Pregnancy-related mortality: definitions and trends

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Key definitions

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

**Pregnancy-associated mortality:** Death of a woman while pregnant or within 1 year of the end of pregnancy irrespective of the cause of death.

**Pregnancy-related mortality:** the death of a woman during pregnancy or within one year of the end of pregnancy from a pregnancy complication, a chain of events initiated by pregnancy, or the aggravation of an unrelated condition by the physiologic effects of pregnancy.

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

Severe maternal morbidity (SMM) includes unexpected outcomes of labor and delivery that result in significant short- or long-term consequences to a woman’s health.

CDC currently includes the following 21 indicators:

1. Acute myocardial infarction
2. Aneurysm
3. Acute renal failure
4. Adult respiratory distress syndrome
5. Amniotic fluid embolism
6. Cardiac arrest/ventricular fibrillation
7. Conversion of cardiac rhythm
8. Disseminated intravascular coagulation
9. Eclampsia
10. Heart failure/arrest during surgery or procedure
11. Puerperal cerebrovascular disorders
12. Pulmonary edema / Acute heart failure
13. Severe anesthesia complications
14. Sepsis
15. Shock
16. Sickle cell disease with crisis
17. Air and thrombotic embolism
18. Blood products transfusion
19. Hysterectomy
20. Temporary tracheostomy*
21. Ventilation

*Per 100,000 live births

Pregnancy-related mortality by race/ethnicity and year

Pregnancy-related mortality by race/ethnicity and age

Persistent and increasing inequities

Maternal mortality rates in the US, 2018-2020


Statistically significant increase in rate from previous year ($p < 0.05$).

Figure 1: Number and Rate of Maternal Deaths by Race and Ethnicity, 2018 through 2021

Number of deaths

<table>
<thead>
<tr>
<th>Year</th>
<th>White</th>
<th>Black</th>
<th>Hispanic</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>105</td>
<td>206</td>
<td>291</td>
</tr>
<tr>
<td>2019</td>
<td>112</td>
<td>343</td>
<td>352</td>
</tr>
<tr>
<td>2020</td>
<td>158</td>
<td>293</td>
<td>491</td>
</tr>
<tr>
<td>2021</td>
<td>356</td>
<td>491</td>
<td>356</td>
</tr>
</tbody>
</table>

Deaths per 100,000 live births

<table>
<thead>
<tr>
<th>Year</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>14.9</td>
<td>11.8</td>
<td>17.9</td>
<td>19.1</td>
</tr>
<tr>
<td>Black</td>
<td>37.3</td>
<td>44.0</td>
<td>55.3</td>
<td>68.9</td>
</tr>
<tr>
<td>Hispanic</td>
<td>12.6</td>
<td>18.2</td>
<td>26.1</td>
<td>27.5</td>
</tr>
</tbody>
</table>

Source: GAO analysis of Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS) data. | GAO-23-105871

COVID-19 increased maternal death

- 25% of maternal deaths that occurred in 2020 and 2021 combined were COVID-19-related.
- The rate of maternal deaths in 2020 and 2021 that were COVID-19 related among Black and Hispanic women was 13.2 and 8.9 per 100,000 live births, respectively, while the rate among White women was 4.5

Pregnancy-related mortality rate by state, 2018-2020

SOURCE: author analysis of NVSS data. All deaths from 2018-2020
Sources of data on maternal death

• Primary source is National Vital Statistics System (NVSS). These are death certificates.

• CDC resumed annual reporting of maternal mortality statistics in 2018 based on data from the NVSS.
  • This was the first full year that all 50 states and DC had implemented the revised version of the death certificate that includes a “pregnancy checkbox”:

<table>
<thead>
<tr>
<th>36. IF FEMALE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Not pregnant within past year</td>
</tr>
<tr>
<td>□ Pregnant at time of death</td>
</tr>
<tr>
<td>□ Not pregnant, but pregnant within 42 days of death</td>
</tr>
<tr>
<td>□ Not pregnant, but pregnant 43 days to 1 year before death</td>
</tr>
<tr>
<td>□ Unknown if pregnant within the past year</td>
</tr>
</tbody>
</table>
Sources of data on maternal death

- Data quality evaluations revealed errors in reporting maternal deaths based on the pregnancy checkbox.

- CDC developed a new coding scheme to mitigate potential errors. For more detail, see: Maternal Mortality in the United States: Changes in Coding, Publication, and Data Release, 2018
Sources of data on maternal death

- Pregnancy Mortality Surveillance System (PMSS)
  - More rigorous identification of maternal deaths involving data linkages, media searches, and reporting from public health agencies, and health care providers.
  - Medical epidemiologists perform an in-depth review of vital records and other data as available (e.g., medical records, autopsy reports).

- State and Local maternal mortality review committees
  - Comprehensive reviews of deaths using information beyond what is available in vital records, including medical and non-medical data sources.
  - Most detailed, complete data on maternal mortality.
  - For example from Louisiana: https://ldh.la.gov/page/PAMR
  - What does your state’s committee look like: https://www.guttmacher.org/state-policy/explore/maternal-mortality-review-committees
Thank you!

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