Centers of Excellence for Anesthesia Care of Obstetric Patients

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Maternal mortality is the sixth most common cause of death among women age 20–34 years old in the United States.[1] Maternal mortality has increased over the past decade in the United States, with 1 analysis showing estimated maternal mortality rate increasing by 27% from 18.8 (per 100,000 live births) in 2000 to 23.8 in 2014.[2] The reason for rising maternal mortality in the United States is likely multifactorial. Advancing maternal age with growing prevalence of comorbidities and chronic conditions, increasing prevalence of obesity, greater numbers of women with cardiac disease surviving to reproductive age, increasing cesarean deliveries (with associated higher complications than vaginal delivery), racial, ethnic, and social disparities, inadequate federal family-planning budgets, fragmented health care, and lack of access to antenatal and postpartum care likely all contribute to maternal mortality, and may account for why the maternal mortality in the United States is significantly higher than in other developed countries.

The provision of optimal hospital care during labor and delivery is essential to reduce maternal morbidity and mortality. Many pregnancy-related deaths have been determined to be preventable. The Centers for Disease Control and Prevention reports that 60% of deaths during childbirth are preventable, and the California Maternal Quality Care Collaborative determined that facility factors contributed to 75% of fatal outcomes when analyzing preventable maternal deaths.[3] There is unfortunately significant heterogeneity in risk-adjusted maternal and neonatal outcomes among hospitals providing care for pregnant women,[4,5] driven in part by hospital-level variables such as delivery volume and case-mix. In a striking example from New York City, the hospital where mothers delivered their babies appeared to explain as much as half of the observed disparity in severe maternal morbidity between African American and Caucasian women.[6]

Data are limited to elucidate the extent to which high-quality anesthetic care contributes to differences in maternal and neonatal outcomes. Adverse anesthesia-specific events differ between institutions but make a relatively small contribution to overall maternal morbidity.[7] However, anesthesiologists play an essential role in the interdisciplinary care team and management of the critically ill pregnant women. In this edition of *Anesthesia & Analgesia*, Pryde's[8] article "Contemplating our maternity care crisis in the United States: reflections of an obstetrician anesthesiologist" outlines the important role of the obstetric anesthesiologist in improving maternal care especially during critical rescue events. He suggests that obstetric anesthesiologists are ideally suited as leaders in this setting with their expertise in obstetric physiology and complications of pregnancy, and training for early recognition of evolving maternal crises, appropriate escalation of monitoring when necessary, and orchestration of team-supported life-saving and morbidity-limiting treatments. The important role of the obstetric anesthesiologist in optimizing maternal care and reducing maternal morbidity and mortality has been highlighted in several excellent articles.[9,10]

To ensure that the highest-risk patients are delivered at institutions with comprehensive services, including high-quality and dedicated obstetric anesthesia care, "risk-appropriate care" has been proposed by American College of Obstetricians and Gynecologists in their document on the levels of maternal care.[11] Their proposed classification system for levels of maternal care include basic care (level I), specialty care (level II), subspecialty care (level III), and regional perinatal health care centers (level IV). To fulfill requirements for subspecialty care (level III) and regional perinatal health care centers (level IV), anesthesia services must be available at all times. In addition, a "board-certified anesthesiologist with special training or experience in obstetrics is in charge of obstetric anesthesia services." Nevertheless, the document is silent on more specific characteristics that may impact the quality of anesthetic services delivered.

To address this gap, the Society of Obstetric Anesthesia and Perinatology has recently proposed a process to designate Centers of Excellence for obstetric anesthesia care. The aim of the Society of Obstetric Anesthesia and Perinatology

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Centers of Excellence designation is to recognize institutions and programs that demonstrate excellence in obstetric anesthesia care, to set a benchmark level of expected care to improve the standards nationally, and to provide a broad surrogate quality metric of institutions providing obstetric anesthesia care. The criteria for Centers of Excellence designation cover various domains including personnel and staffing; equipment, protocols, and policies; simulation and team training; obstetric emergency management; cesarean delivery and labor analgesia care; recommendations and guidelines implementation; and quality assurance and patient follow-up systems. The criteria for Centers of Excellence designation, which cover all aspects of obstetric anesthesia care, were generated by expert consensus and incorporate evidence-based recommendations. Key recommendations that are required for Centers of Excellence designation are outlined in the Table. The full list of Society of Obstetric Anesthesia and Perinatology Centers of Excellence designation criteria are listed at https://soap.org/grants/center-of-excellence/.

In conclusion, there are many aspects contributing to the higher than desired maternal mortality and morbidity in the United States. Improvements in the quality of care that hospitals provide pregnant women undergoing labor and delivery will help reduce maternal and neonatal harm. The training and expertise of obstetric anesthesiologists make them ideally suited to make significant contributions toward reducing maternal mortality. The overall quality of obstetric anesthesia care provided is important to benchmark. The Society of Obstetric Anesthesia and Perinatology proposed "Centers of Excellence for Anesthesia Care of Obstetric Patients' Designation" aims to recognize institutions that provide optimal care, improve the standards nationally, and provide a broad surrogate quality metric for institutions providing obstetric anesthesia care. This Society of Obstetric Anesthesia and Perinatology Centers of

Table. Key Recommendations That Are Required for the Society of Obstetric Anesthesia and Perinatology Centers of Excellence for Anesthesia Care of Obstetric Patients Designation

Personnel and staffing
• Obstetric anesthesiologist leadership, specifically a board-certified physician anesthesiologist who has completed an Accreditation Council for Graduate Medical Education-accredited obstetric anesthesia fellowship and/or has equivalent expertise in obstetric anesthesia
• In-house (24/7) coverage of obstetric patients, by at least 1 board-certified (or equivalent) physician anesthesiologist who is dedicated to covering the obstetric service without additional responsibilities for nonobstetric patients
• Ability to mobilize (within a reasonable [30–60 min] timeframe) additional anesthesia personnel in case of obstetric emergencies or high clinical volume beyond the capacity of in-house staff assigned to the obstetric service
Equipment, protocols, and policies
• Availability of a massive transfusion protocol with O-negative blood and other blood products, and emergency release system for available blood. Blood bank protocol needs to have been tested and functional on the obstetric unit. Rapid-infuser device to assist with massive resuscitation readily available for use on the obstetric unit
• Difficult airway cart (with laryngoscopes, endotracheal tubes, rescue airway devices [eg, supraglottic airway device, such as a laryngeal mask airway], video laryngoscope, and surgical airway equipment) immediately available on the obstetric unit. Suction and a means to deliver positive pressure ventilation immediately available in readily accessible locations where neuraxial analgesia/anesthesia and/or general anesthesia are administered. Lipid emulsion, appropriate supplies and protocols that will allow a timely response to local anesthetic systemic toxicity
• Multidisciplinary team-based approach with systems in place to ensure interprofessional communication and situational awareness on your obstetric unit. Daily multidisciplinary rounds or huddles to discuss management plans for women on labor and delivery, antepartum and postpartum
• Obstetric emergency response team with a policy that includes obstetric conditions and/or vital sign parameters that warrant activation, and means of notifying all members of the response team
• An active multidisciplinary program with obstetric and anesthetic emergency simulation drills
• Additional operating room (with nursing/technical/obstetric and anesthesiology personnel) available at all times for emergency obstetric procedures (if all obstetric unit operating rooms are occupied)
Cesarean delivery management
• A standardized clinical care pathway (eg, enhanced recovery protocol) utilized by the institution and all obstetric anesthesia providers
• Routine utilization of a pencil-point needle, 25 gauge or less for the provision of spinal anesthesia
• Multimodal analgesia protocols and institutional efforts to minimize opioid usage
• Strategies to prevent maternal and fetal intraoperative hypothermia
• Appropriate antibiotic prophylaxis to prevent surgical site infection
• Spinal hypotension, nausea, and vomiting prophylaxis and treatment
Labor analgesia
• Use of low-concentration local anesthetic solutions with neuraxial opioids for administering neuraxial labor analgesia
• Combined-spinal epidural techniques available/offered in addition to standard labor epidural analgesia. Patient-controlled epidural analgesia and ideally background programmed intermittent epidural boluses utilized for the provision of neuraxial labor analgesia
• Routine utilization of flexible (flex-tipped/wire-reinforced) epidural catheters for labor epidural analgesia
• Regular assessment of neuraxial labor analgesia effectiveness
Recommendations and guidelines implementation
• At a minimum, evidence of implementation of the Practice Guidelines for Obstetric Anesthesia by the American Society of Anesthesiologists Task Force on Obstetric Anesthesia and Society of Obstetric Anesthesia and Perinatology
Quality assurance and patient follow-up
• An anesthesiologist serves as a member of the team that develops and implements multidisciplinary clinical policy
• Follow-up with structured interview/consultation on all patients who received labor analgesia, cesarean anesthesia, or anesthesia for other procedures
• A system in place to evaluate and treat (with an epidural blood patch, if necessary) a postdural puncture headache in a timely fashion

Excellence designation combined with American College of Obstetricians and Gynecologists levels of maternal care will hopefully ensure that proportional level care is provided for pregnant women especially those at high risk for maternal morbidity and mortality.

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