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ANESTHESIOLOGY

Volume 136
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Special Article

Opioids and Public Health: The Prescription Opioid Ecosystem and Need for Improved Management
E. D. Kharasch, J. D. Clark, J. M. Adams 10

Despite major restrictions on opioid prescribing, the opioid overdose crisis worsens. The prescription opioid ecosystem concept encompasses supply, demand, and the pool available for diversion. Emphasis is needed on facilitating opioid disposal and return to diminish the pool.

Practice Parameter

🌐 **2022 American Society of Anesthesiologists Practice Guidelines for Management of the Difficult Airway***
J. L. Apfelbaum, C. A. Hagberg, R. T. Connis, B. B. Abdelmalak, M. Agarkar, R. P. Dutton, J. E. Fiadjoe, R. Greif, P. A. Klock, Jr., D. Mercier, S. N. Myatra, E. P. O’Sullivan, W. H. Rosenblatt, M. Sorbello, A. Tung 31

These practice guidelines update the “Practice guidelines for management of the difficult airway: A report by the American Society of Anesthesiologists Task Force on Management of the Difficult Airway.” These updated guidelines are intended for use by anesthesiologists and all other individuals who deliver or who are responsible for difficult airway management. The update may also serve as a resource for other physicians and healthcare professionals who manage patients with expected, unexpected, or emergency difficult airways. *SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT*

Perioperative Medicine

CLINICAL SCIENCE

🌐 ♦ 🔊 **Carbon Dioxide Changes during High-flow Nasal Oxygenation in Apneic Patients: A Single-center Randomized Controlled Noninferiority Trial**
T. Riva, R. Greif, H. Kaiser, T. Riedel, M. Huber, L. Theiler, S. Nabecker 82

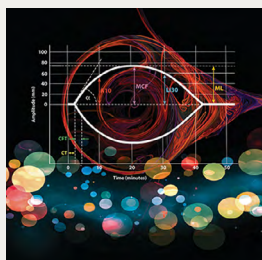
Adults undergoing elective surgery underwent preoxygenation, standardized anesthetic induction, and randomization to 15 min of apneic oxygenation via endotracheal tube (0.25 l/min) or high-flow nasal oxygen (2 to 70 l/min) with jaw thrust or with laryngoscopy. The primary outcome was the linear rate of increase of arterial carbon dioxide, with a predetermined noninferiority margin of 0.3 mmHg · min⁻¹ between groups. All groups met the noninferiority criteria and with comparable arterial partial pressure of carbon dioxide increases between groups, suggesting an absence of ventilatory effects for high-flow humidified nasal oxygen therapy. *SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT*

🌐 ♦ 🔊 **Intraoperative Hypotension and Acute Kidney Injury after Noncardiac Surgery in Infants and Children: A Retrospective Cohort Analysis**
N. Y. Schacham, S. Chhabada, P. N. Efune, X. Pu, L. Liu, D. Yang, P. C. Raza, P. Szmuk, D. I. Sessler 93

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ON THE COVER: The relationship between late clinical outcomes after injury and early dynamic changes between fibrinolytic states is not fully understood. In this issue of ANESTHESIOLOGY, Rossetto *et al.* examine temporal transitions in fibrinolysis states using rotational thromboelastometry (ROTEM) in a cohort of trauma patients. In an accompanying editorial, Myles and Medcalf discuss how this article advances our understanding of fibrinolysis and trauma outcomes. Cover Illustration: A. Johnson, Vivo Visuals Studio.

- Rossetto *et al.*: Temporal Transitions in Fibrinolysis after Trauma: Adverse Outcome Is Principally Related to Late Hypofibrinolysis, p. 148
- Myles and Medcalf: Fibrinolysis and Trauma Outcomes, p. 7



In a large cohort of pediatric surgical patients in whom creatinine concentrations were measured preoperatively and postoperatively, there was no association between lowest mean arterial pressure and acute kidney injury. There was also no association between largest percentage reduction in mean arterial pressure and acute kidney injury. *SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT*

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Mediastinal Masses, Anesthetic Interventions, and Airway Compression in Adults: A Prospective Observational Study
P. M. Hartigan, S. Karamnov, R. R. Gill, J.-M. Ng, S. Yacoubian, H. Tsukada, J. Swanson, J. Barlow, T. L. McMurry, R. S. Blank 104

This prospective, single-center, observational study measured the dynamic change in the anterior–posterior diameter of the segment of the compressed central airway during staged induction of 17 adult patients with large mediastinal masses. The compression of the central airway in a semisitting position did not worsen after muscle paralysis or muscle paralysis plus positive pressure ventilation compared with that occurring during awake, spontaneous breathing. *SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT*

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Pain and Opioid Consumption and Mobilization after Surgery: Post Hoc Analysis of Two Randomized Trials
E. Rivas, B. Cohen, X. Pu, L. Xiang, W. Saasouh, G. Mao, P. Minko, L. Mosteller, A. Volio, K. Maheshwari, D. I. Sessler, A. Turan 115

The authors combined data from two abdominal surgery trials and evaluated pain, opioid use, and mobilization. Pain was associated with less mobilization, but opioid consumption was not. Overall mobilization was low, and complications were more frequent in those who mobilized poorly.

- 

Hemodynamic Responses to Crystalloid and Colloid Fluid Boluses during Noncardiac Surgery
C. Reiterer, B. Kabon, S. Halvorson, D. I. Sessler, E. J. Mascha, A. Kurz, Crystalloid-Colloid Research Group 127




The cardiac index was similar in 973 patients randomized to colloid- or crystalloid-based goal-directed fluid management. Fewer colloid boluses were required but not by a clinically meaningful amount. *SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT*

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Prolonged Blood Storage and Risk of Posttransfusion Acute Kidney Injury
J. Adegboye, S. Sapatnekar, E. J. Mascha, K. Shah, M. Lioudis, H. Essber, B. Cohen, E. Rivas, N. M. Heddle, J. W. Eikelboom, M. H. Ellis, Y. Sharon, R. Sinha, A. Kurz, D. I. Sessler 138




In a planned subanalysis of a large trial that evaluated mortality in hospitalized patients randomized to either the freshest or the oldest available erythrocyte units, there was no difference in the incidence of posttransfusion acute kidney injury.

Critical Care Medicine

CLINICAL SCIENCE

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Temporal Transitions in Fibrinolysis after Trauma: Adverse Outcome Is Principally Related to Late Hypofibrinolysis
A. Rossetto, P. Vulliamy, K. M. Lee, K. Brohi, R. Davenport 148

In a secondary analysis of previously collected data from injured patients at a major trauma center in the United Kingdom, late outcomes (*e.g.*, multiple organ failure) were most closely related to hypofibrinolysis on thromboelastography 24 h after injury, irrespective of admission lysis parameters. Tranexamic acid is associated with lower early mortality and a shift toward hypofibrinolysis, but not with significant impact on late outcomes. *SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT*

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Poor Correlation between Diaphragm Thickening Fraction and Transdiaphragmatic Pressure in Mechanically Ventilated Patients and Healthy Subjects
T. Poulard, D. Bachasson, Q. Fossé, M.-C. Niérat, J.-Y. Hogrel, A. Demoule, J.-L. Gennisson, M. Dres 162


Diaphragm thickening fraction and transdiaphragmatic pressure were compared using ultrasound and catheter pressure measurements from two previously published studies of 14 healthy and 25 mechanically ventilated patients. In healthy patients, moderate correlations between diaphragm thickening fraction with transdiaphragmatic pressure and pressure-time indices were observed. In ventilated patients, weak correlations were observed with transdiaphragmatic pressure and none with pressure-time index. Ultrasound use to assess diaphragm function should be done with caution. *SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT*

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C. Zeng, D. Lagier, J.-W. Lee, M. F. Vidal Melo 181

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◆ Perioperative Pulmonary Atelectasis: Part II. Clinical Implications
D. Lagier, C. Zeng, A. Fernandez-Bustamante, M. F. Vidal Melo.....206

Up-to-date evidence on clinical risk factors and advanced diagnostic approaches of pulmonary atelectasis are reviewed. Novel perspectives on perioperative therapeutic management based on lung imaging studies and recent clinical trials are provided to clinicians.

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