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- Anesthesia and Outcome after Neonatal Surgery: The Role for Randomized Trials** 941  
*Andrew J. Davidson, Mary Ellen McCann, Neil S. Morton, and Paul S. Myles*
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- 2008 in Review: Advancing Medicine in Anesthesiology** 962  
*James C. Eisenach, Alain Borgeat, Zeljko J. Bosnjak, Timothy J. Brennan, Judy R. Kersten, Eberhard Kochs, Jerrold Lerman, David S. Warner, and Jeanine P. Wiener-Kronish*
- This review of 2008 ANESTHESIOLOGY publications highlights articles that have advanced clinical care and science in our medical specialty.
- PERIOPERATIVE MEDICINE
- 
- ◆ **Effects of Supervision by Attending Anesthesiologists on Complications of Emergency Tracheal Intubation** 973  
*Ulrich H. Schmidt, Kanya Kumwilaisak, Edward Bittner, Edward George, and Dean Hess*
- Supervision of anesthesia residents by an attending anesthesiologist is associated with a decreased incidence of complications during emergent intubations outside the operating room compared with intubations performed by resident physicians.

Continued on page 12A

◇ Refers to This Month in Anesthesiology

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◆ Refers to Editorial Views

- ◆◆  **$\gamma$ -Aminobutyric Acid-mediated Neurotransmission in the Pontine Reticular Formation Modulates Hypnosis, Immobility, and Breathing during Isoflurane Anesthesia** 978  
*Giancarlo Vanini, Christopher J. Watson, Ralph Lydic, and Helen A. Baghdoyan*  
 Isoflurane decreases pontine reticular formation  $\gamma$ -aminobutyric acid, and increasing or decreasing  $\gamma$ -aminobutyric acid increases or decreases time to loss of wakefulness. Pontine reticular formation  $\gamma$ -aminobutyric acid promotes wakefulness, and decreasing  $\gamma$ -aminobutyric acid contributes to isoflurane-induced loss of wakefulness.
- ◆◆ **Blood Transfusion Promotes Cancer Progression: A Critical Role for Aged Erythrocytes** 989  
*Shir Atzil, Michal Arad, Ariella Glasner, Noa Abiri, Roi Avraham, Keren Greenfeld, Ella Rosenne, Benzion Bellin, and Shamgar Ben-Eliyahu*  
 Mechanisms underlying the alleged cancer promoting effects of blood transfusion are unknown. Two tumor models were used in rats to study the impact of blood transfusion on the host ability to clear circulating cancer cells, and host survival rates. The potential deleterious characteristics of the transfusion were also studied. Blood transfusion was found to be a risk factor for cancer progression. In rats, blood storage time was the critical determinant of these deleterious effects and aged erythrocytes mediated the effects. These results have implications for cancer patients receiving erythrocyte transfusions.
- ◆ **Xenon Reduces *N*-Methyl-D-aspartate and  $\alpha$ -Amino-3-hydroxy-5-methyl-4-isoxazolepropionic Acid Receptor-mediated Synaptic Transmission in the Amygdala** 998  
*Rainer Haseneder, Stephan Kratzer, Eberhard Kochs, Veit-Simon Eckle, Walter Zieglgänsberger, and Gerhard Rammes*  
 In acute brain slice preparations of the mouse amygdala, xenon depresses *N*-methyl-D-aspartate and  $\alpha$ -amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid receptor-mediated currents without affecting inhibitory synaptic transmission. The results provide evidence that the effects are mediated *via* postsynaptic mechanisms.
- Fiberoptic Oral Intubation: The Effect of Model Fidelity on Training for Transfer to Patient Care** 1007  
*Deven B. Chandra, Georges L. Savoldelli, Hwan S. Joo, Israel D. Weiss, and Viren N. Naik*  
 Training for fiberoptic orotracheal intubation using a high-fidelity simulator *versus* a low-fidelity simulator was compared. No differences between training effects were observed. These findings do not support the added expense of the high-fidelity simulator.
- Electroencephalographic Order Pattern Analysis for the Separation of Consciousness and Unconsciousness: An Analysis of Approximate Entropy, Permutation Entropy, Recurrence Rate, and Phase Coupling of Order Recurrence Plots** 1014  
*Denis Jordan, Gudrun Stockmanns, Eberhard F. Kochs, Stefanie Pilge, and Gerhard Schneider*  
 The recently introduced order pattern analysis, in this investigation represented by permutation entropy, recurrence rate, and phase coupling of order recurrence plots, is suitable to analyze electroencephalographic signals and separate consciousness from unconsciousness.

*Continued on page 14A*

- ◇ **How Much Does Pharmacologic Prophylaxis Reduce Postoperative Vomiting in Children? Calculation of Prophylaxis Effectiveness and Expected Incidence of Vomiting under Treatment Using Bayesian Meta-analysis** 1023  
*Edgard Engelman, Jean-Corentin Salengros, and Luc Barvais*

The most pessimistic expectations result in a 50–60% relative risk reduction of postoperative vomiting. With the combinations of a 5-hydroxytryptamine receptor antagonist and dexamethasone, a relative risk reduction of 80% is expected.

- Signaling Pathways Involved in Desflurane-induced Postconditioning in Human Atrial Myocardium *In Vitro*** 1036

*Sandrine Lemoine, Gallic Beauchef, Lan Zhu, Emmanuelle Renard, Olivier Lepage, Massimo Massetti, André Khayat, Philippe Galera, Jean-Louis Gérard, and Jean-Luc Hanouz*

In isolated human atrial myocardium, desflurane-induced postconditioning involved protein kinase C activation, opening of mitochondrial adenosine triphosphate-sensitive potassium channels, Akt, extracellular-regulated kinase 1/2, and p38 mitogen-activated protein kinase phosphorylation.

## ■ CRITICAL CARE MEDICINE

- ◆◆ **Involvement of  $\beta_3$ -Adrenoceptor in Altered  $\beta$ -Adrenergic Response in Senescent Heart: Role of Nitric Oxide Synthase 1-derived Nitric Oxide** 1045  
*Aurélie Birenbaum, Angela Tesse, Xavier Loyer, Pierre Michelet, Ramarason Andriantsitohaina, Christophe Heymes, Bruno Riou, and Julien Amour*

In senescent heart,  $\beta_3$ -adrenoceptor induces an altered positive inotropic response to  $\beta$ -adrenoceptor stimulation involving nitric oxide synthase 1-derived nitric oxide production.

- Effect of Ischemia–Reperfusion on Renal Expression and Activity of  $N^G$ - $N^G$ -Dimethylarginine Dimethylaminohydrolases** 1054

*Giovanni Li Volti, Valeria Sorrenti, Rosaria Acquaviva, Paolo Murabito, Antonino Gullo, Maria Luisa Barcellona, Fabio Galvano, Luigi Rodella, Rita Rezzani, Luca Vanella, Giovanni Tringali, Massimo Caruso, Diego Gazzolo, and Claudia Di Giacomo*

The results suggest that ischemia–reperfusion injury leads to reduced dimethylarginine dimethylaminohydrolase activity and modification of enzymatic isoform expression, thus leading to increased asymmetric dimethylarginine levels, which result in systemic effects, including increased cardiovascular risk.

- Desmopressin Reduces Transfusion Needs after Surgery: A Meta-analysis of Randomized Clinical Trials** 1063

*Giuseppe Crescenzi, Giovanni Landoni, Giuseppe Biondi-Zoccai, Federico Pappalardo, Massimiliano Nuzzi, Elena Bignami, Oliviero Fochi, Giulia Maj, Maria Grazia Calabrò, Marco Ranucci, and Alberto Zangrillo*

This meta-analysis on the use of desmopressin as a hemostatic drug provides evidence for a reduction in blood product requirements in the perioperative period.

## ■ PAIN MEDICINE

- Gabapentin Acts within the Locus Coeruleus to Alleviate Neuropathic Pain** 1077  
*Ken-ichiro Hayashida, Hideaki Obata, Kunie Nakajima, and James C. Eisenach*

Gabapentin is clinically used for analgesia, but its mechanisms of action are unclear. In the current study, the authors demonstrated that gabapentin acts primarily on local circuits in the brainstem to stimulate descending noradrenergic inhibition.

*Continued on page 16A*

**Phase 2, Double-blind, Placebo-controlled, Dose-Response Trial of Intravenous Adenosine for Perioperative Analgesia** 1085

*Ashraf S. Habib, Harold Minkowitz, Timothy Osborn, Babatunde Ogunnaike, Keith Candiotti, Eugene Viscusi, Jiezhun Gu, Mary R. Creed, Tong J. Gan, and The Adenosine Study Group*

In a phase 2, randomized, double-blind, placebo-controlled study investigating the dose response of adenosine with respect to perioperative analgesia, the use of intraoperative adenosine did not provide a useful analgesic effect after gynecologic surgery.

**Tariquidar, a Selective P-glycoprotein Inhibitor, Does Not Potentiate Loperamide's Opioid Brain Effects in Humans despite Full Inhibition of Lymphocyte P-glycoprotein** 1092

*Daniel Kurnik, Gbenga G. Sofowora, John P. Donahue, Usha B. Nair, Grant R. Wilkinson, Alastair J. J. Wood, and Mordechai Muszkat*

Loperamide, a potent opioid that is a P-glycoprotein substrate, is devoid of central nervous system effects. The authors studied the effect of the highly selective P-glycoprotein inhibitor tariquidar on the central opioid effects of loperamide in healthy subjects.

**Sex Differences in the Effect of Dyspnea on Thermal Pain Threshold in Young Healthy Subjects** 1100

*Takashi Nishino, Shiroh Isono, Teruhiko Ishikawa, and Norihiro Shinozuka*

Experimentally induced dyspnea causes an increase in thermal pain threshold in male subjects but not in female subjects.

**Thoracic Epidural Analgesia with Low Concentration of Bupivacaine Induces Thoracic and Lumbar Sympathetic Block: A Randomized, Double-blind Clinical Trial** 1107

*Hendrik Freise, Andreas Meissner, Stefan Lauer, Björn Ellger, Robert Radke, Mathias Bruewer, Gerd Brodner, Hugo K. Van Aken, Andreas W. Sielenkämper, and Lars G. Fischer*

Thoracic epidural anesthesia with 10 ml bupivacaine, 0.25%, alters thoracic and lumbar skin temperature regulation, indicating a caudally nonrestricted sympathetic block that correlates with sensory block.

■ REVIEW ARTICLE

**Sympathetic Nervous System: Evaluation and Importance for Clinical General Anesthesia** 1113

*Martin Neukirchen and Peter Kienbaum*

This review evaluates different methods for determination of sympathetic nervous system activity and its role in human neurohumoral circulatory control with special regard to general anesthesia.

■ CLASSIC PAPERS REVISITED

🌐 **Propofol: Its Role in Changing the Practice of Anesthesia** 1132

*Paul F. White*

This article is a revisiting of original material published as: Shafer A, Doze VA, Shafer SL, White PF: Pharmacokinetics and pharmacodynamics of propofol infusions during general anesthesia. ANESTHESIOLOGY 1988; 69:348-56.

■ CASE REPORT

**Intraoperative Pacemaker Rate Changes Associated with the Rest Mode** 1137

*Scott C. Streckenbach*

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## ■ CORRESPONDENCE

**Avoidance of Perioperative Acute Renal Failure: Land in Sight?** 1140

*Daniel Chappell, Markus Rehm, and Matthias Jacob*

**Use of Cockcroft and Gault Formula for Estimation of Creatinine Clearance**

*Genevieve D'Souza, Eugene R. Viscusi, and John Rowlands*

**In Reply** *Sachin Kheterpal and Kevin K. Tremper*

**Minimizing the Risk of Intravascular Injection during Ultrasound-guided Peripheral Nerve Blockade** 1142

*Richard Brull, Anahi Perlas, Peter H. Cheng, and Vincent W. S. Chan*

**Ultrasound-guided Peripheral Nerve Blocks and Intravascular Injection**

*Hariharan Shankar*

**Accidental Intravascular Injection of Local Anesthetic?**

*Todd W. Nelson*

**In Reply** *Christian Loubert and Stephan R. Williams*

**In Reply** *Paul J. Zetlaoui, Jean-Philippe Labbe, and Dan Benhamou*

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