

524 Measurement of Disability-free Survival after Surgery

The most important patient-centered outcomes after surgery are survival and freedom from disability. The World Health Organization Disability Assessment Schedule 2.0 (WHODAS), which was developed to measure disability cross-culturally, in the aged, and for disease-related states, was evaluated in a diverse cohort of 510 surgical patients with varying degrees of comorbid medical disease, disability, and health. Because there is no “gold standard” patient-centered long-term postsurgical outcome measure, WHODAS correlation with well-validated health status instruments that measure different but related constructs was used to assess its validity. WHODAS is a clinically acceptable, valid, reliable, and responsive instrument

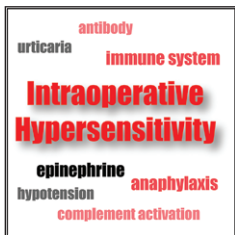
in a surgical population that can be used to measure disability-free survival as an endpoint in perioperative studies. See the accompanying Editorial View on [page 481](#). (Summary: M.J. Avram. Photo Illustration: J.P. Rathmell/A. Johnson, Vivo Visuals.)



659 Postoperative Opioid-induced Respiratory Depression: A Closed Claims Analysis

Postoperative opioid-induced respiratory depression is a potentially preventable cause of death and brain damage. The 9,799 claims of the Anesthesia Closed Claims Project database were reviewed and 92 events that occurred between 1990 and 2009 and met inclusion criteria for possible, probable, or definite postoperative opioid-induced respiratory depression were identified. These cases were analyzed to identify clinical characteristics and management factors that were associated with postoperative respiratory depression. Most respiratory events that resulted in malpractice claims occurred within the first 24 h after surgery, were

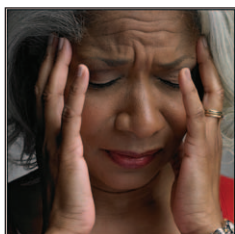
often preceded by a period of somnolence before significant critical events resulting in death or severe brain damage, and were preventable. See the accompanying Editorial View on [page 484](#). (Summary: M.J. Avram. Photo: ©Thinkstock.)



551 Incidence of Intraoperative Hypersensitivity Reactions: A Registry Analysis

The reported incidence of intraoperative hypersensitivity reactions ranges from 1 in 1,480 to 1 in 10,000 anesthetics. The methodological challenges of identifying, evaluating, and characterizing hypersensitivity reactions need to be addressed to estimate the true incidences accurately. A novel methodology combining electronic search strategies and clinical adjudication was used to identify occurrences of hypersensitivity reactions. The overall incidence of hypersensitivity reactions identified from the electronic records of 178,746 procedures performed on 120,242 patients was 1 in 677 and that of anaphylaxis was 1 in 4,583. The incidence of

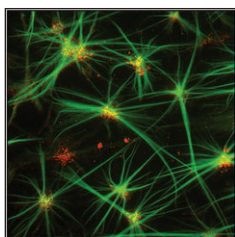
anaphylaxis was similar to that reported in previous studies but that of hypersensitivity reactions was nearly seven times higher. (Summary: M.J. Avram. Illustration: J.P. Rathmell.)



677 Review of the Performance of Quantitative Sensory Testing Methods to Detect Hyperalgesia in Chronic Pain Patients on Long-term Opioids

Opioid-induced hyperalgesia (OIH) is a syndrome in which patients on long-term opioids become more sensitive to pain while taking opioids. Although OIH has been demonstrated in animal models and there is evidence of its occurrence in humans, it is uncertain whether clinical OIH exists. A systematic review of 14 clinical studies incorporating measures of hyperalgesia in chronic pain patients on long-term opioids was conducted to assess the performance of the sensory testing methods used. A gold standard for hyperalgesia measures could not be identified because measures studied were not sensitive enough, study samples were too

small, study designs were suboptimal, or studies failed to control for the timing of opioid dosing. (Summary: M.J. Avram. Photo: ©Thinkstock.)



666 Role of Spinal CXCL1 (GRO α) in Opioid Tolerance: A Human-to-rodent Translational Study

Neuroinflammation plays a pivotal role in the development of opioid tolerance in animals. CXCL1 is a chemokine involved in neuroinflammation. Cerebrospinal fluid CXCL1 concentrations were increased in 30 patients with cancer-related pain controlled by opioids compared with concentrations in 10 age-matched opioid naïve control subjects without cancer and were correlated with opioid dose. CXCL1 messenger RNA was up-regulated in the rat spinal cord after the induction of tolerance by intrathecal morphine administration. Morphine analgesic efficacy in rats was nearly undetectable within 24 h of commencing its intrathecal coadministration with

CXCL1 but was at least partially preserved when it was coadministered with CXCL1 neutralizing antibody or a CXCL1 receptor antagonist. (Summary: M.J. Avram. Image: Immunofluorescent staining of astrocytes in culture demonstrating colocalization of CXCL1 [red] with astrocytes [green staining for GFAP]. From Xu et al.: *NF κ B-mediated CXCL1 production in spinal cord astrocytes contributes to the maintenance of bone cancer pain in mice*. *J Neuroinflammation* 2014; 11:38 [open access].)



631 Effects of Ultraprotective Ventilation, Extracorporeal Carbon Dioxide Removal, and Spontaneous Breathing on Lung Morphofunction and Inflammation in Experimental Severe Acute Respiratory Distress Syndrome

The ability of ultraprotective mechanical ventilation (UP-MV) and extracorporeal carbon dioxide removal with and without spontaneous breathing to improve respiratory function and lung protection was studied in a pig model of severe early acute respiratory distress syndrome. Animals were randomly assigned to 6 h of MV with conventional protective controlled MV, controlled UP-MV, UP-MV with spontaneous breathing, or UP-MV with pressure-supported spontaneous

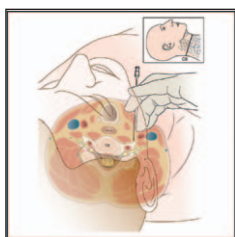
breathing. Extracorporeal carbon dioxide removal allowed ultralow tidal volumes while keeping arterial carbon dioxide partial pressure in an acceptable range. MV with tidal volumes of approximately 3 ml/kg without spontaneous breathing reduced lung damage slightly, but worsened oxygenation and intrapulmonary shunt. Spontaneous breathing during UP-MV improved gas exchange and distribution of ventilation, but pressure support increased lung inflammation. (Summary: M.J. Avram. Photo: J.P. Rathmell.)



495 Practice Advisory on Anesthetic Care for Magnetic Resonance Imaging: An Updated Report by the American Society of Anesthesiologists Task Force on Anesthetic Care for Magnetic Resonance Imaging (Practice Parameters)

This Practice Advisory updates "Practice Advisory on Anesthetic Care for Magnetic Resonance Imaging: A Report by the American Society of Anesthesiologists Task Force on Anesthetic Care for Magnetic Resonance Imaging," adopted by the ASA in 2008 and published in 2009. Advisory statements are provided on magnetic resonance imaging (MRI) safety education, screening of anesthetic care providers and ancillary support personnel entering zone III or IV, screening

of patients for patient-related or equipment-related risks for adverse outcomes associated with MRI procedures, and determining and implementing an individualized anesthetic plan before the MRI procedure begins. Statements are also provided on patient management during MRI procedures, including monitoring, anesthetic care, airway management, and management of emergencies, and on postprocedure care. (Summary: M.J. Avram. Illustration: J.P. Rathmell.)



699 Invasive Treatments for Complex Regional Pain Syndrome in Children and Adolescents: A Scoping Review (Review Article)

Thirty-six articles published between 1972 and 2013 including 173 pediatric patients who received invasive pain therapy for complex regional pain syndrome (CRPS) were reviewed to synthesize evidence on the effectiveness of invasive treatments in children and adolescents. Most were case reports or case series and few used established diagnostic criteria for CRPS. Patients had usually first undergone conservative treatment. Invasive procedures were most often various sympathetic blocks, epidural catheters, and peripheral/plexus regional anesthesia. Nearly half of patients received multiple invasive interventions and many also underwent

conservative treatment. Although positive outcomes were generally reported, a validated outcome instrument was seldom used. Evidence for the effectiveness of invasive treatments for CRPS in children and adolescents is weak. (Summary: M.J. Avram. Illustration: G. Nelson [reproduced with permission from Neal JM, Rathmell JP: *Complications in Regional Anesthesia and Pain Medicine*, 2nd edition. Philadelphia, Lippincott Williams & Wilkins, 2012].)