Maternal Mortality in Connecticut 2015-2019

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Objectives

Situate maternal mortality in Connecticut within national and global contexts.

Describe the efforts of Connecticut Maternal Mortality Review Committee.


Outline CT MMRC’s recommendations for action to prevent maternal deaths in CT.
Definitions

**CDC’s Division of Reproductive Health & CT MMRC Terminology**

Pregnancy-Associated Death: the death that occurs during pregnancy or within one year of the end of pregnancy, regardless of the cause.

Pregnancy-Related Death: the death that occurs during pregnancy or within one year of the end of pregnancy from any cause related to or aggravated by the pregnancy or its management.

**WHO’s ICD-10 & CDC’s NCHS Terminology**

Pregnancy-Related Death: the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the cause.

Maternal Death: the death of a woman while pregnant or within 42 days of termination of pregnancy, from any cause related to or aggravated by pregnancy or its management, but not from accidental or incidental causes.

**Pregnancy-Associated Mortality Ratio (PRMR):**

# of pregnancy-related deaths (during pregnancy or within one year after the end of pregnancy) per 100,000 live births.

**Maternal Mortality Ratio (MMR):**

# of maternal deaths (during pregnancy or within 42 days after the end of pregnancy) per 100,000 live births.
US maternal mortality is on the rise.

- Count:
  - 658 in 2018
  - 754 in 2019

- MMR*:
  - 17.4 in 2018
  - 20.1 in 2019

*maternal deaths per 100,000 live births.

Source: NCHS, 2021
National targets call for decisive action.

There are significant racial disparities in maternal mortality in the US.
Racial disparities are present at all levels of education.

PRMR*  
0 10 20 30 40 50  
Less than high school  College graduate or higher  
White women  Black women  
25.0 7.8 45.6 40.2

*Risk of pregnancy-related deaths per 100,000 live births.

Source: CDC PMSS, 2007-2016

Racial disparities increase with age.

PRMR*  
0 40 80 120 160 200  
Age Group: <20 20-24 25-29 30-34 35-39 >=40  
White  Hispanic  AI/AN  Black 
51.5 44.0 104.2 189.7

*Risk of pregnancy-related deaths per 100,000 live births.

Source: CDC PMSS, 2007-2016
**Historical and Legal Context in Connecticut**

In 2018, Connecticut General Assembly passed Public Act 18-150; An Act Establishing a Maternal Mortality Review Program within the Connecticut Department of Public Health (CT DPH).
- Confidentiality is protected under 19a-25

**Connecticut statute**

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**CT MMRC co-chairs:**
- Commissioner of CT DPH, or their designee – Donna Maselli RN, MPH
- Connecticut State Medical Society appointee—Audrey Merriam MD, MS

**CT legislation identifies MMRC representatives that may be included, and it allows co-chairs to add members that would benefit the committee**
CT MMRC legislative designations

1. CT State Medical Society (CSMS) OB-GYN
2. Dept of Public Health
3. ACOG OB-GYN
4. Licensed Nurse Midwife
5. Licensed Clinical Social Worker
6. Psychologist
7. Office of Chief Medical Examiner
8. CT Hospital Association member
9. UConn Health Disparities Institute
10. Community/Regional Facility for psychiatric disability or substance use
11. Psychiatrist
12. Community Health Worker

CT MMRC additional members

12. Labor & Delivery Doula
13. Internal Medicine physician
14. CT Coalition Against Domestic Violence
15. Consumer
16. Pediatrician
17. Emergency Department physician
18. Cardiologist
19. Neonatologist
20. Medicaid Advisory Council
21. Dept. Social Services
22. Dept. of Mental Health & Addiction Services (DMHAS)
23. Dept. Children & Families
24. OB-GYN Nurse Manager
25. Home visiting provider
26. Federally Qualified Health Center (FQHC)
27. Hospital Nurse Manager Women’s Services
Center for Disease Control & Prevention (CDC) funding

♦ In FY 2019 CDC made 24 awards, supporting 25 states, to fund agencies and organizations that coordinate and manage Maternal Mortality Review Committees, with a goal to:
  ▪ facilitate an understanding of the drivers of maternal mortality;
  ▪ determine what interventions will have the most effect; and
  ▪ inform the implementation of initiatives in the right places for families and communities who need them most.
♦ Standardized data collection among states.

Connecticut Maternal Mortality Review Committee Efforts
Reviews pregnancy-associated deaths of Connecticut residents, with a goal of answering the following questions:

- Was the death pregnancy-related?
- What was the cause of death?
- Was the death preventable?
- What were the critical contributing factors to the death?
- What are the recommendations and actions that address those contributing factors?
- What is the anticipated impact of those actions if implemented?

Death-to-review lag is shrinking.
CT MMRC met monthly in 2020-2021 to close the death-to-review lag.

CT MMRC adopted Utah standardized criteria in September 2020.

 Emblem

Utah criteria are used to determine pregnancy-relatedness for deaths due to mental health conditions, including substance use disorder.

Per Utah criteria, deaths are considered pregnancy-related if:

- there are pregnancy complications or traumatic events in pregnancy or postpartum leading to self-harm or increased drug use and subsequent death;
- there are chain of events initiated by pregnancy such as cessation or attempted taper of substance use leading to maternal destabilization, self-harm, and/or drug use and subsequent death; and
- there is aggravation of an unrelated condition (such as underlying depression, anxiety, or other psychiatric condition) by the physiologic effects of pregnancy leading to self-harm and/or drug use and subsequent death.
Use of Utah criteria likely increased the annual count of pregnancy-related deaths.

Starting with 2018 deaths, CT MMRC considered whether discrimination contributed to each person’s death.
Findings from CT MMRC’s Review of Deaths in 2015-2019

40% of pregnancy-associated deaths in 2015-2019 were pregnancy-related.

62 pregnancy-associated deaths

25 (40%) pregnancy-related

33 (53%) not pregnancy-related

4 undetermined
Each year in 2015-2019, there were:

8-18 pregnancy-associated deaths,

3-11 pregnancy-related deaths, and

~35,000 live births on average.

Connecticut’s PRMR in 2015-2019 was in line with the national PRMR in 2016.

PRMR is based on pregnancy-related deaths that occur during pregnancy or within one year after the end of pregnancy. At the national level, PRMR is calculated based on linked birth and death certificates, which are reviewed by medically trained epidemiologists.

*pregnancy-related deaths per 100,000 live births.
Persons of color comprised well over half of pregnancy-associated deaths.

Black persons were overrepresented in pregnancy-associated deaths.
Two-thirds of all persons had Medicaid for insurance.

- All pregnancy-associated deaths: 42 (68% Private, 15 (24%) Medicaid, 5 (8%) Unknown)
- Pregnancy-related deaths: 15 (60% Private, 10 (40%) Medicaid)

Few had a college degree or advanced education.

- All pregnancy-associated deaths: 8 (13% Bachelor's or higher)
- Pregnancy-related deaths: 5 (20% Bachelor's or higher)
Those with Medicaid for insurance were overrepresented.

Over half of pregnancy-related deaths were due to natural causes.

<table>
<thead>
<tr>
<th>All pregnancy-associated deaths</th>
<th>Pregnancy-related deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>natural</td>
<td>30 (48%)</td>
</tr>
<tr>
<td>accident</td>
<td>21 (34%)</td>
</tr>
<tr>
<td>suicide</td>
<td>6</td>
</tr>
<tr>
<td>homicide</td>
<td>4</td>
</tr>
<tr>
<td>could not be determined</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
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<td>homicide</td>
</tr>
<tr>
<td>could not be determined</td>
</tr>
</tbody>
</table>
Mental health conditions, including SUD, were leading causes of death.

<table>
<thead>
<tr>
<th>Cause</th>
<th>All Pregnancy-Associated Deaths</th>
<th>Pregnancy-Related Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance use disorder</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>Other medical disorder</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>Cardiovascular/stroke</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td>Mental health condition</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Unintentional injury</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Homicide</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Accidental overdose</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Unknown</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Causes of death by race/ethnicity

<table>
<thead>
<tr>
<th>Cause</th>
<th>All Pregnancy-Associated Deaths</th>
<th>Pregnancy-Related Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance use disorder</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Other medical disorder</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Cardiovascular/stroke</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Mental health condition</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Unintentional injury</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Homicide</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Accidental overdose</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

White: 55% 45%
Black & Latinx: 46% 54%
Timing of death by cause of death

- mental health conditions & overdoses
- medical disorders

<table>
<thead>
<tr>
<th>trimester of pregnancy</th>
<th>delivery</th>
<th>days after the end of pregnancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>1-42</td>
<td>85-126</td>
</tr>
<tr>
<td>2nd</td>
<td>43-84</td>
<td>127-168</td>
</tr>
<tr>
<td>3rd</td>
<td>85-126</td>
<td>169-210</td>
</tr>
<tr>
<td></td>
<td></td>
<td>211-252</td>
</tr>
<tr>
<td></td>
<td></td>
<td>253-294</td>
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<tr>
<td></td>
<td></td>
<td>295-336</td>
</tr>
<tr>
<td></td>
<td></td>
<td>337-365</td>
</tr>
</tbody>
</table>

December 7, 2021

Most pregnancy-related deaths were determined to be preventable.

- 62 pregnancy-associated deaths
  - 25 (40%) pregnancy-related
  - 33 (53%) not pregnancy-related
- 22 (88%) pregnancy-related preventable deaths
- 20 (61%) not pregnancy-related preventable deaths

December 7, 2021
Mental Health
Substance Use
Suicide
Homicide

SPECIAL FOCUS

December 7, 2021

Pregnancy-relatedness for select contributors to the death

Mental Health (n=16)

Substance Use (n=20)

Pregnancy-Related
n=10
62%

Pregnancy-Related
n=6
30%

December 7, 2021

CT MMRC | 50

CT MMRC | 51
CT MMRC determined as preventable:

- all deaths to which mental health contributed;
- all deaths to which substance use contributed;
- all suicides; and
- half (2/4) of homicides.

Mental health conditions contributed to the death.

Co-occurring mental health conditions were common.

- Anxiety: 8
- Depression: 6
- Bipolar disorder: 3
- Schizophrenia: 2
- ADD: 2
- PTSD: 1
Challenges related to mental health

- Discontinuing psychiatric medication due to pregnancy leading to instability
- Committing suicide as an outcome of depression (n=6/62)
- Exacerbating relational issues & unstable living conditions
- Increasing likelihood of being labeled “noncompliant”

Missed opportunities for mental health interventions

- Failure to adequately and consistently screen for mental health conditions
- Reliance on patient to identify need for, and self-engage in, treatment
- Inadequate mental health resources in hospitals and communities
- Lack of preparation and resources to treat mental health in medical settings
- Lack of involvement of family/important others to provide and coordinate support
Deaths in which mental health or substance use contributed

- mental health only contributed
  \( n=7 \)
- both contributed
  \( n=9 \)
- substance use disorder only contributed
  \( n=11 \)

Among deaths to which substance use contributed:

- 65% were due to an accidental overdose associated with an underlying Substance Use Disorder.
- 15% were due to complications associated with chronic substance use.
- Only one case was an accidental overdose.
Difficult lives of persons with substance use as a contributor to the death.

- Low SES: 15
- Intimate partner violence: 6
- Child protective services: 6
- Unemployment: 4
- Adverse childhood experiences: 3
- Hospitalization psychiatric disorders: 3
- Homelessness: 2
- Incarceration: 2
- Teen pregnancy: 2
- Sexual assault: 1
- Foster care: 1
- Unwanted pregnancy: 1

Substance use, treatment, and mental health history

- History of substance use: 17
- Treatment for substance use: 9
- Polysubstance use: 16
- One or more mental health diagnoses: 14
Missed opportunities for substance use interventions

- Failure to refer and/or secure placement in detox and/or SU treatment
- Inadequate consistently available community resources
- Delay and/or reliance on patient to “find their way” to treatment
- Inconsistent screening frequency and type
- Lack of involvement of family/important others to prevent v. mourn death

Homicide

- 3 out of 4 homicides were committed by an intimate partner (IPV)
- No warning signs & multiple negative screenings in two homicides
- “Red Flags” in one case e.g., trauma to abdomen, suspicious descriptions of injury causes. Negative Screenings
- No referrals for counseling, support or protection.
- Across all 62 cases 2015-2019, one referral made for IPV.
Suicide

- CT MMRC determined mental health contributed to all 6 suicides and all 6 were determined pregnancy-related.
- 5 out of 6 had history of depression; 1 history of anxiety; 3 had both anxiety and depression.
- Inadequate intervention and lack of mental health and substance abuse care were common across cases.

CT MMRC’s Recommendations
Released in October 2021
Process for arriving at CT MMRC official recommendations

♦ Identification of contributing factors and preventative interventions for each preventable pregnancy-related death
♦ Use of CDC’s guidance to specify the who, the what, and the when of each recommendation for action
♦ Qualitative analysis of contributing factors and case-specific recommendations
♦ CT MMRC initially discussed recommendations for 2015-2019 in April 2021
♦ CT MMRC finalized official recommendations in October 2021

Contextual, Multisystemic Framework

- Socio-cultural/Political/Economic Systems
  - No official CT MMRC recommendations to date
- National & State Policies, Resources, Standards Pertaining to Healthcare
  - Recommendations such as lobbying for changes in policies & funding at state and national levels
- Community Context
  - Recommendations such as advocating for community resources & care coordination
- Care Systems/Hospitals
  - Recommendations such as modifying standards of care
- Providers/Staff
  - Recommendations such as identifying workforce development needs
- Families/Primary Relationships
  - No official CT& MMRC recommendations to date
- Individual Patient
  - No official CT MMRC recommendations to date
- Health Outcomes
  - No official CT MMRC recommendations to date
Thank you!