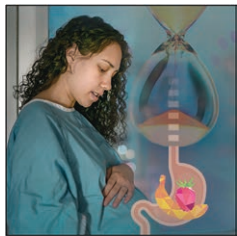
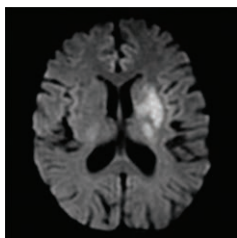


# THIS MONTH IN ANESTHESIOLOGY



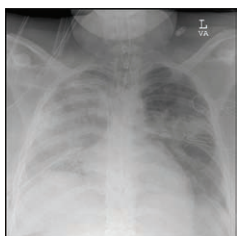
## 542 Pregnancy and Labor Epidural Effects on Gastric Emptying: A Prospective Comparative Study

The need for strict fasting during labor to prevent aspiration pneumonia has been questioned as regional anesthesia techniques and advances in obstetric anesthesia have contributed to reducing its incidence. The hypothesis that the gastric emptying of a light meal measured over 15 to 90 min would be at least 30% less in parturients receiving epidural analgesia and in those without epidural analgesia compared to nonpregnant and pregnant women was tested in a prospective comparative study of 40 women, 10 per group. Antral cross-sectional areas were measured 15 and 90 min after ingestion of yogurt (125 g) using a portable ultrasound device. The median (interquartile range) gastric emptying fraction was 52% (46 to 61%) in nonpregnant controls, 45% (31 to 56%) in pregnant controls, 31% (17 to 39%) in parturients receiving epidural analgesia, and 7% (5 to 10%) in parturients without epidural analgesia. The results suggest a light meal may be allowed in uncomplicated laboring women receiving epidural analgesia with low foreseeable risk for operative delivery within the next 2 h. See the accompanying Editorial on [page 528](#). (Summary: M. J. Avram. Photo: iStock by Getty Images. Illustration: A. Johnson, Vivo Visuals Studio.)



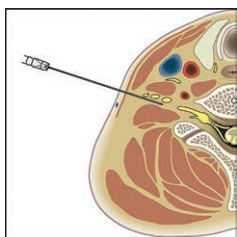
## 567 General Anesthesia versus Sedation, Both with Hemodynamic Control, during Intraarterial Treatment for Stroke: The GASS Randomized Trial

Endovascular thrombectomy is the standard of care for patients with a stroke caused by a large vessel occlusion in the anterior cerebral circulation. The hypothesis that conscious sedation for this treatment would be associated with a better clinical outcome measured by the modified Rankin score 3 months after the procedure than general anesthesia was tested in a multicenter, single-blind, randomized controlled trial. Blood pressure control was standardized in both groups. A favorable neurological outcome, defined as a modified Rankin score less than or equal to 2, 3 months after the treatment was observed in 63 of 175 (36%) patients in the conscious sedation group and 66 of 166 (40%) patients in the general anesthesia group. The relative risk (95% CI) was 0.91 (0.69 to 1.19). Patients in the conscious sedation group experienced more technical failures, whereas patients in the general anesthesia group experienced more hypotension or hypertension episodes and more successful recanalization, but these differences did not influence the outcome. (Summary: M. J. Avram. Image: J. P. Rathmell.)



## 551 Prophylactic Penehyclidine Inhalation for Prevention of Postoperative Pulmonary Complications in High-risk Patients: A Double-blind Randomized Trial

Pulmonary complications are common in patients recovering from thoracic and upper abdominal surgery, even when they do not have serious pre-existing respiratory disease. A potential strategy to prevent perioperative pulmonary complications is inhalation of long-acting muscarinic antagonists, which are first-line treatments for chronic obstructive pulmonary disease (COPD). The hypothesis that inhalation of penehyclidine, a long-acting muscarinic antagonist, will reduce a composite of pulmonary complications in high-risk noncardiac surgical patients over the initial 30 postoperative days was tested in a double-blind randomized controlled trial of 826 patients at high risk for pulmonary complications having upper abdominal or noncardiac thoracic surgery. Patients inhaled penehyclidine or placebo at 12-h intervals beginning the evening before their operation through the second postoperative day. The composite of pulmonary complications within 30 days after surgery was observed in 79 of 417 (18.9%) patients in the penehyclidine group and 108 of 409 (26.4%) patients in the placebo group, for a relative risk (95% CI) of 0.72 (0.56 to 0.93) and number needed to treat of 13. (Summary: M. J. Avram. Image: J. P. Rathmell.)



## 531 Evaluation of Diaphragmatic Function after Interscalene Block with Liposomal Bupivacaine: A Randomized Controlled Trial

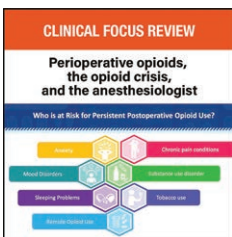
Interscalene blocks provide perioperative analgesia for major shoulder surgery, an accepted consequence of which is hemidiaphragmatic paralysis resulting from local anesthetic traveling over the anterior scalene muscle to the phrenic nerve. A decrease in diaphragm function of 25 to 75% is considered partial paralysis. The hypothesis that patients receiving an interscalene block with both bupivacaine and liposomal bupivacaine would have decreased diaphragmatic excursion 24 h after block placement compared to those receiving bupivacaine alone was tested in 22 patients undergoing total shoulder arthroplasty, 10 in the bupivacaine group and 12 in the liposomal bupivacaine group. At 24 h, the median (interquartile range) percent change in diaphragmatic excursion during a sigh breath in the liposomal bupivacaine group was -24% (-30 to -9%) and that in the bupivacaine group was 9% (-8 to 26%). The liposomal bupivacaine group also had a median 22% decrease in forced expiratory volume in 1 second (FEV1) and 19% decrease in forced vital capacity at 24 h versus 2% and 1% decreases in the bupivacaine group, respectively. See the accompanying Editorial on [page 525](#). (Summary: M. J. Avram. Image: G. Nelson/J. P. Rathmell.)



## 577 Patient Sex and Postoperative Outcomes after Inpatient Intraabdominal Surgery: A Population-based Retrospective Cohort Study

Sex-based differences in the incidence of diseases as well as the effectiveness and safety of therapeutic interventions may be attributed to differences in biology or care delivery. The hypothesis that the incidence of the composite primary outcome of all-cause death, hospital readmission, or major postoperative complications, all within 30 postoperative days, of patients who underwent inpatient intraabdominal surgeries in Ontario, Canada, would not be different for males and females was tested in a retrospective population-based cohort study. The composite primary outcome was observed in 24,712 of 112,802 (21.9%) females and 25,486 of 103,044 (24.7%) males, for a risk difference (95% CI) of 2.8% (2.5 to 3.2%). After adjusting for prog-

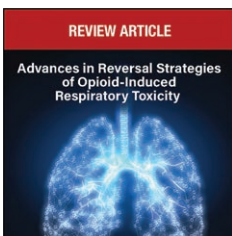
nostically important covariates, the absolute event rate was 23.2% in females and 23.0% in males, and males did not have an increased risk of the primary composite outcome. The adjusted risk difference (95% CI) was  $-0.2\%$  ( $-0.5$  to  $0.2\%$ ). The relative equality of outcomes suggests equitable care and proportionate distribution of resources within the intraabdominal surgery setting in Ontario. (Summary: M. J. Avram. Image: J. P. Rathmell.)



## 594 Perioperative Opioids, the Opioid Crisis, and the Anesthesiologist

Perioperative anesthesia practice and pain medicine have the potential to play an important role in addressing the opioid crisis. Although further research is required to clarify the relationship between perioperative opioid use and opioid-related harms, there are several practical steps anesthesiologists can take to improved acute and chronic postoperative outcomes. The present review summarizes current evidence related to perioperative opioid administration and makes suggestions for how anesthesiologists can reduce opioid-related harm and bring value to their healthcare systems. For example, changes in postanesthesia care unit opioid administration together with changes in hospital ward and discharge opioid prescribing by surgical services represent a more attractive opportunity for anesthesiologists to improve short- and long-term opioid outcomes than does elimination of

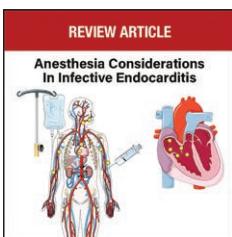
intraoperative opioids. While many anesthesiologists may feel disconnected from postsurgical opioid prescribing and pain management, their role in prescribing opioids, identifying risk, and counseling patients on the safe use, storage, and disposal of opioids is likely to grow in the coming years. (Summary: M. J. Avram. Image: From original article.)



## 618 Advances in Reversal Strategies of Opioid-induced Respiratory Toxicity

The opioid receptor antagonist naloxone is used to treat opioid-induced respiratory depression. Because there are circumstances in which naloxone may be ineffective or undesirable, novel reversal strategies are being developed with the aim of providing efficacy like that of naloxone but without its limitations. These novel approaches are reviewed, grouped to facilitate understanding of their mechanism of action and side effect profile. The goal of most novel countermeasures is strengthening or reactivation of rhythmogenesis within the respiratory neuronal network by providing tonic input to the respiratory neurons depressed by the opioids. Unfortunately, the degree of activity generated within the respiratory neuronal network by nonopioid stimulants is generally

insufficient to overcome depression of respiratory neurons. Therefore, the authors suggest studying synergistic effects of combinations of drugs with different modes of action that separately provide limited or partial reversal of opioid respiratory depression. Another approach reviewed is sequestration of opioids within the blood stream by container or scrubber molecules or by immunopharmacotherapy. (Summary: M. J. Avram. Image: Adobe Stock.)



## 633 Anesthesia Considerations in Infective Endocarditis

Infective endocarditis is an infection of a native or prosthetic heart valve or of the cardiac endocardial surface that affects 3 to 15 people per 100,000 per year. It is a challenging clinical condition with a high morbidity and mortality, requiring a multidisciplinary approach to urgent decision making. The mainstay of the management of infective endocarditis is early diagnosis based on physical examination, imaging, and microbiologic studies according to the modified Duke criteria. Generally, the treatment of infective endocarditis aims to eradicate the infection and restore cardiac structures to prevent local and systemic complications. Subsequently, close monitoring for the effectiveness of treatment, the potential occurrence of complications, and indication for surgery is strongly recommended. Indications for surgery include heart failure, uncontrolled infection, and prevention of systemic

embolic events. Approximately half of patients with infective endocarditis meet the criteria to undergo surgery, the ideal timing of which may be unclear. This review summarizes important disease-specific features in the perioperative care of this high-risk patient group. (Summary: M. J. Avram. Image: From original article.)