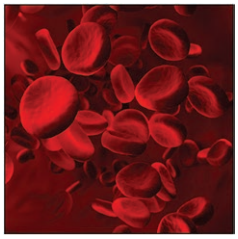
THIS MONTH IN
ANESTHESIOLOGY®

859 Dexamethasone for Cardiac Surgery: A Practice Preference–Randomized Consent Comparative Effectiveness Trial

Prophylactic high-dose corticosteroids are sometimes used to attenuate the intense inflammatory response to cardiac surgery and cardiopulmonary bypass. The hypothesis that prophylactic dexamethasone administration in patients undergoing cardiac surgery increases days alive and spent at home up to 30 days after surgery compared with no dexamethasone was tested in a practice preference–randomized consent design study of 1,871 adult patients less than 75 yr old scheduled for elective or nonemergent cardiac surgery including cardiopulmonary bypass. Dexamethasone, 1 mg/kg (up to a maximum of 100 mg), was administered to 738 patients assigned to the treatment group as an IV bolus after induction of anesthesia but before surgical incision. The median [interquartile range] number of home days in the dexamethasone group was 23.1 [20.1 to 24.6] and it was 23.0 [20.1 to 24.1] in the no dexamethasone group; the median difference (95% CI) was 0.1 (–0.3 to 0.5). The rates of prolonged mechanical ventilation, sepsis, renal failure, myocardial infarction, stroke, and death in the two groups were comparable. The duration of intensive care unit stay was 29 [22 to 50] h in the dexamethasone group and 43 [24 to 72] h in the no dexamethasone group. *See the accompanying Editorial on* ***page 825****. (Summary: M. J. Avram. Image: A. Johnson, Vivo Visuals Studio.)*



904 Correction of Trauma-induced Coagulopathy by Goal-directed Therapy: A Secondary Analysis of the ITACTIC Trial

Major hemorrhage transfusion algorithms attempt to prevent coagulopathy from developing or worsening, mainly through empiric administration of whole blood or balanced blood component transfusions. Goal-directed treatment algorithms aim to identify established coagulation deficits and correct them using concentrated products. This study was a secondary analysis of the Implementing Treatment Algorithms for the Correction of Trauma Induced Coagulopathy (ITACTIC) randomized controlled trial that tested two goal-directed treatment algorithms for coagulation management, one guided by conventional coagulation tests and one by viscoelastic hemostatic assays. Full viscoelastic and conventional coagulation test results were available for 133 patients, 111 of whom had or developed a coagulation test result that could have triggered an algorithm-guided intervention. Of the 58 patients in the conventional coagulation test group, 20 received goal-directed treatment as did 52 of the 75 in the viscoelastic hemostatic assay group; the others received empiric care alone. Goal-directed treatments improved coagulation profiles more than empiric care alone but they took more than an hour to deliver and did not restore coagulation to normal during bleeding and resuscitation. *See the accompanying Editorial on* ***page 832****. (Summary: M. J. Avram. Image: Adobe Stock.)*

870 Cannabis Use and Inhalational Anesthesia Administration in Older Adults: A Propensity-matched Retrospective Cohort Study

Observational studies have found associations between cannabis use and increased intravenous anesthetic dose requirements. The hypothesis that cannabis use within 60 days of surgery in older adults would be associated with higher inhalational anesthesia administered during general anesthesia was tested in a propensity score–matched retrospective cohort study of 1,340 patients. Natural language processing techniques extracted cannabis use information from electronic health records. Four nonusers were matched to each identified cannabis user. Intraoperative time-weighted average isoflurane and sevoflurane minimum alveolar concentration (MAC) equivalents of cannabis users were compared with those in nonusers. Propensity score matching effectively adjusted the association between cannabis use and the amount of inhalational anesthesia administered for potential confounders, including coadministered anesthetic agents and baseline patient and anesthesia characteristics. Older adults with documentation of cannabis use received a higher time-weighted average mean MAC (0.58 ± 0.23) than older adults without documentation of cannabis use (0.54 ± 0.22). The clinical significance of this difference is unclear. *See the accompanying Editorial on* ***page 829****. (Summary: M. J. Avram. Image: Adobe Stock.)*

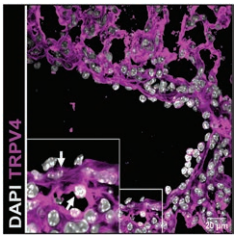
881 Restrictive *versus* Decision Support Guided Fluid Therapy during Major Hepatic Resection Surgery: A Randomized Controlled Trial

Restrictive prehepatectomy fluid therapy is used to reduce central venous pressure, retrograde liver blood flow, and venous bleeding but puts patients at risk of poor tissue perfusion, which can result in hyperlactatemia and increased postoperative morbidity. Goal-directed fluid therapy is a proposed strategy for volume optimization during hepatic resection but may be difficult to implement. A decision support system has been developed to increase goal-directed fluid therapy protocol compliance and individualize fluid therapy. The hypothesis that using a decision support system could decrease arterial lactate concentrations at the end of major hepatic resection compared to a more restrictive fluid strategy was tested in a randomized controlled study of 90 patients undergoing elective surgery. The median [interquartile range] lactate concentration at the end of surgery in the decision support group was 2.5 [1.9 to 3.7] mmol · l^{-1} and that in the restrictive group was 4.6 [3.1 to 5.4] mmol · l^{-1}; the median difference (95% CI) was –2.1 (–1.2 to –2.7) mmol · l^{-1}. Total intraoperative fluid volume did not differ between groups, but a larger fluid volume was administered before the end of hepatic resection in the decision support group and the norepinephrine dose was lower. *(Summary: M. J. Avram. Image: J. P. Rathmell.)*

DOI: 10.1097/ALN.0000000000005226

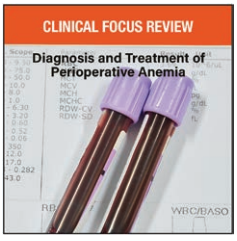
891 Plantar Compartment Block Improves Enhanced Recovery after Hallux Valgus Surgery: A Randomized, Comparative, Double-blind Study

A popliteal sciatic nerve block (PSNB) with long-acting local anesthetics promotes a long duration of sensory and motor block in patients undergoing foot and ankle surgery but increases the risk of postoperative falls and delayed ambulation. The plantar compartment block (PCB) is an ultrasound-guided distal compartment block that targets the medial and lateral plantar nerves and spares heel sensitivity. The hypothesis that a PCB will enable accelerated rehabilitation and normal walking after hallux valgus (bunion) surgery while maintaining enhanced postoperative comfort was tested in a randomized double-blind study of 59 patients undergoing ambulatory unilateral surgery. The study compared an intervention group that received a short-acting PSNB, a PCB, and a fibular block with a control group that received a long-acting PSNB and sham plantar compartment and fibular blocks. In the intervention group, 21 of 30 (70%) patients were able to ambulate unaided 6 h after PSNB but only 4 of 29 (13.8%) patients in the control group were able to do so. The authors concluded that the combination of a short-acting PSNB with a long-acting PCB not only provided surgical and patient comfort but also preserved mobility with prolonged analgesia. *(Summary: M. J. Avram. Image: From original article.)*



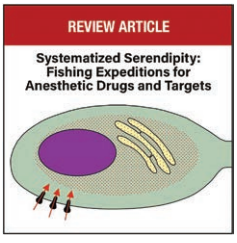
913 Calcium-activated Potassium Channels as Amplifiers of TRPV4-mediated Pulmonary Edema Formation in Male Mice

A mismatch between delivered tidal volumes and the reduced recruitable lung volume of mechanically ventilated patients with acute respiratory distress syndrome can cause excessive biomechanical forces that aggravate lung inflammation and endothelial barrier failure and cause ventilator-induced lung injury (VILI). Endothelial transient receptor potential vanilloid-type 4 (TRPV4), a nonselective cation channel, contributes to VILI and edema formation. Ca^{2+} influx *via* TRPV4 can activate Ca^{2+}-activated K^+ (K_{Ca}) channels, which may amplify Ca^{2+} influx by increasing the electrochemical Ca^{2+} gradient and promote lung injury. The hypothesis that K_{Ca} channels may play an important amplifying role in endothelial Ca^{2+} signaling and the subsequent development of edema and lung injury in overventilated lungs was tested in male mice and human pulmonary microvascular endothelial cells (HPMECs). Endothelial-specific deletion of TRPV4 prevented experimental VILI, and inhibition of K_{Ca} channels attenuated VILI. Inhibition of K_{Ca} channels attenuated stretch-induced endothelial Ca^{2+} influx in isolated-perfused mouse lungs and TRPV4 agonist-induced Ca^{2+} influx, K^+ efflux, and membrane hyperpolarization in HPMECs. Inhibition of intermediate K_{Ca} channels in HPMECs reduced TRPV4 agonist-induced elevated intracellular Ca^{2+} concentrations. *(Summary: M. J. Avram. Image: From original article.)*



984 Diagnosis and Treatment of Perioperative Anemia: A Society for Perioperative Assessment and Quality Improvement Collaborative Review (Clinical Focus Review)

Preoperative evaluations provide excellent opportunities to screen, evaluate, and optimize surgical patients. The high prevalence of anemia and associated poor outcomes support screening all preoperative patients with a complete blood count (CBC), except those undergoing minor procedures. A time frame of 4 to 6 weeks preoperatively is optimal for appropriate diagnosis of anemia and initiation of targeted therapies. The authors recommend collecting blood samples for both a CBC and an anemia panel at the first preoperative visit for the convenience of the patient. If the CBC identifies a hemoglobin of less than 11 g/dl in pregnant women, less than 12 g/dl in nonpregnant women, or less than 13 g/dl in men, the anemia panel should be run automatically to identify the cause of the anemia, which can then be treated. This review outlines screening, indicated testing, test interpretation, and treatment of common etiologies of anemia, including iron deficiency, anemia of inflammation, and vitamin B12 and folate deficiencies. The authors believe that clinicians providing preoperative evaluations can evaluate the most common etiologies of preoperative anemia but should recognize contexts requiring consultation of hematologists. *(Summary: M. J. Avram. Image: Adobe Stock.)*



997 Systematized Serendipity: Fishing Expeditions for Anesthetic Drugs and Targets (Review Article)

Although hypothesis-driven research has established the basis of modern healthcare, scientific advances have emerged from serendipitous discoveries that resulted in unexpected paradigm shifts. This review discusses scientific tools that largely dissociate results from mechanistic hypothesis, forward screens. Unlike a reverse screen, which measures the effects of a set of known genes or drugs, a forward screen goes from phenotype to genotype or drug. The models chosen for large-scale forward screens are generally capable of both high throughput at the initial screening step and subsequent characterization of the hits. After identification of a gene or a drug, hypotheses are generated and the standard scientific method is employed. The authors review several high-throughput forward screens that have discovered genes and compounds that had not been implicated in anesthesia. These include three high-throughput forward screens for genes that influence anesthetic sensitivity, two in the nematode and one in the fruit fly, and a forward screen for novel anesthetic drugs in the zebrafish. An example of a potential advantage of the forward screen is the possibility of discovering a sedative-hypnotic with a novel mechanism of action. *(Summary: M. J. Avram. Image: From original article.)*