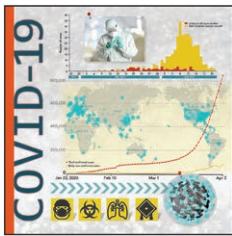


THIS MONTH IN ANESTHESIOLOGY



1346 COVID-19 Infection: Implications for Perioperative and Critical Care Physicians (Special Section: COVID-19)

Infection with Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) leads to the syndrome of Coronavirus Disease 2019 (COVID-19). While most COVID-19 patients have mild symptoms and good prognosis, a subset will require admission to the intensive care unit and respiratory support with noninvasive or invasive ventilation, or potentially extracorporeal membrane oxygenation. Anesthesiologists will be called on to provide supportive care to these patients while minimizing the risk of viral transmission to themselves and others until therapeutic interventions and vaccination options to help minimize morbidity and mortality have been developed. This article summarizes the latest insights into the pathogenesis of COVID-19, the typical presentation and diagnosis of COVID-19 as well as variations in its presentations, management of COVID-19 associated

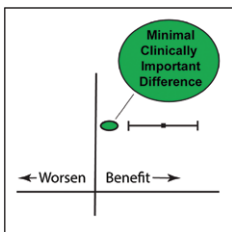
respiratory failure, and potential therapeutic interventions. It draws on literature from other viral epidemics, treatment of acute respiratory distress syndrome, recent publications on COVID-19, and guidelines from major health organizations to provide a comprehensive summary of the evidence currently available to guide management of critically ill patients with COVID-19. (Summary: M. J. Avram. Image: A. Johnson, Vivo Visuals.)



1307 Perioperative Management of Patients Infected with the Novel Coronavirus: Recommendation from the Joint Task Force of the Chinese Society of Anesthesiology and the Chinese Association of Anesthesiologists (Special Section: COVID-19)

Anesthesiologists are among healthcare workers at highest risk of becoming infected with Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) because of close contact with patients with Coronavirus Disease 2019 (COVID-19) and exposure to respiratory droplets or aerosol from those patients' airways. This article provides recommendations of a task force formed by

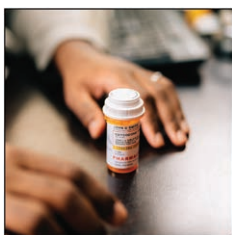
the Chinese Society of Anesthesiology and the Chinese Association of Anesthesiologists for the management of patients with known or suspected COVID-19 in the perioperative setting as well as for their emergency airway management outside the operating room. These recommendations are based on World Health Organization (WHO) and National Health Commission of the People's Republic of China guidelines for the prevention and treatment of COVID-19, clinical experience from frontline care providers, and a comprehensive review of the most recent literature on the perioperative management of infectious patients. The aim of these recommendations is to optimize patient care while protecting patients, healthcare workers, and the public from becoming infected with SARS-CoV-2. (Summary: M. J. Avram. Image: J. P. Rathmell.)



1362 Defining the Minimal Clinically Important Difference and Patient-acceptable Symptom State Score for Disability Assessment in Surgical Patients

It has been suggested that the 12-item World Health Organization Disability Assessment Schedule 2.0 be included as a measure of functional status in perioperative clinical trials. This study determined the minimal clinically important difference and patient-acceptable symptom state for the World Health Organization Disability Assessment Schedule 2.0 score using data collected prospectively from 4,361 patients in two published and one ongoing perioperative medicine studies, all of which measured disability 3 and 6 months after surgery using the assessment. The results of three distribution-based methods and two anchor-based methods were averaged to estimate the minimal clinically important difference for the score converted to a

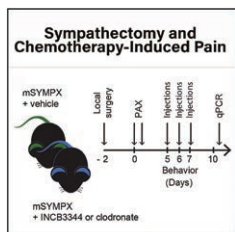
percentage scale. A change in the score of 5% or more after surgery was consistent with a clinically meaningful increase or decrease in the level of patient disability. A score of less than 16% was consistent with a patient-acceptable symptom state while a score of 35% or more was consistent with at least a moderate clinically significant disability. See the accompanying Editorial on [page 1296](#). (Summary: M. J. Avram. Image: J. P. Rathmell.)



1528 Persistent Postoperative Opioid Use: A Systematic Literature Search of Definitions and Population-based Cohort Study

The inconsistent definition of persistent postoperative opioid use in studies seeking to determine whether excessive exposure to opioids for the management of postoperative pain leads to long-term dependence makes interpretation of estimates and comparisons across studies difficult. This study evaluated whether the definition of persistent postoperative opioid use affects the reported incidence. A systematic search of the literature was performed to identify definitions of persistent postoperative opioid use. Each definition was then applied to the same cohort of 162,830 opioid-naïve patients presenting for surgery to determine the effects of the definitions employed on variability in estimated persistent opioid use. Twenty-nine unique defini-

tions of persistent postoperative opioid use were identified in 39 studies. Estimates of persistent opioid use in the year after surgery ranged from 0.01% (n = 10) to 14.7% (n = 23,442) of patients, depending on the definition of persistent use used, leading to the conclusion that development and widespread adoption of a single, clinically meaningful definition is important to both facilitate comparison of studies and ensure accurate communication of risk. See the accompanying Editorial on [page 1304](#). (Summary: M. J. Avram. Image: Adobe Stock.)



1540 Local Sympathectomy Promotes Anti-inflammatory Responses and Relief of Paclitaxel-induced Mechanical and Cold Allodynia in Mice

Chemotherapy-induced neuropathic pain is a disabling condition affecting up to 80% of patients during treatment with antineoplastic drugs, including paclitaxel. Preclinical evidence indicates immune cells in dorsal root ganglia play critical roles in the development and progression of chemotherapy-induced pain-like behaviors. The hypothesis that sympathetic nervous system activity regulates the progression of immune response in dorsal root ganglia and pain-like behaviors was tested in a well-characterized paclitaxel-induced mouse model of chemotherapy-induced neuropathic pain. Local microsympathectomy performed 2 days before paclitaxel treatment produced a fast and sustained recovery of mechanical allodynia in the ipsilateral hind paw of mice, with

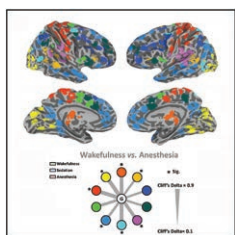
no effect observed in the contralateral paw, in addition to preventing cold allodynia after paclitaxel treatment. Transcriptional and pharmacologic results suggest a beneficial role of circulating monocytes and potentially infiltrating macrophages after local microsympathectomy. Microsympathectomy increased expression of transforming growth factor- β (TGF- β) and its receptor; recombinant TGF- β dose-dependent reduction of mechanical allodynia was abolished when it was co-injected with the TGF- β receptor 1 inhibitor SB431542. (Summary: M. J. Avram. Image: From original article.)



1371 Sugammadex versus Neostigmine for Reversal of Neuromuscular Blockade and Postoperative Pulmonary Complications (STRONGER): A Multicenter Matched Cohort Analysis

Approximately 5% of patients experience a major pulmonary complication after inpatient noncardiac surgery. Residual neuromuscular blockade is a common, modifiable risk factor for major postoperative pulmonary complications. The hypothesis tested in a retrospective observational matched-cohort analysis was that adult patients undergoing inpatient surgery requiring general anesthesia with tracheal intubation administered sugammadex to reverse neuromuscular blockade were at lower risk of postoperative pulmonary complications than were similar patients administered neostigmine. Across 12 U.S. hospitals, 22,856 sugammadex patients were matched to 22,856

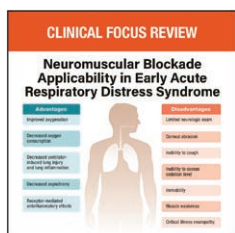
neostigmine patients. The primary outcome was a composite of postoperative pulmonary complications plausibly related to residual neuromuscular blockade including pneumonia, respiratory failure, or other major pulmonary complications. In multivariable conditional logistic regression analyses incorporating all covariates with an absolute standard difference more than 0.10 and each surgical procedure category, sugammadex administration was associated with a 30% reduced risk of pulmonary complications (adjusted odds ratio, 0.70; 95% CI, 0.63 to 0.77), 47% for pneumonia (adjusted odds ratio, 0.53; 95% CI, 0.44 to 0.62), and 55% (adjusted odds ratio, 0.45; 95% CI, 0.37 to 0.56) for respiratory failure. See the accompanying Editorial on [page 1299](#). (Summary: M. J. Avram. Image: J. P. Rathmell.)



1392 Altered Global Brain Signal during Physiologic, Pharmacologic, and Pathologic States of Unconsciousness in Humans and Rats

The hypothesis tested was that unconsciousness is accompanied by a loss of global temporal coordination, but different kinds of unconscious states may be distinguished by specific patterns of decoupling between local regions and global activity. Functional magnetic resonance imaging-derived global signals were studied across physiologic, pharmacologic, and pathologic states of unconsciousness: different natural sleep stages ($n = 9$) in humans; sedation and general anesthesia in humans ($n = 14$) and rats ($n = 12$); and patients with disorders of consciousness ($n = 21$). There was a strong association between the net strength of overall brain connectivity (measured by global signal amplitude and functional connectivity) and the level of consciousness in

both humans and rats. There were specific alterations in the global signal topography during unconsciousness states; nonrapid eye movement stage 3 sleep was characterized by a decoupling of sensory and attention networks from the global network, while general anesthesia and unresponsive wakefulness syndrome were characterized by a dissociation of the majority of functionally segregated networks from the global network. (Summary: M. J. Avram. Image: From original article.)



1577 Neuromuscular Blockade Applicability in Early Acute Respiratory Distress Syndrome (Clinical Focus Review)

Neuromuscular blockade has been reported to improve survival in some studies of patients with acute respiratory distress syndrome (ARDS). There have been two recent large randomized trials of the use of neuromuscular blockade in ARDS patients. One sought to determine whether a 48-h cisatracurium infusion with deep sedation early in the course of severe ARDS would improve clinical outcomes compared to deep sedation alone and, after performing preplanned adjustments, reported the hazard ratio for death at 90 days was 0.68 in the cisatracurium group. Another comparing the effects of a 48-h continuous cisatracurium infusion with deep sedation to those of light sedation without neuromuscular blockade was stopped early for futility to detect a difference in

in-hospital death at 90 days. This Clinical Focus Review discusses these studies then compares them in an attempt to determine why the findings were apparently different. It concludes neuromuscular blockade likely offers no advantage in ARDS patients who can be managed with light sedation but may be beneficial in those who require deep sedation. (Summary: M. J. Avram. Image: From original article.)