REVIEW ARTICLE

The Ethical Obligation to Prevent Maternal Mortality during the COVID-19 Pandemic and Beyond

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Abstract

The United States of America (USA) has the highest maternal mortality rate of all high-income countries, with over 80% found to be preventable. After leveling off around 2015, maternal mortality rates in the USA further increased due to coronavirus disease 2019 (COVID-19) related deaths starting in 2020 by about 20% from about 17–18/100,000 live births to about 24/100,000 live births with about one in seven maternal deaths due to COVID-19 infections. The vast majority of COVID-19-related maternal deaths were among unvaccinated pregnant patients. A total of 11% of postpartum maternal deaths were found to be associated with mental health issues, with the remainder usually due to medical issues such as hemorrhage and hypertension. As physicians, we have the ethical obligation to address perinatal and maternal mortality, especially preventable maternal mortalities, reduce the discrepancy between different races and ethnicities, recommend COVID-19 vaccinations, and develop approaches to address the causes.

Keywords: COVID-19, Hemorrhage, Maternal deaths, Mental health, Maternal mortality, Preeclampsia, Thromboembolism, United States.

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Introduction

Maternal mortality is a major global concern. The maternal mortality rate in the USA has for many years exceeded that of other high-income countries, and data show a widening gap between the USA and its peer nations.[1] Although a notable decline in maternal mortality in the USA occurred during the mid-20th century, this progress stalled during the late 20th century. Furthermore, maternal mortality rates have increased during the early 21st century. Since 1987 the number of reported pregnancy-related deaths in the USA has steadily increased from 7.2 deaths/100,000 live births in 1987 to 16.9 deaths per 100,000 live births in 2016. Four in five maternal deaths in the USA were found to be preventable.[2–4]

Maternal deaths in the USA further increased during the COVID-19 pandemic. After leveling off around 2015, maternal mortality rates in the USA further increased in 2020 and 2021 by about 20%, with most of the increase in maternal deaths due to COVID-19-related deaths. In 2021 about one in four maternal deaths were due to causes of COVID-19 infections; the vast majority were among unvaccinated pregnant patients.[4]

Maternal mortality rates in the USA in 2021 were about 24/100,000 live births, while in the United Kingdom, the number was less than nine, and in Canada, it was less than seven, and rates are much higher for Blacks and Hispanics. Maternal mortality, as defined by the Centers for Disease Control and Prevention (CDC), therefore, places the USA far behind its peer nations.[1]

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Centers for Disease Control and Prevention (CDC) data also show racial and ethnic disparities in the rate of maternal deaths per 100,000 live births/year. Black women died at significantly higher rates during antepartum, intrapartum, and postpartum periods compared to hospitalizations for whites or Hispanics during the same time period.

The maternal death rate for Black or African-American (not Hispanic or Latina) women was 44.0 per 100,000 live births in 2019, and then increased to 55.3 in 2020 and 68.9 in 2021. In contrast, white (not Hispanic or Latina) women had death rates of 17.9, 19.1, and 26.1, respectively. The maternal death rate for Hispanic or Latina women was lower (12.6) compared with white (not Hispanic or Latina) women (17.9) in 2019 but increased significantly during the pandemic in 2020 (18.2) and 2021 (27.5).[4]

What Are the Causes of the Increased Maternal Mortality in the USA?

Of pregnancy-related deaths with information on timing, 22% occurred during pregnancy, 25% occurred on the day of delivery or within 7 days after, and 53% occurred between 7 days to 1 year after pregnancy.[5]

The top five leading underlying causes of pregnancy-related death (Table 1) include: Mental health conditions, excessive bleeding, cardiac and coronary conditions, infection, and thrombotic embolism.

An increasing number of pregnant women in the USA have chronic health conditions such as obesity, hypertension, diabetes, obesity, and chronic heart disease.[6–9] Recently, mental health conditions have been shown to contribute significantly to the increased maternal mortality in the USA. These conditions may put a pregnant woman at higher risk of pregnancy complications. While the contribution of hemorrhage, hypertensive disorders of pregnancy (i.e., preeclampsia, eclampsia), and anesthesia complications to pregnancy-related deaths have declined, the contribution of cardiovascular, cerebrovascular accidents, and other medical conditions have increased.[10] In addition, obesity has increased has further increased maternal morbidity and mortality. When combined, COVID and mental health conditions contribute to over 1/3 of maternal mortalities.

Table 1: The leading underlying causes of pregnancy-related death in the United States (2017–2019; prior to COVID-19)

Mental health conditions (including deaths to suicide and overdose/poisoning related to substance use disorder) (23%)
Excessive bleeding (hemorrhage) (14%)
Cardiac and coronary conditions (relating to the heart) (13%)
Infection (9%)
Thrombotic embolism (a type of blood clot) (9%)
Cardiomyopathy (a disease of the heart muscle) (9%)
Hypertensive disorders of pregnancy (relating to high blood pressure) (7%)

Note: The leading underlying cause of death varied by race and ethnicity. Cardiac and coronary conditions were the leading underlying cause of pregnancy-related deaths among non-Hispanic Black people, mental health conditions were the leading underlying cause for Hispanic and non-Hispanic white people, and hemorrhage was the leading underlying cause for non-Hispanic Asian people; From, https://www.cdc.gov/media/releases/2022/p0919-pregnancy-related-deaths.html

Our Ethical Obligation to Prevent Maternal Mortality

Professional ethics in obstetrics is based on the ethical principles of beneficence, respect for autonomy, and justice and the professional virtues of integrity, humility, compassion, self-effacement, and self-sacrifice.[11–13] The ethical principle of beneficence and the professional virtue of integrity are directly applicable tools for addressing the question of how to decrease maternal mortality.

Here, we address four examples of causes of maternal deaths in the USA which highlight our ethical responsibilities to prevent maternal mortality:

- Prevention of medical problems.
- Prevention of mental and drug issues.
- Access to abortion.
- Preventing COVID-19-related maternal mortality.

Prevention of Maternal Mortality from Hemorrhage and Medical Issues

With the support of the American College of Obstetricians and Gynecologists, the "Alliance for Innovation on Maternal Health (AIM)" was created as a maternal safety and quality improvement initiative to improve maternal safety and outcomes in the USA. The goal of AIM is to eliminate preventable maternal mortality and severe morbidity across the USA, but it can also serve as an example for other countries.[14] AIM has developed so-called "safety bundles," which are a structured way of improving the processes of care and patient outcomes by using a small, straightforward set of evidence-based practices—generally three to five—that when performed collectively and reliably, have been proven to improve patient outcomes. A safety bundle is a collection of 10–13 best practices for improving safety in maternity care that have been vetted by experts in practice. The goal of a bundle is to move established guidelines into practice with a standard approach.

Prevention of Maternal Mortality from Mental Health Issues

Suicide and substance use are the leading causes of maternal deaths within 1 year after birth, with suicide accounting for 9% of the maternal mortality rate.

In one study, 11% of pregnancy-related deaths with an underlying cause of death were due to mental health conditions. Pregnancy-related mental health deaths were more likely than deaths from other causes to be determined by a Maternal mortality review committee (MMRC) to be preventable (100 vs 64%), to occur among non-Hispanic white people (86 vs 45%), and to occur 43–365 days postpartum

(63 vs 18%). Around 63% of pregnancy-related mental health deaths were by suicide. Nearly three-quarters of people with a pregnancy-related mental health cause of death had a history of depression, and more than two-thirds had past or current substance use.[15]

Maternal mental health conditions, such as anxiety, perinatal and postpartum depression (PPD), and birth-related posttraumatic stress disorder, are the most common complications of pregnancy and childbirth, affecting one in five women. Among those affected, 75% go untreated. While women of color are more likely to experience these conditions, they also are less likely to seek help.

What remains surprising is 100% of these conditions respond to early interventions and/or treatment. As part of our efforts to prevent maternal mortality, timely screening and assessing of mental health conditions are essential but not done sufficiently.

The CDC recommends increased screening for PPD and anxiety, starting at the first prenatal visit and continuing throughout the year after birth. However, this recommendation is not followed routinely. In one study, 30% of pregnant and postpartum patients were not routinely screened for PPD regardless of symptoms being reported by patients, and many respondents felt their organizations would benefit from further training, perhaps indicating an awareness of this gap.[16]

It is our ethical obligation to follow the recommendation to screen all pregnant and postpartum patients for mental health conditions and depression.

Prevention of Maternal Mortality by Providing Access to Abortions

In the summer of 2022, the USA Supreme Court struck down a woman's right to have an abortion, thus eliminating the long-standing constitutional right to an abortion, and returned jurisdiction to individual states. This change in laws endangers the medical care of pregnant women. Some of the medical situations where termination of pregnancy is indicated to save a patient's life include malignancy, severe heart and lung disease, or obstetric complications such as premature rupture of fetal membranes or ectopic pregnancy. All of these clear indications to save a mother's life are not necessarily considered in many USA states as an appropriate indication for a termination of pregnancy. Consequently, we can expect to see further increases in maternal mortality in the USA. As physicians, we have the ethical obligation to fight for access to abortion and save women's lives.[17]

Prevention of Maternal Mortality from COVID-19

Maternal mortality has significantly increased with the COVID-19 pandemic, with 401/1,178 or about one in three maternal deaths in 2021 (Fig. 1) due to COVID-19.[4] Vaccination against COVID-19, and therefore strong recommendations by physicians for vaccinations are the gold standard for preventing maternal mortality.[17,18] Unfortunately, for multiple reasons, including physicians' hesitancy, this does not yet happen enough, and consequently, pregnant women

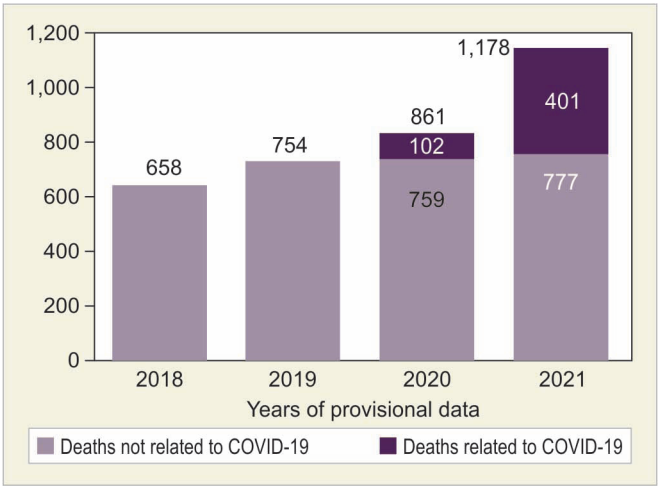

Fig. 1: Maternal deaths 2018–2021; from, Maternal health outcomes worsened, and disparities persisted during the pandemic; from, https://www.gao.gov/assets/gao-23-105871.pdf

lag behind other risk groups in getting vaccinated. Even though COVID-19-infected patients had higher morbidity and mortality rates, professional organizations, including the CDC, hesitated to recommend COVID-19 vaccinations for most of 2021.[17–19] This procrastination and the lower vaccine acceptance rate of pregnant women led to a significant increase in maternal mortality at the end of 2021.

Conclusion

The USA has the highest maternal mortality rates among high-income countries and is the only one where maternal mortality rates have increased. As physicians, we have the ethical obligation to address maternal mortality and implement steps for prevention. Consequently, our ethical obligations require us to do the following for the four examples we cited that highlight our ethical responsibilities to prevent maternal mortality:

- Prevention of medical problems requires that we expand the focus on the preventable causes of obstetrical complications and related death, especially hemorrhage and hypertensive-related death. We should establish "bundles" and guidelines, implement multidisciplinary staff meetings or huddles to assess and review each obstetrical patient's risk factors, and routinely do emergency drills such as simulating obstetrical emergencies in the labor and delivery unit.
- Every pregnant and postpartum patient should receive an effective screening for depression and other mental issues to prevent early identification and referral for mental and drug issues in pregnancy and postpartum.
- We need to improve providing access to abortion as an essential aspect of preventing maternal mortality.
- We must recommend COVID-19 vaccination and boosters to all patients trying to get pregnant, those who are pregnant, and postpartum to prevent COVID-19-related maternal mortality.

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