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◆◆◆ **Burnout Rate and Risk Factors among Anesthesiologists in the United States**

A. M. Afonso, J. B. Cadwell, S. J. Staffa, D. Zurakowski,
A. E. Vinson683

On the basis of the Maslach Burnout Inventory Human Services Survey conducted during March 2020, the rate of high risk of burnout among anesthesiologists in the United States was 59.2% (2,307 of 3,898), and the rate of burnout syndrome was 13.8% (539 of 3,898). Perceived lack of support at work and at home were most strongly associated with burnout syndrome on multivariable logistic regression modeling. Age was the only personal factor that was associated with burnout syndrome. *SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT*

◆◆◆ **Perioperative Methadone and Ketamine for Postoperative Pain Control in Spinal Surgical Patients: A Randomized, Double-blind, Placebo-controlled Trial**

G. S. Murphy, M. J. Avram, S. B. Greenberg, J. Benson,
S. Billimoria, C. E. Maher, K. Teister, J. W. Szokol697

In a randomized trial of 130 spinal surgery patients, adding ketamine to methadone reduced pain scores from 4 to 2 points on an 11-point Likert scale and roughly halved postoperative opioid use. Adding low-dose ketamine to methadone improves analgesia and reduces opioid requirement and could be considered in patients recovering from spine surgery. *SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT*

◆ **Supplemental Intraoperative Oxygen and Long-term Mortality: Subanalysis of a Multiple Crossover Cluster Trial**

Q. Jiang, A. Kurz, X. Zhang, L. Liu, D. Yang, D. I. Sessler709

In a *post hoc* analysis of a controlled trial of 3,471 colorectal surgeries, the incidence of death after a median of 3 yr of follow-up was 13% with 80% oxygen and 14% with 30% oxygen, giving an estimated hazard ratio for mortality of 0.94 (95% CI, 0.78 to 1.13; $P = 0.493$). Supplemental oxygen does not increase mortality.

◆ Refers to This Month in ANESTHESIOLOGY

◆ Refers to Editorial

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ON THE COVER: Physician burnout, widespread across medicine, is linked to poorer physician quality of life and reduced quality of care. Data on prevalence of and risk factors for burnout among anesthesiologists are limited. In this issue of ANESTHESIOLOGY, Afonso *et al.* present the results of a survey of member anesthesiologists of the American Society of Anesthesiologists conducted during March 2020 aimed at improving our understanding of burnout in anesthesiologists. In an accompanying editorial, Hyman traces the origins of the term “burnout,” how it is now measured, and the value of this new study in emphasizing the burnout problem for anesthesiologists and the need for future studies on burnout and therapy. Cover Illustration: A. Johnson, Vivo Visuals.

- Afonso *et al.*: Burnout Rate and Risk Factors among Anesthesiologists in the United States, p. 683
- Hyman: Burnout: The “Other” Pandemic, p. 673

- ◇ Posterior Quadratus Lumborum Block in Total Hip Arthroplasty: A Randomized Controlled Trial
S. M. Brixel, P. Biboulet, F. Swisser, O. Choquet, Y. Aarab, H. Nguyen, S. Bringuier, X. Capdevila.....722

In the context of a multimodal postoperative analgesic strategy, providing a quadratus lumborum block using ropivacaine resulted in no less morphine consumption or pain in the first 24 postoperative hours compared to saline injection. Quadratus lumborum block also provided no advantages in terms of time to first standing, ambulation, or hospital stay.

BASIC SCIENCE

- ◇ Neurons in the Nonhuman Primate Amygdala and Dorsal Anterior Cingulate Cortex Signal Aversive Memory Formation under Sedation
N. Samuel, E. Kahana, A. Taub, T. Reitich-Stolero, R. Paz, A. Raz.....734

In nonhuman primates, aversive memory formation occurs under midazolam and ketamine anesthesia. The firing rate of neurons in the amygdala and the dorsal cingulate cortex during memory acquisition under anesthetics predicts the memory retention response after anesthesia. These observations suggest that implicit memory formation under anesthesia follows similar rules and engages the same structures and mechanisms as in the awake state.

Critical Care Medicine

CLINICAL SCIENCE

- ◇ Changes in Respiratory Muscle Thickness during Mechanical Ventilation: Focus on Expiratory Muscles
Z.-H. Shi, H. de Vries, H.-J. de Groot, A. H. Jonkman, Y. Zhang, M. Haaksma, P. M. van de Ven, A. A. M. E. de Man, A. Girbes, P. R. Tuinman, J.-X. Zhou, C. Ottenheijm, L. Heunks.....748

Inter- and intrarater reproducibility was strong (intraclass correlation coefficients 0.994 [95% CI, 0.987 to 0.997] and 0.992 [95% CI, 0.957 to 0.998], respectively). Muscle thickness increased by 3.2% after increasing lung volume by a mean of 481 ± 64 ml. Although muscle thickness remained stable in the majority of subjects, it decreased in 22% and increased in 12% with no association with changes in diaphragmatic thickness. Exploratory analyses suggest no relation with a variety of clinical or physiologic parameters or medications. Time-dependent decreases in thickness resulted from muscle loss, whereas increases largely resulted from increases in thickness of the interparietal fasciae. *SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT*

- Reverse Triggering Dyssynchrony 24 h after Initiation of Mechanical Ventilation
R. Mellado Artigas, L. F. Damiani, T. Piraino, T. Pham, L. Chen, M. Rausero, I. Telias, I. Soliman, D. Junhasavasdikul, C. Santis, O. M. Smith, E. Goligher, N. Comtois, C. Sinderby, L. Heunks, L. Brochard.....760

The automated software had positive and negative predictive values of 0.74 (95% CI, 0.67 to 0.81) and 0.97 (95% CI, 0.96 to 0.98), respectively. In 39 patients primarily intubated for medical reasons and studied for 1 h at 24 h after intubation, the median reverse triggering rate was 8% (95% CI, 0.1 to 75); 44% of patients had reverse triggering in greater than or equal to 10% of breaths. The wide variability in frequency was not explained by patient demographics, reason for intubation, disease severity, or depth or type of sedation. The authors suggest that reverse triggering is common at 24 h after intubation and occurs during the transition between deep sedation and onset of patient triggering, leading to extubation. *SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT*

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S. Coppola, A. Caccioppola, S. Froio, D. Chiumello.....774

Intravenous sodium bicarbonate is commonly used in several critically ill conditions for the management of acute acidemia independently of the etiology, and for the prevention of acute kidney injury, although this is still controversial from a physiologic point of view.

- ◇ Clinical Applications of Near-infrared Spectroscopy Monitoring in Cardiovascular Surgery
C. W. Hogue, A. Levine, A. Hudson, C. Lewis.....784

Near-infrared spectroscopy monitoring provides a practical method to follow trends in superficial cerebral cortex oxygenation during and after cardiovascular surgery. Determination of the limits of cerebral pressure–flow autoregulation is now possible using processed oximetry signals in relation to arterial pressure.

REVIEW ARTICLE

◇ α 1-Antitrypsin: Key Player or Bystander in Acute Respiratory Distress Syndrome?

G. Hogan, P. Geoghegan, T. P. Carroll, J. Clarke, O. F. McElvaney, O. J. McElvaney, N. G. McElvaney, G. F. Curley792

New therapies are urgently required for acute respiratory distress syndrome, particularly in the context of the current SARS-CoV-2 pandemic. The endogenously produced protein α 1-antitrypsin is a potential treatment option because of its potent antielastase, immunomodulatory, and bactericidal effects.

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