body mass index and insurance type among pregnancy-associated deaths that resulted in a live birth, NYC, 2022

	Pregnancy-associated deaths n (%)	Pregnancy-related deaths n (%)
Total	32 (100.0%)	23 (100.0%)
Number of previous live births		
None	15 (46.9%)	8 (34.8%)
One	6 (18.8%)	6 (26.1%)
Two	6 (18.8%)	5 (21.7%)
Three or more	3 (9.4%)	2 (8.7%)
Unknown	2 (6.3%)	2 (8.7%)
Trimester of prenatal care initiation		
First trimester	11 (34.4%)	9 (39.1%)
Second trimester	11 (34.4%)	7 (30.4%)
Third trimester	3 (9.4%)	3 (13.0%)
No prenatal care	2 (6.3%)	1 (4.3%)
Unknown	5 (15.6%)	3 (13.0%)
Pre-pregnancy body mass index (BMI)		
BMI < 18.5	4 (12.5%)	3 (13.0%)
BMI 18.5-24.9	11 (34.4%)	8 (34.8%)
BMI 25-29.9	9 (28.1%)	6 (26.1%)
BMI ≥ 30	7 (21.9%)	5 (21.7%)
Unknown	1 (3.1%)	1 (4.3%)
Insurance type		
Medicaid	25 (78.1%)	18 (78.3%)
Private	4 (12.5%)	3 (13.0%)
Other insurance[a]	3 (9.4%)	2 (8.7%)

Percentage may not total 100 due to rounding.

[a] Other insurance type includes other government type, self-pay, and unknown.

Table 4. Social and emotional stressors[a] among pregnancy-associated deaths, NYC, 2022

	Pregnancy-associated deaths	
	n	**%**
Total	66	100.0%
Ever experienced any stressor	53	80.3%
Ever experienced homelessness[b]	15	22.7%
Prior to pregnancy	11	16.7%
During pregnancy	7	10.6%
After pregnancy	5	7.6%
Social or emotional stressors[c]		
Recent trauma[d]	38	57.6%
History of domestic violence	25	37.9%
Unemployment	23	34.9%
Child protective services involvement	21	31.8%
History of childhood trauma	21	31.8%
History of substance use	18	27.3%
History of psychiatric hospitalizations or treatment	17	25.8%
Prior suicide attempts	14	21.2%
History of treatment for substance use	11	16.7%

[a] Social and emotional stressors determined through review of available medical and social service records.
[b] The timing of the deaths is not mutually exclusive. Women and people who can become pregnant may have experienced homelessness at different times in their lives in relation to pregnancy.
[c] Women and people who can become pregnant may have faced more than one social or emotional stressor.
[d] Recent trauma is defined as experiencing a traumatic (shocking, dangerous, distressing) event within the year of death (for example, family member dying, surviving a car crash, experiencing a pregnancy loss or other significant loss, etc.).

Table 5. Preventability and committee determinations on circumstances contributing to pregnancy-associated deaths, NYC, 2022

	Pregnancy-associated deaths	
	n	%
Total	66	100.0%
Preventability		
Preventable	57	86.4%
Good chance	25	37.9%
Some chance	32	48.5%
Not preventable	5	7.6%
Unable to determine	4	6.1%
Circumstances contributing to the death		
Discrimination		
Yes or probably	45	68.2%
No	15	22.7%
Unknown	6	9.1%
Obesity		
Yes or probably	5	7.6%
No	58	87.9%
Unknown	3	4.6%
Substance use disorder		
Yes or probably	19	28.8%
No	45	68.2%
Unknown	2	3.0%
Mental health conditions other than substance use disorder		
Yes or probably	25	37.9%
No	34	51.5%
Unknown	7	10.6%

Table 6. Contributing factors[a] for preventable pregnancy-associated deaths, NYC, 2022

Contributing factors	Pregnancy-associated deaths	
	n	%
Total[b]	56	100.0%
Clinical skill/quality of care[c]	36	64.3%
Discrimination[d]	35	62.5%
Lack of continuity of care/care coordination[e]	24	42.9%
Knowledge[f]	21	37.5%
Mental health conditions[g]	19	33.9%
Lack of standardized policies/procedures[h]	16	28.6%
Substance use disorder- alcohol, illicit/prescription drugs[i]	13	23.2%
Access/financial[j]	12	21.4%
Chronic disease[k]	8	14.3%
Structural racism[l]	8	14.3%
Delay [m]	7	12.5%

[a] Each pregnancy-associated death may be associated with multiple contributing factors.

[b] For one preventable pregnancy-associated death with a cause of death of injury, the committee did not feel their expertise allowed them to make recommendations for how to prevent this death.

[c] Personnel were not appropriately skilled for the situation or did not exercise clinical judgement consistent with standards of care.

[d] Treating someone less or more favorably based on the group, class or category they belong to resulting from biases, prejudices, and stereotyping. It can manifest as differences in care, clinical communication, and shared decision-making.

[e] Care clinicians did not have access to individual's complete records or did not communicate their status sufficiently. Lack of continuity can be among prenatal, labor and delivery, and postpartum providers.

[f] The provider or patient did not receive adequate education or lacked knowledge or understanding regarding the significance of a health event or lacked understanding about the need for treatment/follow-up after evaluation for a health event.

[g] The patient had a documented diagnosis of a psychiatric disorder. This includes postpartum depression. If a formal diagnosis is not available, refer to your review committee subject matter expert (for example, psychiatrist, psychologist, licensed counselor) to determine whether the criteria for a diagnosis of substance use disorder or another mental health condition are met based on the available information.

[h] The facility lacked basic policies or infrastructure germane to the individual's needs.

[i] 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 their health status.

[j] Systemic barriers, for example, lack or loss of health care insurance or other financial duress, as opposed to noncompliance, impacted their ability to care for themself. Other barriers to accessing care: insurance non-eligibility, provider shortage in their geographical area, and lack of public transportation.

[k] Occurrence of one or more significant preexisting medical conditions.

[l] The system of power based on historical injustices and contemporary social factors that systematically disadvantage people of color and advantage white people through inequities in housing, education, employment, earnings, benefits, credit, media, health care, criminal justice, etc.

[m] The provider or patient was delayed in referring or accessing care, treatment, or follow-up care/action.