



WHITEPAPER

Maternal Mortality

Hospitals Take Aim at Maternal Cardiovascular Disease



Rates of maternal mortality, or deaths during pregnancy or within 42 days following delivery,¹ have reached concerning high levels in the United States, making this one of the worst countries for pregnant women. More than 1,200 U.S. women died in 2021 and 2022 during pregnancy or shortly after childbirth.² And data shows that Black women experience 2.6 times higher maternal death rates than white women.³

Pregnancy related deaths are 80% Preventable

CENTERS FOR DISEASE CONTROL (CDC)

According to the Centers for Disease Control (CDC) “more than 80% of pregnancy-related deaths were preventable. Among pregnancy-related deaths with information on timing, 22% of deaths 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.”⁴

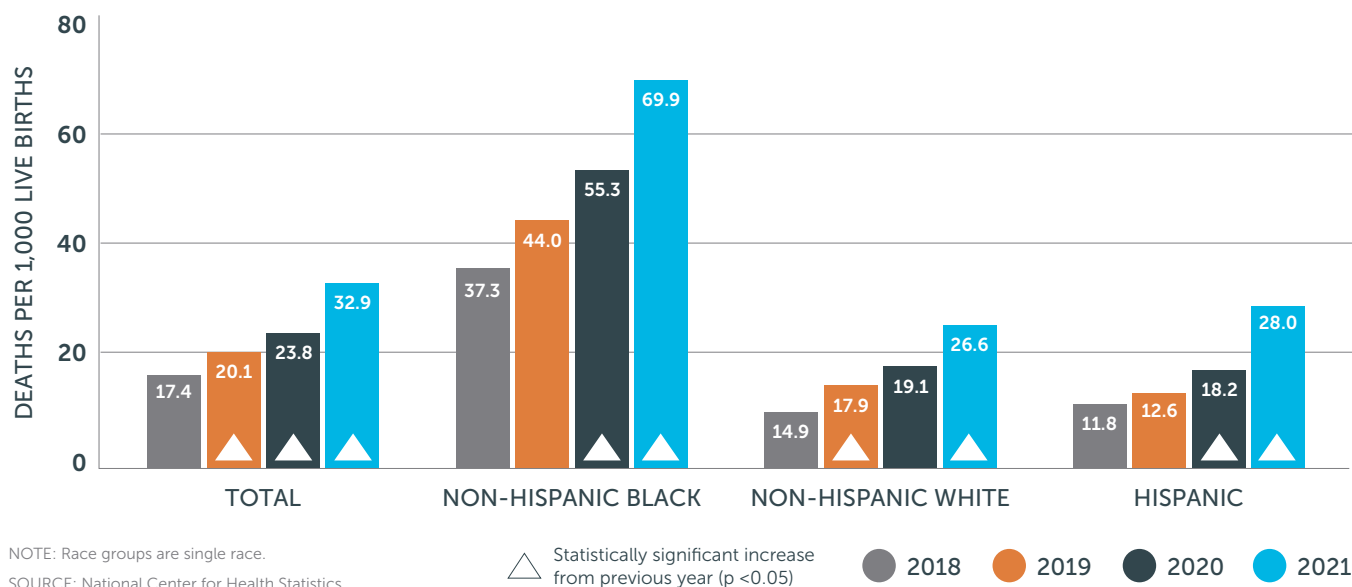
Leading Cause of Maternal Mortality

The leading cause of maternal mortality in the United States is cardiovascular disease. While maternal deaths caused by hemorrhage and hypertensive disorders of pregnancy and anesthesia-related deaths have declined over the past 20 years, cardiovascular deaths have increased.⁵ As of 2019, cardiomyopathy, pulmonary conditions, and cardiac and coronary conditions accounted for 22.5% of maternal deaths.⁶

Mortality reviews show that most pregnant or postpartum patients who die of cardiovascular disease have no formal diagnosis of it — and pregnant individuals with preexisting cardiovascular disease have better outcomes than those who experience their first acute event during pregnancy.

A Closer Look

Maternal mortality rates by race and Hispanic origin in the United States, 2018-2021



Programs, Processes & New Technology to Improve Outcomes

Hospitals and health systems are taking stock of maternal cardiovascular risk and are putting programs, processes, and modern technology in place to improve outcomes.

SOME INITIATIVES THAT HOSPITALS HAVE UNDERWAY

- Screen for risk and prevalence of cardiovascular disease
- Create cardio-obstetrics teams or include cardiac nurses on the obstetrics team
- Evaluate time delays in systems and processes
- Implement mobile telemetry monitoring
- Equip emergency departments for pregnancy-related cardiovascular emergencies
- Continue postpartum cardiac monitoring and care



Screen for Risk & Prevalence of Cardiovascular Disease

According to a March 2022 study in the Journal of Cardiovascular Development and Disease, “it is not yet standard of care for obstetric providers to incorporate a robust screening and management strategy into the prenatal care of pregnant patients without existing cardiovascular disease.”⁷

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“Cardiac diagnosis is not considered in the differential diagnosis in a woman presenting with the normal symptoms of pregnancy such as shortness of breath or fatigue that often leads to delays in recognition and treatment. Early recognition of CVD will help triage women at risk to initiate appropriate timely treatment to prevent maternal morbidity and/or mortality. Most important is a new diagnosis of CVD during pregnancy, *i.e.*, peripartum cardiomyopathy, which presents in the later part of pregnancy or in the postpartum period.”⁸

Given that mortality reviews indicate that most women who die from CVD during pregnancy or the postpartum period do not have a prior diagnosis of CVD, hospitals are considering implementing a universal screening tool to assess all pregnant and postpartum patients for their risk of CVD.

Create Cardio-Obstetrics

Cardio-obstetrics has emerged as an important multidisciplinary field that uses a team-based approach to manage cardiovascular disease during pregnancy. A cardio-obstetrics team is primarily focused on the early diagnosis and management of cardiovascular disease and often consists of cardiologists, obstetricians, maternal-fetal medicine specialists, nurses, and pharmacists, among others.

Reducing Morbidity

Early involvement of the cardio-obstetrics team is a critical component in improving cardiovascular outcomes.

Early involvement of the cardio-obstetrics team is a critical component in improving cardiovascular outcomes and reducing maternal morbidity and mortality rates during pregnancy and one year postpartum. Providing a preconception health evaluation, engaging in prepregnancy counseling, monitoring blood pressure, and practicing expectant management are just some of the ways in which this team can assess, identify, and prevent cardiovascular conditions from arising or worsening.⁹

Another approach is to include cardiovascular nurses in the obstetrics unit to ensure expectant mothers are assessed and monitored for cardiac conditions throughout labor and delivery.



Evaluate Time Delays in Systems & Processes

Even with the most advanced telemetry technology, manual processes remain in place. Cardiac rhythm strips are captured routinely during labor and delivery and with any arrhythmia or change in the patient's condition. In many hospitals, this process is paper-based, and includes printing the ECG strips, selecting those that will become part of the patient record, cutting, pasting, annotating, labeling, and later scanning these strips into the EHR. This manual process can create serious delays in care and inefficient workflows, increasing the potential for error. Hospitals are replacing manual processes with mobile technology solutions that unlock siloed data from patient monitors, allowing cardiologists to view native waveforms, edit and confirm ECGs, and track ECG acknowledgment in real-time.

Even with the most advanced telemetry technology available, manual processes remain in place, creating serious delays in care.



Implement Mobile Telemetry Monitoring

Traditionally, hospitals have relied upon bedside and central station monitoring, but it has limitations. Providers cannot access data outside the patient's room and have difficulty achieving timely collaboration, which may impact response times and outcomes.

In an effort to overcome logistical and geographic barriers to care, many hospitals are supplementing bedside telemetry monitoring with mobile technology that transmits digital ECGs directly to mobile devices. By providing diagnostic-quality ECGs on mobile devices with touch screen manipulation, cardiologists can interpret 12-lead ECGs and identify potential STEMIs faster.

In an effort to overcome logistical and geographic barriers to care, many hospitals are supplementing bedside telemetry monitoring with mobile technology that transmits digital ECGs directly to mobile devices.





Equip Emergency Departments for Pregnancy Related Cardiovascular Emergencies

As many as 12% of postpartum patients seek care in the emergency department.¹⁰ Knowing that approximately half of maternal deaths occur during the one-year postpartum period, emergency departments play a critical role in identifying maternal cardiovascular risk.

Many emergency departments are focusing on identifying cardiovascular disease in post-partum patients with an eye toward mobile solutions that deliver diagnostic quality ECGs to speed up the time to treatment. The most advanced mobile technology enables clinicians to access native waveforms, compare them with historical ECGs, edit and confirm ECGs, send secure notifications to other providers, and track ECG acknowledgment in near real-time.

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of postpartum patients seek care in the emergency department.

Increase Postpartum Monitoring & Care

Discussing the long-term cardiovascular risks with patients during the postpartum period is important. Rather than simply scheduling a six-week follow-up appointment, clinicians need to ensure that patients are receiving ongoing cardiac care including being properly monitored in the days and weeks following delivery, especially if they've been identified with cardiovascular risk factors or have been diagnosed with gestational hypertension, which is associated with an increased subsequent risk of myocardial infarction, heart failure, and ischemic stroke.

Part of the postpartum care plan may focus on improving glucose control, weight management, home blood pressure, and weight monitoring, or even using a combination of telehealth and in-person visits, as determined by a patient's multidisciplinary care team.¹¹

"If this [maternal mortality] is not a call to action, I don't know what is."

ADRIENNE GRIEN, EXECUTIVE DIRECTOR OF THE MATERNAL MENTAL HEALTH LEADERSHIP ALLIANCE, TOLD TO NPR IN 2022

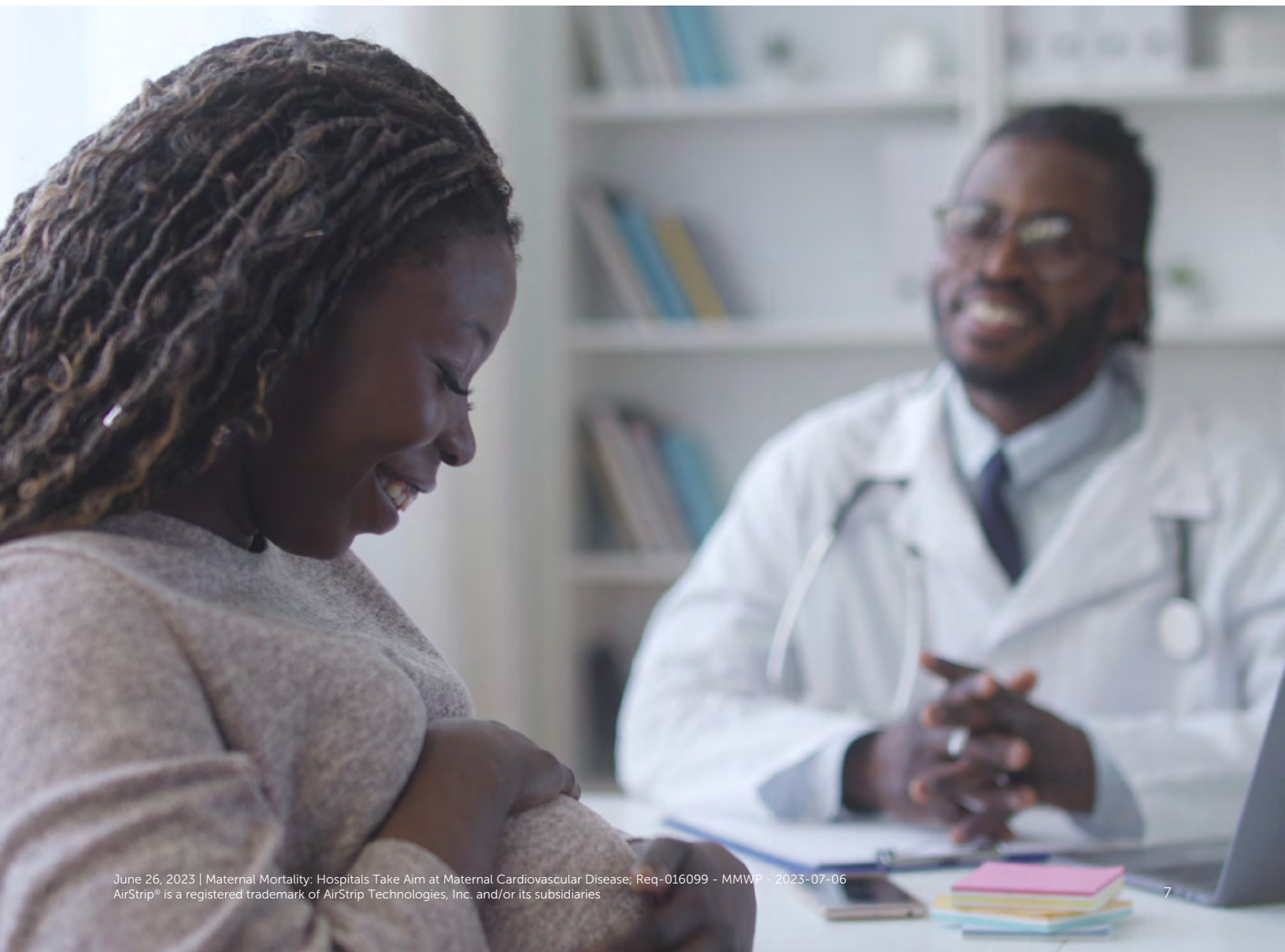


Combating Maternal Mortality Takes a Village

There is a widespread commitment among the various entities in the healthcare ecosystem to decrease maternal mortality. New federal initiatives to combat mortality risks, a recognition of the role that social determinants of health play, the creation of state Maternal Mortality Review Committees that review deaths that occur during or within a year of pregnancy, and a focus on solving the health equity imbalance will all go a long way in combatting maternal mortality.

Hospitals are playing their part by streamlining processes to give providers the systems, workflows, and technology they need to diagnose maternal cardiovascular disease quickly, reduce the time to treatment, decrease false-positive activations of the cardiac catheterization laboratory team, reduce the long-term costs of cardiac care, and improve long-term health outcomes.

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FEDERAL GOVERNMENT TAKES ACTION TO ADDRESS MATERNAL HEALTH

In June 2022, the White House Blueprint for Addressing the Maternal Health Crisis was released, outlining the Biden Administration's vision for reducing rates of maternal mortality and morbidity rates, combating health disparities in rural and traditionally underserved communities and improving the experiences of birthing people.

Within the blueprint, the Centers for Medicare & Medicaid Services (CMS) proposed new policies and programs for improving the quality of care during pregnancy, childbirth, and the postpartum period.



SOME OF THE INITIATIVES INCLUDE:

- Two additional measures included in the Hospital Inpatient Quality Reporting Program, which now assess severe obstetric complications, such as hemorrhage, and low-risk Cesarean section rates.
- A “birthing-friendly” hospital designation, which hospitals can qualify for if they participate in a structured Perinatal Quality Improvement (QI) Collaborative and implement patient safety practices or bundles. This may expand to include electronic clinical quality measures that are equity-focused and capture patient-reported outcomes of experiences of care.
- Six measures added to the Maternity Core Set for state Medicaid agencies to report on.
- The encouragement of evidence-based patient safety interventions to ensure that facilities are prepared for medical and obstetric emergencies.
- The requirement of hospitals to report data on the screening of patients for certain health-related social needs, which will become mandatory in 2024.

¹ Icd-11 for mortality and morbidity statistics.

² Provisional maternal death counts.

³ Maternal mortality rates in the United States, 2021.

⁴ <https://www.cdc.gov/media/releases/2022/p0919-pregnancy-related-deaths.html>

⁵ Mehta LS, Sharma G, Creanga AA, et al. Call to action: maternal health and saving mothers: a policy statement from the American Heart Association. *Circulation*. 2021;144(15).

⁶ Pregnancy-related deaths: data from maternal mortality review committees in 36 U.S. states, 2017–2019 | CDC.

⁷ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8953180/>

⁸ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8953180/>

⁹ Mehta LS, Warnes CA, Bradley E, et al. Cardiovascular considerations in caring for pregnant patients: a scientific statement from the American Heart Association. *Circulation*. 2020;141(23).

¹⁰ Mitchell KA, Haddock AJ, Husainy H, et al. Care of the postpartum patient in the emergency department: a systematic review with implications for maternal mortality. *Am J Perinatol*. 2023;40(5):489–507.

¹¹ Mehta LS, Sharma G, Creanga AA, et al. Call to action: maternal health and saving mothers: a policy statement from the American Heart Association. *Circulation*. 2021;144(15).

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