Neuraxial Anesthesia Access and Maternal Mortality: A Regional Anesthesia-Focused Analysis from Southern California

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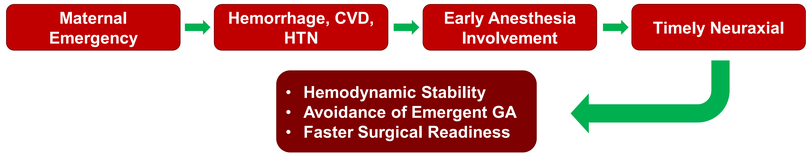
INTRODUCTION

Maternal mortality in the United States remains unacceptably high, with cardiovascular disease, hemorrhage, and hypertensive disorders representing leading causes of preventable death. Anesthesiologists play a central role in maternal safety through neuraxial anesthesia, which can reduce physiologic stress, facilitate rapid escalation to operative care, and decrease reliance on emergent general anesthesia. This scientific analysis examines maternal mortality through a regional anesthesia–centered lens using findings from Southern California maternal mortality and equity initiatives

MATERIALS AND METHODS

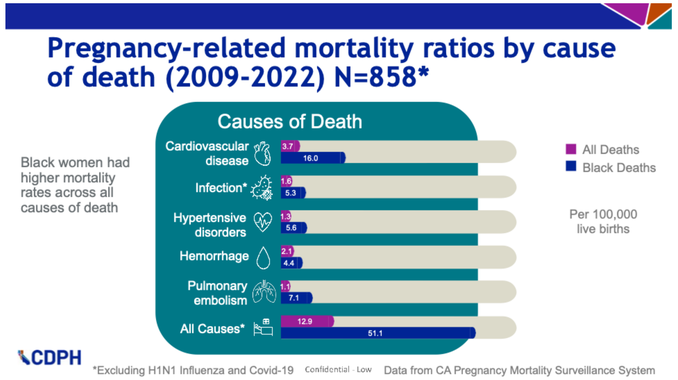
This scientific synthesis utilized publicly reported California maternal mortality surveillance data, pregnancy-associated mortality review (PAMR) findings, and anesthesia-relevant themes presented during Southern California maternal safety initiatives, including the California Black Birth Equity Summit (October 2025). As this analysis is devoid of patient identifiable information and is based exclusively on publicly available, de-identified data and professional practice synthesis, it is exempt from Institutional Review Board review requirements per Cedars-Sinai Medical Center IRB policy. Documentation of this exemption is available upon request. This scientific abstract contains no patient identifiable information; therefore, patient informed consent was not required per institutional policy.

Figure 1. Neuraxial Anesthesia Access as a Systems-Level Determinant of Maternal Safety



Conceptual framework illustrating how timely neuraxial anesthesia access influences physiologic stability, escalation readiness, and avoidance of emergent general anesthesia during obstetric hemorrhage, cardiovascular decompensation, and hypertensive emergencies. Synthesized from Southern California pregnancy-associated mortality review themes.

Figure 2. Pregnancy – related mortality ratios by cause of death (2009-2022) N=858*



Data-informed schematic derived from publicly reported California maternal mortality surveillance demonstrating higher pregnancy-related mortality rates among Black birthing patients, with cardiovascular disease, hypertensive disorders, hemorrhage, and as leading causes of death.

Table 1. Anesthesia-Relevant System Vulnerabilities Identified in Southern California Maternal Mortality Reviews

SYSTEM VULNERABILITY	CLINICAL CONTEXT	RELEVANCE TO REGIONAL/NEURAXIAL ANESTHESIA
Delayed recognition of cardiovascular disease	Postpartum dyspnea, fatigue, hypertension	Loss of opportunity for controlled neuraxial anesthesia
Fragmented care across ED, OB, cardiology	Multiple encounters, missed handoffs	Increased reliance on emergent general anesthesia
Postpartum discharge without escalation planning	High-risk 1–42 day postpartum period	Delayed anesthesia involvement during deterioration
Bias affecting symptom interpretation	Disproportionate impact on Black birthing patients	Delayed anesthesia consultation
Lack of escalation readiness	Hemorrhage, cardiac instability	Reduced ability to deploy neuraxial techniques safely

Table synthesized from Southern California pregnancy-associated mortality review themes; no new patient-level data were collected.

RESULTS

Across reviewed maternal mortality and equity initiatives, delayed or limited access to neuraxial anesthesia consistently emerged as a contributing vulnerability during obstetric emergencies, particularly in cases involving cardiovascular decompensation, hemorrhage, and hypertensive crises. Recurrent anesthesia-related themes included delayed neuraxial placement, increased reliance on emergent general anesthesia during clinical deterioration, and lack of escalation readiness. These vulnerabilities disproportionately affected Black birthing patients and those with complex medical comorbidities. In contrast, early neuraxial availability was repeatedly identified as a protective factor enabling more controlled physiologic management and coordinated multidisciplinary response.

DISCUSSION

A regional anesthesia–focused synthesis of Southern California maternal mortality initiatives identifies neuraxial anesthesia access as a critical, modifiable determinant of maternal safety. Reframing neuraxial readiness as a systems-level patient safety strategy, rather than a procedural convenience, may represent an important opportunity to reduce preventable maternal morbidity and mortality. These findings underscore the central role of anesthesiology in maternal mortality prevention and support greater integration of regional anesthesia principles into maternal safety frameworks.

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