



695 Intraoperative Transitions of Anesthesia Care and Postoperative Adverse Outcomes

Intraoperative transfers of patient care among anesthesia caregivers are relatively frequent. Lost critical information during handovers may result in delays, inefficiencies, suboptimal care, or patient harm. Records for 135,810 adults who had noncardiac surgery with general or regional anesthesia between 2005 and 2012 were reviewed to determine the association between total number of anesthesia handovers during a case and an adjusted collapsed composite of in-hospital mortality and major morbidities. Each anesthetic handover increased the risk of the composite outcome by 8%. Adverse effects of handovers were similar for attending anesthesiologists and medically directed residents and certified

registered nurse anesthetists (CRNAs) and were virtually identical for residents and CRNAs. *See the accompanying Editorial View on page 673.* (Summary: M.J. Avram. Photo illustration: J.P. Rathmell; A. Johnson/Vivo Visuals.)



707 Matched Cohort Study of Postoperative Outcomes in Obstructive Sleep Apnea: Could Preoperative Diagnosis and Treatment Prevent Complications?

Postoperative cardiovascular and respiratory complications in 1,581 patients up to 5 yr before diagnosis of obstructive sleep apnea (OSA) by polysomnography and in 2,640 patients after diagnosis of OSA and prescription of continuous positive airway pressure (CPAP) therapy were compared to those in 16,277 matched controls at low risk of having sleep apnea. Diagnosis of OSA and prescription of CPAP was associated with a reduced risk of cardiovascular complications but the risk of respiratory complications was increased in both

OSA groups. Increasing OSA severity, age, comorbid disease, and type of surgery were also important risk factors for both cardiovascular and respiratory complications. (Summary: M.J. Avram. Photo: J.P. Rathmell.)



801 Effects of Dexmedetomidine on Sleep Quality in Critically Ill Patients: A Pilot Study

The impaired sleep quality of critically ill patients may lead to morbidity. A pilot study determined sleep quality in 13 hemodynamically stable critically ill patients for 57 h, divided into three nighttime and two daytime periods, during the second night of which dexmedetomidine was administered to maintain a light level of sedation. Dexmedetomidine infusion significantly increased sleep efficiency and improved sleep architecture by reducing sleep fragmentation and stage 1 sleep and by increasing stage 2 sleep. Nighttime dexmedetomidine infusion shifted sleep mainly to nighttime, partly restoring normal circadian rhythm. However, sleep quality remained low because dexmedetomidine

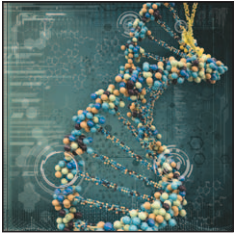
did not increase the most restorative sleep stages, slow-wave and rapid eye movement sleep. (Summary: M.J. Avram. Photo: J.P. Rathmell.)



808 Impact of the Anesthetic Conserving Device on Respiratory Parameters and Work of Breathing in Critically Ill Patients under Light Sedation with Sevoflurane

Sevoflurane can be administered in the intensive care unit via the Anesthetic Conserving Device (ACD) (AnaConDa®; Sedana Medical AB, Uppsala, Sweden), a specific heat and moisture exchanger that could corrupt ventilatory mechanics during weaning due to increased dead space and airflow resistance. The ventilatory effects of sevoflurane administered with the ACD were compared with those of management with intravenous sedation and a heated humidifier or an

ACD in 15 consecutive patients receiving pressure support ventilation. Sevoflurane use via the ACD normalized the increased work of breathing and the worsened ventilatory parameters observed during an identical level of sedation with remifentanyl and the ACD, suggesting light sedation with sevoflurane and the ACD can be used for weaning patients from mechanical ventilation. (Summary: M.J. Avram. Photo: J.P. Rathmell.)



825 **OPRM1 A118G Gene Variant and Postoperative Opioid Requirement: A Systematic Review and Meta-analysis**

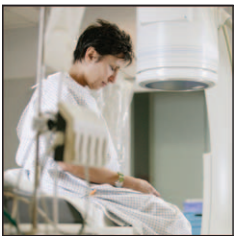
The contribution of μ -opioid receptor (*OPRM1*) A118G single nucleotide polymorphisms to interindividual variability in response to opioids is unclear. A meta-analysis of 18 studies of the postoperative opioid requirements of 4,607 patients, 2,121 with the AA genotype and 2,486 with the AG/GG genotype, found the *OPRM1* genetic variant had overall effects on postoperative opioid requirements, with each additional copy of the G allele increasing the need for opioids. Subgroup meta-analysis found the A118G allele was associated with postoperative opioid requirements in Asians but not in

Caucasians, A118G affected the requirement for morphine but not fentanyl, and A118G affected opioid requirements after visceral surgery but not after nonvisceral surgery. *See the accompanying Editorial View on page 678.* (Summary: M.J. Avram. Illustration: ©Thinkstock.)



894 **Noise in the Operating Room (Clinical Concepts and Commentary)**

Noise in the operating room may pose occupational health risks to the surgical staff, impede their performance, and jeopardize patient comfort and safety. Guidelines for safe occupational noise levels, which represent a compromise between practicality and hearing protection, are reviewed. Sources of noise, noise levels in the operating room, and the effect of operating room noise pollution on occupational health, cognition, communication, and performance are also reviewed as is music, a special type of noise that can have either a harmful or a beneficial effect. Simple and inexpensive interventions to minimize many of the harmful effects of noise are suggested. (Summary: M.J. Avram. Image: J.P. Rathmell.)



852 **Brain Neuroplastic Changes Accompany Anxiety and Memory Deficits in a Model of Complex Regional Pain Syndrome**

The existence of pain-associated cognitive and emotional comorbidities in chronic complex regional pain syndrome (CRPS) patients suggests alterations in brain structure and function contribute to these sustained features. A mouse tibial fracture/cast immobilization model, characterized by nociceptive sensitization, bone demineralization, edema, and warmth similar to changes found in CRPS I patients, was used to measure behavioral phenotypes of anxiety and memory dysfunction that accompany ongoing mechanical allodynia as well as neuroplastic changes that are associated with these phenotypes. Selective measures of anxiety and impaired working and social memory accompanied nociceptive sensitization as did changes in dendritic architecture and decreased synaptophysin and brain-derived neurotrophic factor concentrations in specific brain regions.

See the accompanying Editorial View on page 675. (Summary: M.J. Avram. Photo: ©Thinkstock.)



730 **Effect of Hydroxyethyl Starch on Postoperative Kidney Function in Patients Having Noncardiac Surgery**

Large randomized trials of critically ill patients given large volumes of low molecular weight hydroxyethyl starch (HES) solution found it increased the risk of acute kidney injury (AKI) and mortality. To test the hypothesis that intraoperative HES administration increases the risk of postoperative kidney injury in patients undergoing noncardiac, nonurological surgery, 14,680 patients receiving both crystalloid and high molecular weight colloid solutions were propensity matched to patients given only crystalloids. Intraoperative HES use was associated with a 21% increase in the risk of AKI, with the risk

increasing as a function of colloid volume. The risk of in-hospital or 90-day mortality was not increased in patients receiving HES. (Summary: M.J. Avram. Photo: J.P. Rathmell.)