New York City Maternal Mortality and Morbidity: Moving Data to Equitable and Sustainable Action

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I have no conflicts of interest related to this subject

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Presentation Overview

- Maternal mortality (MM) and severe maternal morbidity & (SMM) surveillance in NYC
  - Merck for Mothers Projects
    - SMM Surveillance 2008-2012
    - *Reducing Inequities and disparities in Preventable SMM, 2016*

- NYC Initiatives to help create equity and improve outcomes
  - Maternal Mortality and Morbidity Steering and Review Committees
  - Community Engagement Group
  - Birth Equity Initiative
  - SRJ Birth Justice Initiative
  - Maternal and Infant Health Collaborative
Since 2001, NYC has conducted enhanced surveillance of pregnancy-associated mortality or maternal mortality.

**Pregnancy-associated deaths** (death while pregnant or within 1 year of termination from any cause) identified using multiple sources:

- Death certificate
- Vital records linkage
- Hospital discharge data
- Autopsy reports
- Obstetrician abstractors
- 2011-2015 report pending
Pregnancy-Related Mortality

Pregnancy-Related Mortality Ratios, NYC vs. U.S., 2001 to 2010

Women age 40 years or > had the highest mortality ratio 62.4 per 100,000 live births and the lowest mortality ratio was among women age 20 to 24 at 11.9 deaths per 100,000 live births.

The Bronx had the highest ratio of pregnancy-related deaths 26.0 per live births followed by Brooklyn (25.7), Queens (24.6), Staten Island (17.4) and Manhattan (13.9).

The PRMRs for U.S.-born and foreign-born women were similar at 21.5 per live births and 22.2, respectively.

1.73% of NYC women died in the Emergency Department and 70.5% died during their hospitalization.

18.7% of women died before delivery, 33.1% during the first 24 hours and 14.4% during the first week, representing the majority of maternal deaths.

Pregnancy-Related Mortality in NYC, by Race

## Pregnancy-Related Mortality Causes of Death, 2006-2010

<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemorrhage</td>
<td>38</td>
<td>27.3</td>
</tr>
<tr>
<td>Embolism</td>
<td>26</td>
<td>18.7</td>
</tr>
<tr>
<td>Pregnancy-induced hypertension</td>
<td>19</td>
<td>13.7</td>
</tr>
<tr>
<td>Cardiovascular problems</td>
<td>18</td>
<td>12.9</td>
</tr>
<tr>
<td>Infection</td>
<td>10</td>
<td>7.2</td>
</tr>
<tr>
<td>Cancer</td>
<td>5</td>
<td>3.6</td>
</tr>
<tr>
<td>Injury</td>
<td>3</td>
<td>2.2</td>
</tr>
<tr>
<td>Anesthesia complications</td>
<td>3</td>
<td>2.2</td>
</tr>
<tr>
<td>Other</td>
<td>16</td>
<td>11.5</td>
</tr>
<tr>
<td>Unknown</td>
<td>1</td>
<td>0.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>139</td>
<td>100</td>
</tr>
</tbody>
</table>

Pre-Existing Conditions Among Top Five Causes of Pregnancy-Related Death, NYC, 2006-2010

<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>≥1 Pre-Existing Condition</th>
<th>Obesity</th>
<th>Hypertension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>59.0</td>
<td>30.0</td>
<td>15.8</td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>50.0</td>
<td>23.7</td>
<td>2.6</td>
</tr>
<tr>
<td>Embolism</td>
<td>53.9</td>
<td>46.2</td>
<td>15.4</td>
</tr>
<tr>
<td>Pregnancy-induced hypertension</td>
<td>57.9</td>
<td>26.3</td>
<td>36.8</td>
</tr>
<tr>
<td>Cardiovascular problems</td>
<td>94.4</td>
<td>55.6</td>
<td>38.9</td>
</tr>
<tr>
<td>Infection</td>
<td>50.0</td>
<td>10.0</td>
<td>20.0</td>
</tr>
</tbody>
</table>
Severe Maternal Morbidity (SMM)

www.cdc.gov
Two-year grant from Merck for Mothers

Project Objectives:

1. Define and assess the occurrence of SMM in NYC;
2. Disseminate a final report and other communications to stakeholders to inform program and policy initiatives;
3. Estimate the direct medical costs of SMM hospitalizations
Severe Maternal Morbidity (SMM) Surveillance

- **Data Sources**
  - SMM defined by CDC algorithm
  - First citywide SMM surveillance system
    - Live deliveries from 41 NYC hospitals
    - ~125,000 births per year, diverse
  - Hospital discharge data matched with birth certificates
  - NYC SMM surveillance report for 2008-2012 released in March 2016
NYC SMM Surveillance Findings, 2008-2012

- SMM affects over 2,500 women each year with highest rates in Brooklyn and the Bronx
- SMM rates were highest among women less than 20 or over 40 years of age
- Women with any chronic condition were 3x as likely to have SMM
- Women who delivered at Level 3 and 4 hospitals had highest SMM rates
- SMM deliveries cost exceeded 85 million or an average of $17 million/year
Severe Maternal Morbidity by Race, 2008-2010*

<table>
<thead>
<tr>
<th>Race/ethnicity</th>
<th>Rate per 10,000 deliveries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Puerto Rican</td>
<td>272.0</td>
</tr>
<tr>
<td>Other Latina</td>
<td>248.5</td>
</tr>
<tr>
<td>Asian and Pacific Islander</td>
<td>162.9</td>
</tr>
<tr>
<td>White non-Latina</td>
<td>126.7</td>
</tr>
<tr>
<td>Black non-Latina</td>
<td>386.9</td>
</tr>
</tbody>
</table>

*Excluding other non-Latina women and non-Latina women with two or more races (<2%)
Severe Maternal Morbidity by Race, 2008-2012

![Bar chart showing rates of severe maternal morbidity by race and educational attainment from 2008 to 2012.](chart.png)

- **Less than high school**:
  - Puerto Rican: 325
  - Other Latina: 288
  - Asian and Pacific Islander: 153
  - White non-Latina: 138
  - Black non-Latina: 127

- **High school graduate**:
  - Puerto Rican: 427
  - Other Latina: 252
  - Asian and Pacific Islander: 172
  - White non-Latina: 114

- **Some college**:
  - Puerto Rican: 404
  - Other Latina: 245
  - Asian and Pacific Islander: 193
  - White non-Latina: 135

- **College graduate or higher**:
  - Puerto Rican: 361
  - Other Latina: 235
  - Asian and Pacific Islander: 153
  - White non-Latina: 153
  - Black non-Latina: 127

*Note: The red circle highlights the rate for Black non-Latina with the highest rate of 333.*
SMM Rates Among Women Experiencing SMM, 2008-2012

<table>
<thead>
<tr>
<th>Chronic condition</th>
<th>Rate per 10,000 deliveries</th>
</tr>
</thead>
<tbody>
<tr>
<td>No chronic disease</td>
<td>217.3</td>
</tr>
<tr>
<td>Diabetes only</td>
<td>509.2</td>
</tr>
<tr>
<td>Chronic heart disease only</td>
<td>560.3</td>
</tr>
<tr>
<td>Hypertension only</td>
<td>627.6</td>
</tr>
<tr>
<td>Any chronic disease*</td>
<td>628.2</td>
</tr>
</tbody>
</table>
NYC Initiatives to help create equity and improve MM/SMM Outcomes

• Birth Equity Initiative
• Maternal Mortality and Morbidity Steering and Review Committees
• Severe Maternal Morbidity Project
• SRJ Community Engagement Group
• SRJ Birth Justice Initiative
• Maternal and Infant Health Collaborative
The New York City Birth Equity Initiative

The NYC Health Department’s comprehensive approach to address the root causes of persistent, unacceptable and preventable racial/ethnic disparities in infant mortality and severe maternal morbidity
NYC Birth Equity Initiative: A “Targeted Universalism” Approach

• Address social determinants of health, structural racism and gender oppression
• Prioritize key drivers of disparities in maternal outcomes
  – Women’s health before and between pregnancies
  – Toxic stress and trauma
• Partnerships with hospitals and health care providers to promote quality and respectful care
• A focus on neighborhood-level work in priority neighborhoods
• Surveillance and research to inform program work
Maternal Mortality and Morbidity Committees

<table>
<thead>
<tr>
<th>Steering Committee (M3SC)</th>
<th>Review Committee (M3RC)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A Multidisciplinary Group</strong></td>
<td><strong>Also multidisciplinary, meets quarterly</strong></td>
</tr>
<tr>
<td>– Global and national experts committed to the reduction of maternal mortality and morbidity</td>
<td><strong>Role/responsibilities</strong></td>
</tr>
<tr>
<td>– Local organizations: ACOG, AAP, NYS DOH, NYC Health + Hospitals, OCME, Greater NY Hospital Association, community organizations, law enforcement</td>
<td>– Review de-identified individual case narratives on all NYC maternal deaths</td>
</tr>
<tr>
<td><strong>Advise and support DOHMH and its partners</strong></td>
<td>– Decide preventability</td>
</tr>
<tr>
<td>– Review detailed findings of the M3RC</td>
<td>– Identify clinical factors and social determinants that contributed to the death</td>
</tr>
<tr>
<td>– Discuss policy and program recommendations proposed by the MMRC</td>
<td>– Discuss aggregate SMM review findings</td>
</tr>
<tr>
<td>– Provide guidance on future MMMRC directions and priorities</td>
<td>– Develop recommendations for actions to prevent future deaths and SMM</td>
</tr>
<tr>
<td>– *Each member is equally important</td>
<td>– Advocate for actionable change within sphere of influence</td>
</tr>
</tbody>
</table>
Community members are Key

- Add community voice to the discussion of maternal deaths and morbidity for all NYC women
- Ensure the committees use an equity lens in the determination of policy and program development
- Serve as a catalyst for the dissemination of our findings and recommendations as well as implementation of new strategies to improve maternal health
- Contribute to the discussion of the future direction of research
Merck for Mothers Grant, 2017-2019

• Merck for Mothers grant to reduce SMM in NYC
  – Promote health equity and eliminate racial/ethnic disparities in preventable MM and SMM
  – Facility initiative in 3-4 hospitals to conduct SMM case reviews and integrate into routine hospital practice
  – Engage, educate and support communities to address quality of care, chronic disease and social conditions that increase SMM risk
  – Present aggregate de-identified results at M3RC meetings and at other gatherings
Sexual and Reproductive Justice
Community Engagement Group (SRJ CEG)

• Formed July 2015: 50+ community leaders, activists and CBOs meet monthly to jointly plan campaigns to promote SRJ

• SRJ exists when all people have the power and resources to make healthy decisions about their bodies, sexuality and reproduction.

• Search “SRJ” at nyc.gov

Source: SRJ Video
SRJ CEG Birth Justice Campaign

• 3 Year Campaign: Sept 2017 - June 2019

• Engage Birth Justice Defenders (community members), Provider Champions to advocate for respectful care at birth

• Educate on best practices for respectful care at birth and increase application within health care institutions

• Change institutional policies and practices to support the use of community-led initiatives and accountability and other aspects of the SRJ framework
MIH Community Collaborative, 2016

• A 3 year community-based organization program working with families in the most high risk neighborhoods in NYC
• 22 Agencies educating families in 5 areas
  – Women’s health
  – Family planning
  – Toxic stress and trauma
  – Breastfeeding and safe sleep
• Over 18,000 encounters in fiscal year 1
  – Workshops, focus groups, support groups, individual and group counseling and other activities
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