

MATERNAL MORTALITY RATE

1. Definition:

MATERNAL MORTALITY RATE is the number of resident maternal deaths within 42 days of pregnancy termination due to complications of pregnancy, childbirth, and the puerperium in a specified geographic area (country, state, county, etc.) divided by total resident live births for the same geographic area for a specified time period, usually a calendar year, multiplied by 100,000.

2. Calculation:

(Number of resident maternal deaths/Number of resident live births) x 100,000

$$\frac{\text{Number of Resident Maternal Deaths}}{\text{Number of Resident Live Births}} \times 100,000$$

http://www.cdc.gov/nchs/data/series/sr_03/sr03_033.pdf

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3. Examples:

84 maternal deaths in 2008 among state residents

130,000 live births in 2008 to state residents

$84/130,000 \times 100,000 = \underline{64.6}$ maternal deaths per 100,000 live births in 2008 among state residents

4. Technical Notes:

- A **maternal mortality rate** is considered a primary and important indicator of a geographic area's (country, state, county) overall health status or quality of life.
- A maternal death is defined by the World Health Organization as:
The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.
- Under the International Classification of Diseases Revision 10 the cause of death codes that are pregnancy associated include A34, O00-O95 and O98-O99.
- There are considerable concerns about the quality and consistency of reporting across the states relative to maternal mortality, with considerable variation in rates across states in evidence. Some of these differences have been associated with underreporting of maternal mortality particularly when based upon maternal mortality identified solely through death certificates.
- Maternal mortality data may vary because the data may be augmented by sources other than death certificates including maternal mortality surveillance reports, the findings of maternal mortality review committees within state health departments that routinely review suspected maternal deaths and/or by routinely linking deaths among women of child bearing age to live birth and fetal death files.
- A revised death certificate, issued as the model certificate in 2003, includes a new item on pregnancy status for deceased females with the intent to improve the completeness and comparability of maternal mortality data nationwide. This revision has led to

increases in the numbers of maternal deaths being identified, beginning in 2004, as states adopt the revised death certificate.

- The maternal mortality rate is sometimes referred to as a **maternal mortality ratio** as the rate is not calculated using an accurate count of all pregnancies that can result in a maternal death, with stillbirths not included and infants in multiple birth sets over represented in live birth figures.
- Annual numbers of maternal deaths may be small (<10 or 20) which would result in a maternal mortality rate considered to be too unstable or unreliable for analysis. Adding additional years (three or five-year average annual rates) and/or expanding the area to be studied should result in a larger number of deaths and more reliable rates for analysis.
- Maternal deaths more than 42 days but less than one year after termination of the pregnancy are termed late maternal deaths.
- Deaths from any cause during pregnancy or within one calendar year of delivery or pregnancy termination, regardless of the duration or anatomical site of the pregnancy, are termed **pregnancy-associated deaths**. Pregnancy-associated deaths include not only deaths commonly associated with pregnancy such as hemorrhage, pregnancy-induced hypertension, and embolism—which are captured in the WHO definition—but also deaths not traditionally considered to be related to pregnancy such as accidents, homicide, and suicide.