

Abstract

Adverse maternal outcomes are an ongoing public health concern in the United States. Adverse maternal health events encompass maternal mortality and severe maternal morbidity (SMM). Presently, it is reported that approximately 700 women die annually due to pregnancy, and it is estimated that 50,000 women will experience a severe maternal morbidity event. This is concerning given the recent National Vital Statistic System (NVSS) findings which reported 3.8 million births in US during 2018; of which, racial/ ethnic minority women contributed to 48.4% of births. It is well known that racial/ ethnic minorities are not only less likely to receive needed medical attention but are also more likely to have an unfavorable experience when receiving medical care. That is also the case with the reproductive and maternal health of minority women. Underlying chronic health conditions and the delayed utilization of prenatal care services were found to be risk factors that predisposed women, in particular Black women, to a greater risk of developing SMM. Similarly, pre-existing comorbidities were found to exacerbate Black women's risk for maternal mortality. That is, in addition to existing structural and economic inequalities as well as inequalities in healthcare access. Lastly, women of color were found to experience SMM and die from pregnancy related complications at a disproportionately greater rate than White women, irrespective of a state's SMM or pregnancy related mortality rate (PRMR) tertile ranking. Ongoing efforts to reduce racial/ ethnic disparities in adverse maternal outcomes include refining the US death certification system, instituting beneficial healthcare policies, and improving the quality of obstetric care.

Objectives

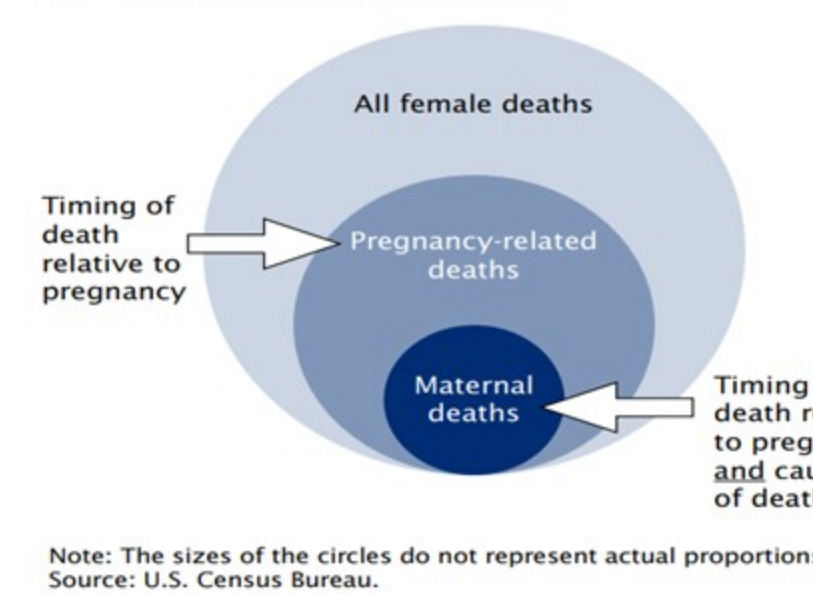
- Highlight the disparities in maternal health outcomes among racial/ ethnic minorities.
- Ongoing, and potential measures that can be instituted to mitigate the consequences of maternal morbidity and maternal mortality will be discussed.

Methods

- Primary database used was NCBI PubMed. 71 articles were found. 15 articles published from 2010 – Present were selected and reviewed. Snow-ball method was used to cross-reference articles bibliography.
- Key Terminology Searched:** maternal health, maternal health disparities, maternal mortality, pregnancy related deaths, severe maternal morbidity, and racial disparities in maternal morbidity.
- Other sources utilized includes the US Census, the National Institute of Health (NIH), the World Health Organization (WHO), and the Center for Disease Control and Prevention (CDC)

Results

Figure 1. Difference Between Maternal and Pregnancy-Related Death



Note: The sizes of the circles do not represent actual proportions. Source: U.S. Census Bureau.

Figure 1. A. Differences Between Maternal and Pregnancy-Related Term. Maternal mortality is an umbrella term used to encompass both maternal deaths and pregnancy related deaths. B. Depicts the Continuum of Maternal Morbidity Showing Variation in Severity. The primary adverse maternal outcome is that of maternal death.

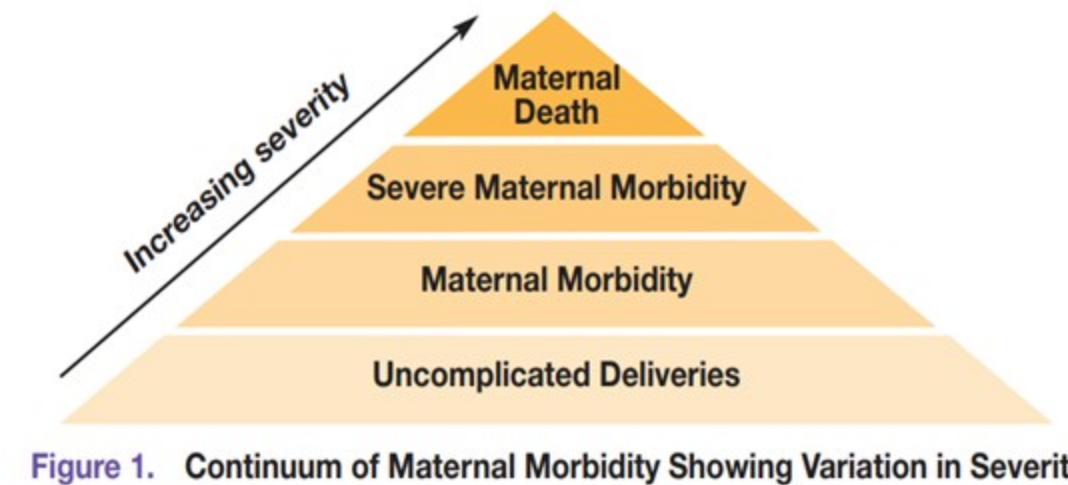


Figure 1. Continuum of Maternal Morbidity Showing Variation in Severity

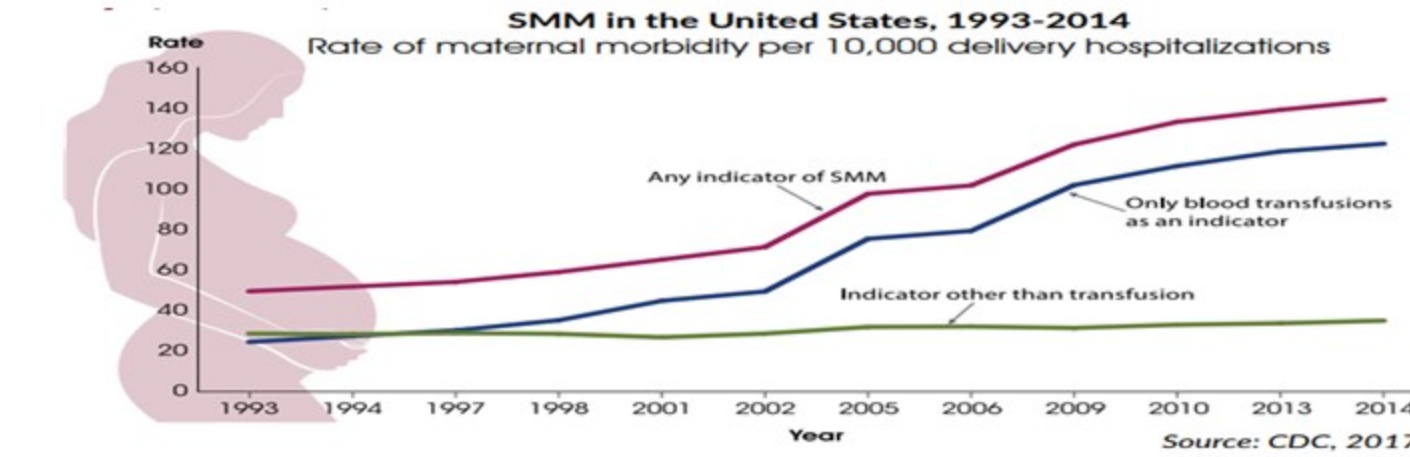


Figure 2. A. Current trends in Maternal morbidity in the United States. SMM has increased by almost 200% between 1993-2014. B. depicts the current trends in maternal mortality among high income countries. The MMR in the US is notably greater than other high-income countries.

Maternal Morbidity

Prenatal care utilization

- Black women less likely to attend more than 9 prenatal care appointments compared to White women (70.91% vs. 86.06%; P<0.0001)
- 15% of Non-Hispanic Black women began prenatal care during the 2nd trimester

Pre-existing Comorbidities: Black vs. White Women

- Overweight/ Obese weight Status:** (52.77% vs. 26.53%; P<0.0001)
- Chronic Hypertension:** 3.05% vs. 0.73; P<0.0001)
- Diabetes:** (1.65% vs. 0.53%; P<0.0001)

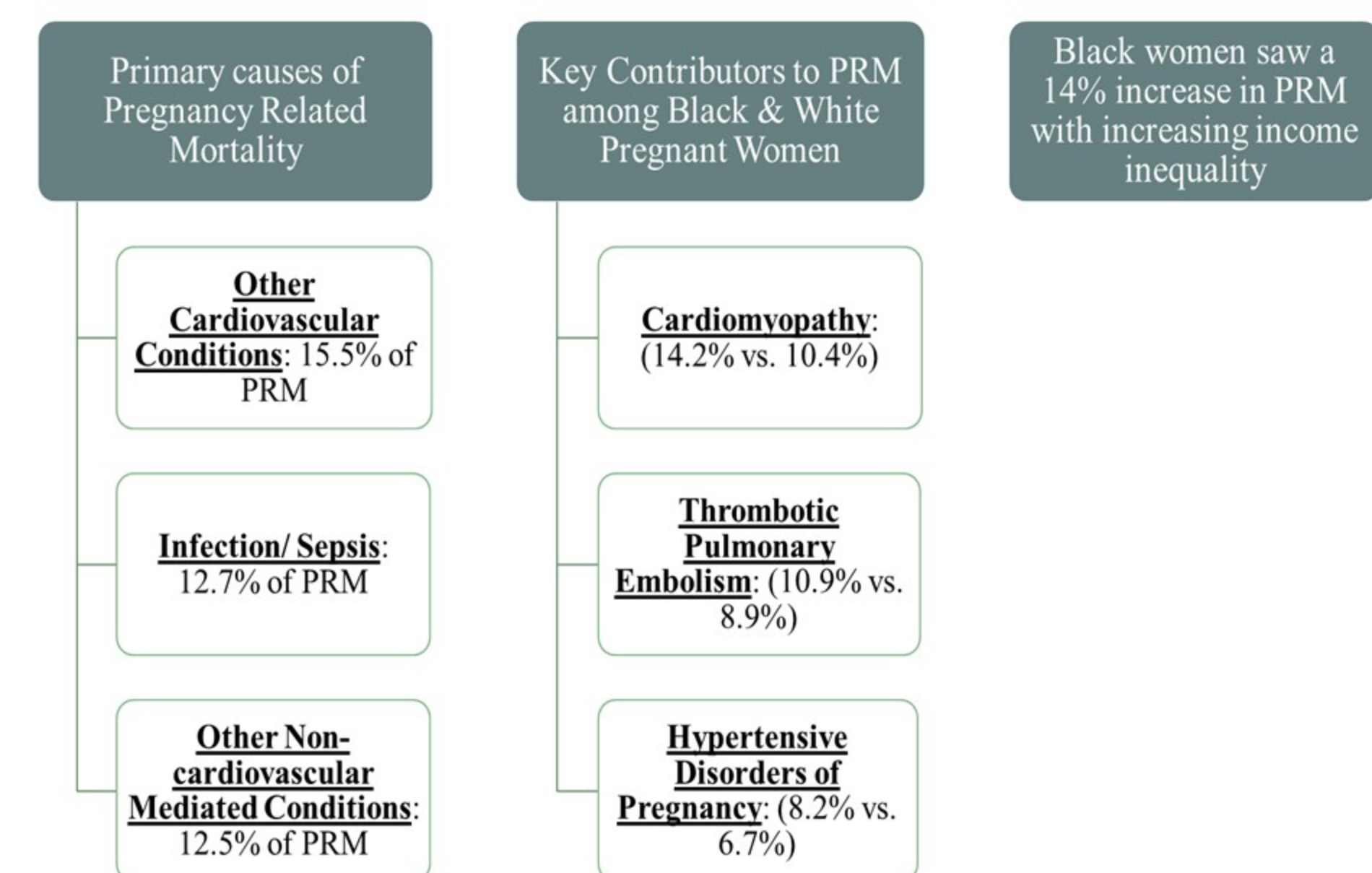
Table 1. Racial/ Ethnic Differences in Deliveries in Healthcare Institutions

Hospitals w/ High SMM Tertile Rank:	37.3% of deliveries were by Black women
	18% of deliveries were by White women
Hospitals w/ Low SMM tertile rank:	23.3% of deliveries were by Black women
	65.3% of deliveries were by White women

Maternal Mortality

Table 2. Importance of the Post-partum Period in Maternal Mortality

Petersen et al.,	Pregnancy: 31.3% of mothers died
	Delivery: 16.9% of mothers died
	Post-partum Period: 51.7% of pregnancy-related death events occurred
Davis et al.,	Pregnancy: 24% of mothers died
	Delivery: 15.5% of mothers died
	Post-partum Period: 60% of pregnancy-related deaths occurred
Various studies have identified women of color as being adversely impacted by cardiovascular events during the postpartum period	



Addressing Adverse Maternal Outcomes

Putting the M in Maternal-Fetal Medicine Initiative

- Expands the education & training Maternal-Fetal Medicine (MFM) fellows acquire
- Standardizing the Levels of Maternal Care
- Narrow the present research gaps in maternal medicine

Improving Quality of Obstetric Care

- Telehealth post-partum check ups
- Patient oriented & culturally relevant obstetric services
- Addressing providers implicit biases

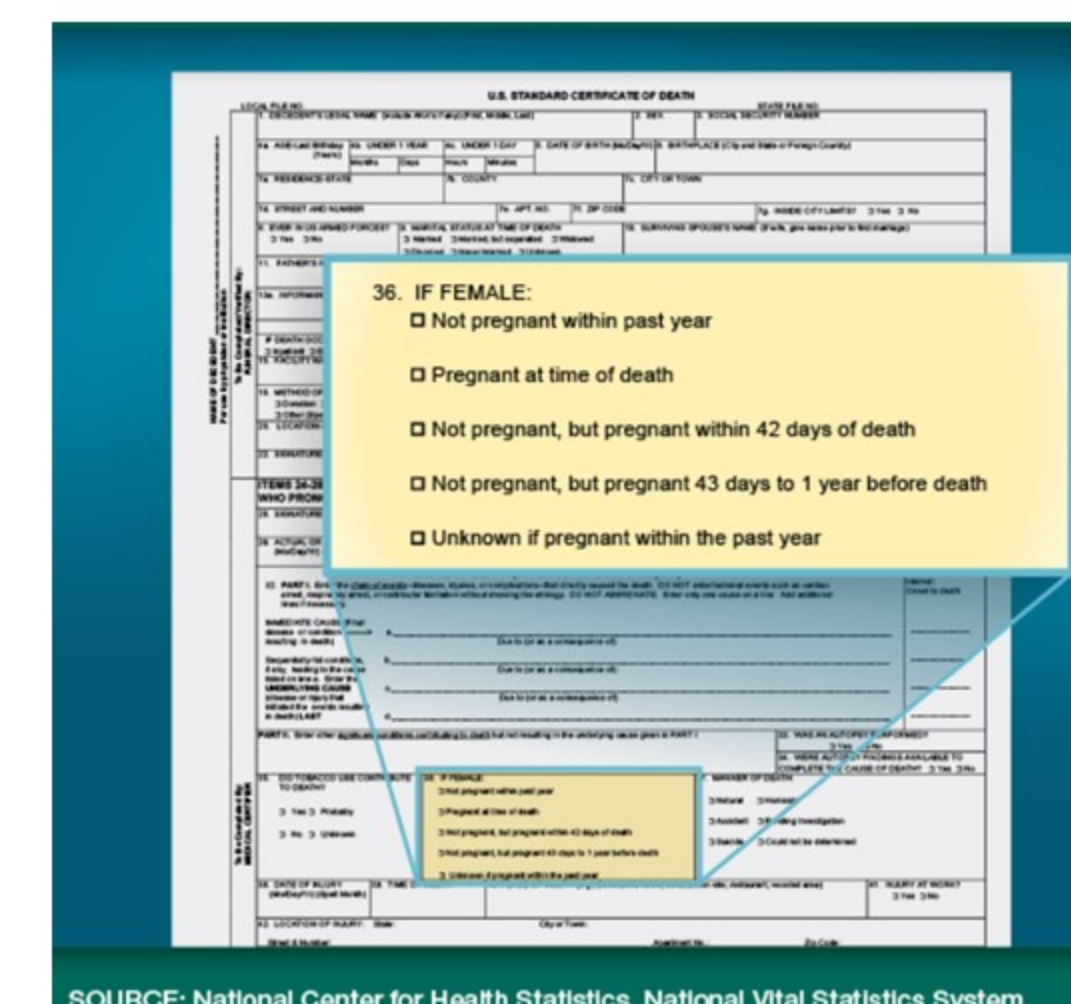


Figure 3. Ongoing efforts to ascertain maternal mortality in death certificates.

Discussion/Conclusion

- Underlying chronic health conditions and the delayed utilization of prenatal care services serves as risk factors that predispose women, in particular Black women, to a greater risk of developing severe maternal morbidity.
- Women of color experience SMM and die from pregnancy related complications at a disproportionately higher rate irrespective of a states SMM or PRMR tertile ranking.
- The post-partum period is a pivotal time point, wherein mothers can suffer from health events that can lead to their untimely death. It has been identified that women of color are impacted by cardiovascular events during the postpartum period. Understanding the effects of timing and the identification of health events that precede PRM will ensure the health of women during their post-partum journey.
- Ongoing efforts to reduce adverse maternal outcomes includes refining the US death certification system, instituting beneficial healthcare policies and improving the quality of obstetric care.
- To address the ongoing racial/ ethnic disparities in maternal mortality and maternal morbidity, there is a dire need for healthcare providers to be aware of their implicit biases and establish an environment that fosters patient-provider interactions built on trust, as well as a need to identify cause-specific indicators and risk factors that facilitate adverse maternal events.

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