VIEWPOINT

Measuring US Maternal Mortality

Eugene Declercq, PhD
Boston University School of Public Health, Boston, Massachusetts.

Marie Thoma, PhD
University of Maryland School of Public Health, College Park, Maryland.

Viewpoint

Multimedia

The annual publication of the US maternal mortality rate leads to extensive, often alarmed, commentary from politicians, public health officials, and women's health advocates. The official 2021 rate from the National Vital Statistics System (NVSS) was 32.9 maternal deaths per 100 000 births,[1] which is the highest rate since 1964. The US rate, even accounting for COVID-19–related cases,[2] remains higher than any other high-income country.

There are currently 3 different government data sources on US maternal mortality: the NVSS, which provides official reports used for international comparisons (includes deaths related to pregnancy that occur during pregnancy and up to 42 days postpartum); the Centers for Disease Control and Prevention's Pregnancy Related Mortality Surveillance System (PMSS), which reports the pregnancy-related mortality rate (pregnancy-related deaths that occur during pregnancy and up to 1 year postpartum); and state Maternal Mortality Review Committees (MMRCs), which report either or both of these rates for individual states, as well as a third category of pregnancy-associated deaths (deaths of pregnant/birthing people whether related to pregnancy or not). All 3 measures rely on state vital statistics systems to provide the initial data, which are then refined into mortality estimates using different approaches. These different sources typically yield inconsistent estimates of the magnitude of, and trends in, maternal mortality, with the NVSS system reporting a core national public health measure more than 50% higher than the PMSS. The NVSS system does have the considerable advantage of timeliness, having already produced a 2021 national estimate. In contrast, the most recent PMSS rate is for 2019, and most state MMRCs have not published rates past 2017.

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It is challenging to identify deaths in those who were pregnant or recently pregnant and then make a judgment as to whether the pregnancy caused or contributed to the death.[3] The World Health Organization has offered guidance on improving identification of pregnancy-related deaths, including adding a pregnancy checkbox to death certificates asking certifiers to identify whether the individual had been pregnant at the time of death or the death occurred within 42 days or 1 year of a birth.[4] The US added the checkbox in a 2003 revision of the standard death certificate and all states adopted the pregnancy checkbox by 2018, although California opted to exclude the 42-day cutoff.[5] Although the checkbox has improved identification of deaths during pregnancy, NVSS research identified numerous false-positive responses associated with the pregnancy checkbox, and steps have been taken to minimize this problem.[5]

The **Table** displays comparisons of the different maternal mortality and pregnancy-related mortality rates starting in 2018, when the NVSS began reporting an official maternal mortality rate again after an 11-year hiatus.[5] For example, in 2019, the official NVSS maternal mortality rate (only including deaths during pregnancy and up to 42 days postpartum) was 20.1 per 100 000 births, which is 63.4% higher than a PMSS estimated rate of 12.3 using the same definition. Similar problems arise in the more complex comparison of NVSS data to rates developed by state MMRCs. Only states averaging more than 50 000 births a year with an MMRC-issued report of rates between 2018 to 2020 are included in the Table, and estimates from multiple years are combined whenever possible. Unfortunately, although most states have MMRCs, only a handful had published reports documenting rates between 2018 and 2020. With 1 exception, the NVSS data produced higher rates, ranging from 11% higher than Missouri's MMRC to 107% higher than the Indiana MMRC's published rate. All of these processes begin with a comparable, reliably reported denominator—births. Given the different processes used in the 3 measurements, one wouldn't expect exactly the same results from each system; however, the scale of these differences is worrisome. Differences likely arise from distinctions in classifying specific deaths as pregnancy-related or not.

Although maternal mortality estimates differ, the US is in a unique position to refine these processes. We can compare and analyze alternative approaches for ascertaining pregnancy-related deaths. The challenge concerns how some deaths are classified as pregnancy-related or not in the 3 sources. Because they all begin with the same pregnancy-associated deaths (eg, a 31-year-old individual died 3 months postpartum in a given state on a given date), comparisons and decisions between the different systems regarding the classification of the relatedness to pregnancy could be identified. This would require collaboration from officials across the different data systems to meet and discuss these processes, compare decision guidelines, and determine how their processes may lead to different decisions given the strengths, limitations, and constraints of each system. These classifications can be complex, and

Corresponding Author: Eugene Declercq, PhD, Community Health Sciences CT 430, Boston University School of Public Health, 801 Massachusetts Ave, Boston, MA 02118 (declercq@bu.edu).

Table. US Maternal Mortality in Different Measurement Systems

Outcome	US national comparisons		
	National Vital Statistics System (NVSS)	CDC's Pregnancy Related Mortality Surveillance System (PMSS)	Difference in NVSS vs PMSS rate, % higher
Maternal mortality (pregnancy-related deaths during pregnancy and up to 42 d postpartum)			
2018	17.4	12.1[a]	43.8
2019	20.1	12.3[a]	63.4
Pregnancy-related mortality (pregnancy-related deaths during pregnancy and up to 365 d postpartum)			
2018	24.7[b]	17.3	42.8
2019	28.7[b]	17.6	63.1
State comparisons of maternal deaths through 1 y postpartum[c]	National Vital Statistics System	State maternal mortality review committees[d]	
Florida (2018-2020)	27.8	18.9	47.0
Georgia (2018-2020)	45.9	30.1	52.5
Indiana (2018-2020)	36.9	17.8	107.4
Louisiana (2018-2019)	39.6	24.5	61.6
Maryland (2018)	23.9	25.3	−5.5
Missouri (2018-2019)	27.5	24.8	10.9
New York (2018)	28.7	18.2	57.7
Tennessee (2018-2020)	44.6	37.9	17.7

[a] Based on the reported pregnancy related rate limited to 42 days postpartum. Value was adjusted based on a Centers for Disease Control and Prevention (CDC) report estimating 70% of maternal deaths occurring during pregnancy and up to 42 days postpartum.

[b] Includes additional cases with O96 code, which adds death from any obstetric cause occurring more than 42 days but less than 1 year after delivery.

[c] PMSS state rates are not presented for comparison because the CDC cannot, based on contracts with the states to supply their data to the CDC, publish specific state rates.

[d] Rates drawn from state MMRC reports from states averaging at least 50 000 births annually and which published reports that included data on the years 2018, 2019, or 2020. To stabilize estimates, multiple years were combined when available.

honest differences in judgment will emerge. However, through open collaboration, patterns can be identified that can lead to a refinement of processes for making the data systems appropriately consistent nationally and across states and ensure greater clarity on circumstances in which they might differ.

Refining the measurement of maternal mortality will not transform the US into a global leader in maternal mortality or eliminate racial disparities. The US fares poorly under both national systems, and racial disparities reported in each system are unacceptably high. However, accurate and timely measurement of maternal mortality can dramatically shift policy makers' understanding of the problem. When the PMSS reported rates by timing relative to pregnancy,[6] documenting that half of all maternal deaths occurred postpartum changed those tragedies from hospital-based clinical problems to public health and community-based problems. This provided an evidence base for advocates seeking to extend expanded postpartum Medicaid coverage of new mothers from 60 days to 1 year.[7]

Those involved in this process from different agencies are clearly committed to improving pregnancy-related health outcomes. If the US is to make future improvements in reducing overall maternal mortality as well as eliminating major disparities in maternal deaths, the agencies responsible for documenting these rates need to collaborate to ensure there is a transparent process for providing more accurate, reliable, and timely maternal mortality estimates.

ARTICLE INFORMATION

Published Online: October 13, 2023. doi:10.1001/jama.2023.19945

Conflict of Interest Disclosures: None reported.

Additional Contributions: The authors wish to thank Juliana Stonebeck, BA, and Nicole Amodio, MPH, neither of whom were compensated, for their assistance on this article.

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