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Making vital statistics count: Preventing U.S. Maternal Deaths Requires Better Data

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The death of a mother during pregnancy, childbirth or postpartum is one of the greatest tragedies that can occur within a family, with wide-ranging consequences for the index child, other family members and the larger society. Accurate identification and investigation of maternal deaths is critical to the development of effective prevention programs. Yet, the United States has not published an “official” maternal mortality rate since 2007, and current data systems are unable to supply the accurate and timely information needed to prevent these deaths.

Instead of a single system to measure maternal mortality in the U.S., there are currently three different systems in use and while they could potentially complement one another, they currently do not. Each is briefly described below.

The **National Vital Statistics System** (NVSS) is the official source of maternal mortality data for the United States, used for international and subnational comparisons. It is based on information from death certificates filed in each state that are subsequently compiled into national data. Physicians, medical examiners, and coroners are responsible for completing the medical portion of the death certificate. To improve the reporting of maternal deaths, a question was added to the 2003 revision of the U.S. standard death certificate to ask if the woman was pregnant or post-partum at the time of death. However, extended delays in states adopting the pregnancy checkbox created a situation where, by 2007, half the states were using the standard question and half were not. This likely contributed to the U.S. government’s decision to stop reporting a national maternal mortality rate since the adoption of the standard pregnancy question almost doubled the number of cases identified. By 2016, all but two states had adopted the standard pregnancy question, however, recent reports have identified substantial errors in reporting of pregnancy status on death certificates, leading to substantial overreporting of maternal deaths in some areas (1–3)

The **Pregnancy Mortality Surveillance System** is based on deidentified copies of death certificates for women 12–55 years of age who died during or within 1 year of pregnancy.

These certificates are supplemented by linkages to birth or fetal death certificates, when available, computerized searches of Lexis Nexis, reports by public health agencies, and other sources (4). The records are reviewed by specially trained clinicians to determine whether or not a death was pregnancy related, and this data system reports pregnancy-related mortality rates (deaths up to 1 year after birth), rather than standard maternal mortality rates. This data system provides more detailed information than that available through the NVSS; however, unlike the NVSS, the data are held confidentially by CDC, are not accessible to researchers and state and local estimates are not available (4).

Maternal mortality review committees also play a critical role in the prevention of maternal deaths, and such committees now exist in most states. Maternal mortality review committees start with lists of probable maternal deaths from the NVSS, and then investigate these deaths in more detail than is possible with other data systems. Their purpose is to assess the causes, contributing factors, and preventability of maternal deaths; recommend actions to be implemented to prevent these deaths; and to monitor the progress of these actions (1). There is also a recent effort to merge data from state committees into a national system through the Maternal Mortality Review Information Application (1).

Notably, each of these systems relies heavily on data from the NVSS. In all cases, the NVSS is the starting point for case ascertainment and more detailed review.

A recent report authored by members of the Texas Maternal Mortality and Morbidity Task Force (Texas' maternal mortality review committee) further investigated maternal deaths reported by the Texas vital statistics system to determine how many were "true" maternal deaths, vs. errors (5). They found that one-half (50.3%) of maternal deaths reported on Texas death certificates in 2012 were misclassified as maternal deaths since the women were not pregnant or postpartum at the time of death. The vast majority of these errors were due to errors in reporting of the pregnancy checkbox. After investigation, there were 15 deaths with "insufficient information to make a determination" as to whether or not they were maternal deaths, with a resultant 2012 Texas maternal mortality rate of 14.6–18.6 maternal deaths per 100,000 live births, depending on whether these cases were included or excluded (5). These figures are less than one-half the reported Texas maternal mortality rate of 38.4 from the NVSS (3) and well below a rate of 30.1 from an earlier Texas state report (6).

The work of the Texas maternal mortality review committee is laudable, necessary, and entirely appropriate given the current state of Texas vital statistics data. It is also true that if the vital statistics system was functioning as it should, such a study would not have been needed, as this system would have supplied accurate baseline counts of maternal deaths needed for the committee to begin its work. The Texas study is important in that it provides a more accurate estimate of the 2012 Texas maternal mortality, and it also provides important insight into the nature and magnitude of errors in Texas vital statistics data. However, as it only examined data from a single year (2012), questions concerning the maternal mortality increase in Texas in the critical period from 2010–2012 remain unanswered, as do questions about more recent trends. In the absence of reliable vital statistics data, answers to those questions depend on detailed case review -- an expensive and time-consuming process for committees.

A more fundamental concern relates to the essential purpose of maternal mortality review committees, and how this is being hindered throughout the United States by the data problems in the NVSS. Because the NVSS is unable to provide an accurate count of maternal deaths, maternal mortality review committees throughout the country are spending too much time simply identifying cases and eliminating false positives. The unique and critical role of maternal mortality review committees is to go beyond establishing accurate counts of maternal deaths, to assess the preventability of these deaths, identify contributing factors, make recommendations for actions to reduce maternal mortality, and to study the impact of these actions on maternal mortality. We need to improve data quality in the NVSS by working at the national, state and local levels to better train physicians, medical examiners, and coroners on the importance of the pregnancy checkbox and completing the cause of death section; enhance query systems and internal consistency checks in real-time; and review cause-of-death coding procedures in relation to maternal deaths (2,6,7,8). Maternal mortality review committees can then get back to doing the job they were designed to do – investigating and preventing maternal deaths.

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