Mental illness as an underlying factor in maternal mortality: Analysis in New York State
Background and importance

- Pregnancy and the postpartum period serve as stressful time periods that can exacerbate or trigger new mental illness in women.

- World Health Organization projects that by 2020, depressive disorders will be the top contributor to global burden of disease among women.

- 2015, British health system data identified mental illness occurring in 25% of maternal deaths.

- CDC report 2017: Mental health conditions are a Leading Cause of Pregnancy-Related deaths (8.9%): Colorado, Delaware, Georgia, Ohio.
Perinatal mood and anxiety disorders

First onset and relapse

Major depression (10-15%): Depressed mood or a loss of interest or pleasure in daily activities for more than two weeks; 5/9 specific symptoms

“Minor depression” (25%): 2/9 major depression symptoms

Anxiety (20%): Persistent excessive fear, anxiety, or avoidance, 6 months, adjusted to 1 month for pregnant/postpartum women

Psychosis (1-2 women per 1,000 pregnancies): 1) psychotic disorder; 2) schizoaffective disorder (mood disorder, with persistent psychotic disorder); 3) mood disorder with psychotic episode (bipolar disorder)
Mental illness and manners of death

Unintentional self-injury: accidents

- Car crashes, falls, drowning, etc. associated with mental illness (also repeat injury)
  - Unintentional substance overdose

Intentional harm (by other): homicide

- Victims of intimate partner violence are 3-5 times more likely to suffer from mental illness compared to general pop.

Mental illness and chronic illness (obesity, hypertension, diabetes)

- Mental illness is associated with not seeking appropriate care
- Leptin associated with weight regulation is also associated with depression and anxiety among women

Intentional self-injury: suicide

- 70-fold increase in risk of suicide among women with postpartum psychosis in the first year postpartum
Associated risk factors

Chronic stressors: racism, poverty
Lack of social support
Childcare stress
Sleep deprivation
Homelessness
Exposure to violence and trauma
  ◦ Intimate partner violence
Substance use disorder
Exploratory analysis of the impacts of mental illness on Maternal Mortality Review in New York State, 2012-2013
Research questions

To what extent is mental illness captured through the NYS Maternal Mortality Review review process?

What factors such as sociodemographic characteristics, social risk factors, etc. are associated with mortality cases with evidence of prior mental illness?

Methodology

NYS Maternal Mortality Review Abstract Form: medical records and hospital discharge data available from preconception, prenatal, delivery, and the postpartum periods for 156 mortality cases from the 2012-2013 maternal mortality cohort

Electronic discharge data from acute care hospitals searched for history of diagnosis of mental illness within six years of death.
### Data source where mental illness was identified

<table>
<thead>
<tr>
<th>Data source</th>
<th>Count (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal mortality case review only</td>
<td>15 (34.1%)</td>
</tr>
<tr>
<td>Electronic hospital discharge records only</td>
<td>14 (31.8%)</td>
</tr>
<tr>
<td>Both</td>
<td>15 (34.1%)</td>
</tr>
</tbody>
</table>
Description of subgroup with mental illness

- 70% White
- 44% non-Hispanic
- 66% single
- 36% Medicaid
Percent mental illness by type within subgroup with mental illness (n=44)

<table>
<thead>
<tr>
<th>Mental illness type</th>
<th>Count (Percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>24 (54.6%)</td>
</tr>
<tr>
<td>Anxiety</td>
<td>14 (31.8%)</td>
</tr>
<tr>
<td>Bipolar disorder</td>
<td>11 (25%)</td>
</tr>
<tr>
<td>Other</td>
<td>3 (6.8%)</td>
</tr>
<tr>
<td><strong>Comorbidities</strong></td>
<td></td>
</tr>
<tr>
<td>Depression &amp; Anxiety</td>
<td>9 (20.5%)</td>
</tr>
<tr>
<td>Depression &amp; Bipolar disorder</td>
<td>7 (15.9%)</td>
</tr>
<tr>
<td>Depression &amp; Anxiety &amp; Bipolar Disorder</td>
<td>3 (6.8%)</td>
</tr>
</tbody>
</table>
Risk factors by entire mortality cohort vs. subgroup with mental illness

- Suicidal ideation
- Mother abused as a child
- Crime/legal problems
- Drug use during pregnancy
- Drug use prior to pregnancy
- Intimate partner violence

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Entire Mortality Cohort (n=156)</th>
<th>Subgroup with Mental Illness (n=44)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suicidal ideation</td>
<td>10.26%</td>
<td>4.49%</td>
</tr>
<tr>
<td>Mother abused as a child</td>
<td>15.38%</td>
<td>6.82%</td>
</tr>
<tr>
<td>Crime/legal problems</td>
<td>22.73%</td>
<td>13.64%</td>
</tr>
<tr>
<td>Drug use during pregnancy</td>
<td>31.82%</td>
<td>13.46%</td>
</tr>
<tr>
<td>Drug use prior to pregnancy</td>
<td>30%</td>
<td>15.38%</td>
</tr>
<tr>
<td>Intimate partner violence</td>
<td>10.26%</td>
<td>22.73%</td>
</tr>
</tbody>
</table>
Manner of death by entire mortality cohort vs. subgroup with mental illness

- **Other/Unknown**: 18.18% (Subgroup) vs. 21.16% (Entire cohort)
- **Suicide**: 7.69% (Subgroup) vs. 11.36% (Entire cohort)
- **Homicide**: 9.09% (Subgroup) vs. 5.13% (Entire cohort)
- **Substance overdose**: 22.73% (Subgroup) vs. 28.64% (Entire cohort)
- **Natural/no injury**: 10.90% (Subgroup) vs. 55.13% (Entire cohort)
Conclusions

• Analysis of electronic hospital discharge records assists in the identification of past history of mental illness

• Compared to the entire mortality cohort, the subgroup with identified mental illness, has a higher prevalence of identified:
  • Intimate partner violence
  • Drug use
  • Crime/legal problems
  • Childhood abuse
  • Suicidal ideation

• Compared to the entire mortality cohort, the subgroup with identified mental illness died more frequently from substance overdose, homicide, and suicide.
Acknowledgements

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Questions and comments

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