Welcome to the August 2025 Editor-in-Chief Podcast. I'm Jim Rathmell, Editor-in-Chief of *ANESTHESIOLOGY*, here with highlights from this month's issue. This month's research addresses some important questions. What is best way to measure for quality of recovery in pediatric patients? Will perioperative administration of nitric oxide help prevent acute kidney injury? Is sugammadex safe for patients under the age of 2? And, how do different anesthetic drugs alter consciousness?

A Clinical Focus Review in this month's issue details ways to control bleeding and reduce risk of thrombosis when using factor concentrates, and a Review Article looks at ambulatory use of insulin and its impact on peripartum anesthesia care.

Let's start with the development of a new assessment tool designed to measure quality of recovery in pediatric patients. Designing a tool for the pediatric population presents unique challenges. Different developmental stages in children require assessment tools that can be answered by parents and other caregivers in younger children. Cameron Graydon and fellow researchers aimed to develop a scale to assess quality of recovery in pediatric patients. Using a mixed methods approach, they sought broad expert input using a Deplhi approach, conducted a literature review, and engaged directly with patients and their families. They developed a 50-item pilot questionnaire, which was given to 1,100 patients presenting for surgery and their families. This resulted in a 20-item Pediatric Scale for Quality of Recovery designed to address a child's physical, emotional, and psychological recovery following anesthesia after surgery. This new survey may well become a standard endpoint in pediatric perioperative trials. In their accompanying editorial, Clyde Matava, Conor Mc Donnel and Andrew Davidson write that the Pediatric Scale for Quality of Recovery (called ped - core) addresses a persistent gap in pediatric perioperative medicine. The tool provides a meaningful step toward quantifying what recovery means for children and their families. To hear more about this novel tool, listen to the featured author podcast.

The next study in this month's issue explores whether perioperative nitric oxide can help prevent acute kidney injury in patients with chronic kidney disease undergoing cardiac surgery. Researchers led by Nikolay Kamenshchikov hypothesized that perioperative nitric oxide administration could counteract inter-renal nitric oxide deficiency. In this single-center clinical trial, patients with chronic kidney disease undergoing elective cardiac surgery were randomized to either 80 parts per million nitric oxide during the intraoperative period and for 6 hours post-surgery or a sham treatment. They found that acute kidney injury was significantly lower in the nitric oxide group, suggesting that perioperative nitric oxide administration in chronic kidney patients is safe and reduces the risk of acute kidney injury. In an accompanying editorial, Kamrouz Ghadimi and Vikram Fielding-Singh write that this study provides compelling evidence that perioperative nitric oxide therapy could defend against kidney injury associated with adult cardiac surgery. For more information, listen to the Featured Author Podcast where the original investigation author and editorialist discuss this research.

Another surgical study appearing in this month's issue explores whether sugammadex can be used in children under 2 years old. This phase IV randomized, multicenter trial led by Edith Mensah-Osman sought to evaluate the efficacy and tolerability of sugammadex in children under 2 years old. Participants were randomized to moderate neuromuscular blockade and reversal with 2 mg/kg sugammadex or moderate neuromuscular blockade and reversal with neostigmine or deep neuromuscular blockade and reversal with 4 mg/kg sugammadex. They found that in children under 2 years, sugammadex 2 mg/kg reversed moderate neuromuscular blockade faster than neostigmine, and sugammadex 4 mg/kg rapidly reversed deep neuromuscular blockade. Both sugammadex 2 mg/kg and 4 mg/kg were well tolerated. In their editorial, Francis Veyckemans and Joseph Tobias write that this study is a "welcome addition" regarding the use of sugammadex in pediatric patients. While not currently approved by the FDA for use in this population, many practitioners do use it off label in patients under 2. There are some methodological concerns to be considered before widespread adoption but these findings suggest that the same dosing schedule in adults may be used in the pediatric population.

The next surgical study in this month's issue looks at how distinct anesthetic drugs alter consciousness. Keith Michael Vogt and colleagues sought to determine how low doses of propofol, dexmedetomidine, and fentanyl affect the brain system in memory encoding and pain perception. In this single-blind 1:1:1 crossover study, 92 healthy volunteers received either one of the three anesthetic drugs or saline and then were exposed to auditory word stimuli, some paired with experimentally induced painful electrical shocks. The study attempted to model a clinically relevant scenario: memory encoding during perception of pain and sedation, with brain activity imaged at ultra-high field using 7 tesla functional MRI. Researchers quantified cognitive behavioral changes in pain perception and memory performance before relating these tasks to differences in brain activation measured with MRI. Ratings of pain intensity were reduced under both propofol and fentanyl; propofol impairs next-day explicit memory, while dexmedetomidine and fentanyl largely spare it. These findings show differential action of distinct anesthetics on important targets in the brain. In the accompanying editorial, Zirui Huang writes that these findings not only reinforce what is known but disturb the default narrative by offering a topographical map of divergent brain activation patterns induced by each agent, reminding us that sedation is not a unitary process. These findings highlight the necessity of tailoring sedative regimens to specific clinical goals and remind us that anesthetics do not silence the brain, rather, they redirect its narrative, each type of drug in a unique way.

The next article in this month's issue is an obstetric anesthesia workforce survey that assesses trends in obstetric anesthesia practice. Brenda Bucklin and coauthors hypothesized that labor and delivery care had changed substantially during the last 10 years. They sent a 32-question survey about contemporary obstetric anesthesia practice to providers at 1,180 US hospitals. They found that hospitals providing obstetric care have decreased by 50% over the past 4 decades. 77% of survey respondents work in non-academic hospitals without residency programs. Neuraxial analgesia is the most common form of pain relief during labor and respondents estimated that it was used in 84% of patients. Elective cesarean deliveries are usually performed with spinal anesthesia. Neuraxial anesthesia is used in 86% of urgent cesareans while 14% use general anesthesia. The increased access to neuraxial labor analgesia provides a dramatic step in reducing in-hospital maternal mortality. In their editorial, Grace Lim and Lisa Leffert state that the survey is a critical source of insight into the operational realities of national obstetric care and offers a framework for action, reinforcing the need to fund and staff obstetric anesthesia services around the clock. It also demonstrates that gaps remain in these services, disproportionately impacting smaller hospitals and underserved populations.

The next research article in this month's issue explores how Isoflurane induces pain relief and loss of consciousness. Researchers led by Ru-Rong Ji explored the underlying cellular mechanisms in the central amygdala activated by general anesthesia across different phases of nerve injury-induced nociceptive sensitization. They induced c-Fos activation in the brains of 107 mice, using 1.2% isoflurane. They labeled the central amygdala neurons and performed ex vivo electrophysiological recordings to assess the Fos properties. Isoflurane induced robust Fos expression in the central. This study highlights the distinct role of the central amygdala neurons in governing physiological and acute pain. This research sheds light on peripheral neuropathic pain, write editorialists Cyril Rivat and J. David Clark. It also raises interesting questions—is there the possibility of modifying perioperative anesthetics to strengthen resistance to chronic pain, and is there specific timing when interventions could have a greater impact? This basic research provides significant hope that there may be non-opioid alternatives for managing chronic pain.

This month's Clinical Focus Review discusses surgical bleeding, which poses a risk during both routine and complex procedures. Controlling bleeding and risk of thrombosis critical when using factor concentrates, particularly those with activated factors. Activated prothrombin complex concentrates are plasma derived, multicomponent products designed to promote hemostasis in patients with bleeding disorders. In this Clinical Focus Review, Anil Panigrahi and Joseph Shaw detail the composition of activated prothrombin complex concentrates, their proposed mechanism of action, and historical and recent uses. They offer emerging data on its application in treating perioperative coagulopathy and cardiac surgical bleeding.

Closing this month's issue, the latest Review Article provides an overview of caring for diabetes during pregnancy, a common obstetric comorbidity that increases the risk of pregnancy-specific complications. William Kirke Rogers and coauthors explain how understanding ambulatory use of insulin can impact peripartum anesthesia care and describe the appropriate delivery, dosing, and timing of insulin during. They also discuss the indications and limitations of technologies—such as continuous glucose monitors and insulin pumps in pregnancy— and describe their relevance and appropriate management in the perioperative and peripartum period. Finally, they review the unique complication of euglycemic diabetic ketoacidosis and provide appropriate management strategies, as anesthesiologists are often uniquely positioned to recognize and treat this complication.

Thanks for listening. Please listen again next month for highlights from the September issue.