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# experience

**ANESTHESIOLOGY™ 2014**



OCTOBER 11-15 | NEW ORLEANS, LA

2014 SCIENTIFIC ABSTRACT GUIDE

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# INTRODUCTION

## LEARNING TRACK CODES

Sessions and scientific abstracts are designated by the following learning track codes:

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain

## ELECTRONIC POSTERS (E-POSTERS)

All Poster Discussions and Poster Sessions will be presented in an electronic format (e-posters) on large, high-definition monitors. Abstracts will also be available for viewing at your leisure on HD monitors located throughout the convention center. **Please note: Poster sessions will no longer offer CME credit.**

## SCIENTIFIC ABSTRACT SESSIONS

Scientific abstract sessions consist of Oral Presentations, Poster Discussions and Poster Sessions. During Oral Presentations and Poster Discussions, authors present a summary of their study, including their hypothesis, methods, data and conclusions. Questions and comments from the audience are welcome and encouraged at the conclusion of the presentation. Poster Sessions are in-depth and informative discussions among authors and attendees. Poster authors will be available for discussion during designated times during the meeting. Full text for all scientific abstracts will be available to view online in August at [goanesthesiology.org](http://goanesthesiology.org).

## LATE-BREAKING ABSTRACTS

Late-Breaking Abstracts focus on significant and timely findings while showcasing late-breaking data and results that affect the field of anesthesiology. These abstracts will be presented during designated periods during ANESTHESIOLOGY™ 2014.

## TARGET AUDIENCE

ANESTHESIOLOGY™ 2014 is intended for anesthesiologists, residents and other health care professionals interested in expanding their knowledge and enhancing their skills to improve competency and professional practice.

## OVERALL LEARNING OBJECTIVES

At the conclusion of this activity, participants should be able to:

- Assess the potential applications of emerging issues and advances that affect the practice of anesthesia.
- Integrate technical knowledge about state-of-the-art procedures, advanced therapeutic agents and medical device uses into practice.
- Apply contemporary practice management skills and knowledge of regulatory issues to the efficient and safe delivery of patient care.
- Translate expanded knowledge into improvements in practice, patient outcomes and patient satisfaction.

## ACCREDITATION AND CREDIT DESIGNATION STATEMENTS

This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint sponsorship of the American Society of Anesthesiologists (ASA®). ASA is accredited by the ACCME to provide continuing medical education for physicians.



ASA designates this live activity for a maximum of **44 AMA PRA Category 1 Credits™**. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

## RESIDENT DESIGNATION

The abstracts marked with this icon are presented by a resident.



## DISCLOSURE

The American Society of Anesthesiologists adheres to ACCME Essential Areas, Standards and Policies regarding industry support of CME. Disclosure of the planning committee and faculty's commercial relationships will be made known at the activity. Speakers are required to openly disclose any limitations of data and/or any discussion of any off-label, experimental, or investigational uses of drugs or devices in their presentations.

All abstract author disclosure information can be found at the end of this book. All planners' disclosure information can be found on the next page.

## RESOLUTIONS OF CONFLICTS OF INTEREST

In accordance with the ACCME Standards for Commercial Support of CME, the American Society of Anesthesiologists has implemented mechanisms, prior to the planning and implementation of this CME activity, to identify and resolve conflicts of interest for all individuals in a position to control content of this CME activity.

All faculty and planning committee members are required to disclose any financial relationships and will be listed accordingly at [goanesthesiology.org](http://goanesthesiology.org).

For a full listing of all presenters and their sessions, please go to [goanesthesiology.org](http://goanesthesiology.org).

#### **DISCLAIMER**

The information provided at this CME activity is for continuing education purposes only and is not meant to substitute for the independent medical judgment of a healthcare provider relative to diagnostic and treatment options of a specific patient's medical condition.

#### **PHOTOGRAPHY/VIDEOTAPING POLICIES**

No photography, videotaping or audio taping is permitted in the scientific abstract sessions, instructional courses, exhibit hall or committee meetings.

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## SPE11 BEST OF ABSTRACTS: BASIC SCIENCE

Monday, October 13 | 8-10 a.m. | Room 265-268

### FA BOS01

#### Acyclic Cucurbit[n]uril-Type Molecular Containers Bind Etomidate in Vitro and Reverse Etomidate Anesthesia in Rats Dose-Dependently

The molecular container Calabadiion 2 binds to etomidate in vitro (UV/Vis titration of RH 6G with calabadiion 2). Calabadiion 2 dose-dependently reverses EEG signs of etomidate anesthesia, and accelerates recovery of righting reflex in anesthetized rats. This class of drugs might promote recovery following etomidate hypnosis and eliminate its prolonged inhibitory effects on adrenal function. **Daniel Diaz-Gil, Medical Student, Ingrid Moreno Duarte, M.D., Joseph F. Cotten, M.D., Ph.D., Jessica L. Seidel, Ph.D., Shweta Ganapati, M.Sc., Ben Zhang, M.Sc., Jeroen C.P. Simons, Medical Student, Cenk Ayata, M.D., Lyle Isaacs, Ph.D., Matthias Eikermann, M.D., Ph.D.; Anesthesia, Critical Care and Pain Medicine, Radiology, Massachusetts General Hospital, Boston, MA, Chemistry and Biochemistry, University of Maryland, Baltimore, MD**

### CA BOS02

#### Cardiospinal Reflex Modulation of Ventricular Arrhythmogenesis

The goal of this study is to determine the role of cardiac afferent neural inputs in modulating sympathetic control of ventricular electrophysiology. Interruption of spinal afferent signals at T1-T4 results in enhanced cardiac sympathoexcitability, suggesting that afferent neuronal signals, from the heart, exert inhibitory control of myocardial excitability. This finding provides mechanistic insight into the role of thoracic spinal integration of cardiac afferent signals in regulation of cardiac excitability, and provides novel targets for neuromodulation therapy. **Kimberly J. Howard-Quijano, M.D., Kent Yamakawa, M.D., Wei Zhou, Ph.D., Kalyanam Shivkumar, M.D., Ph.D., Aman Mahajan, M.D., Ph.D.; Anesthesiology, Cardiology, University of California at Los Angeles, Los Angeles, CA**



### CA BOS03

#### LDL-Receptor Deficient Mice on Western Diet Develop Pulmonary Hypertension and Right Ventricular Dysfunction That Are Prevented by a Novel HDL Mimetic Peptide 4F

LDL-receptor deficient mice on western diet develop pulmonary hypertension and RV dysfunction that were prevented by HDL mimetic therapy. **Soban Umar, M.D., Ph.D., Kaveh D. Navab, M.D., Rod Partow-navid, B.S., Mohamad Navab, Ph.D., Mansoureh Eghbali, Ph.D.; Anesthesiology, UCLA Med Ctr, Los Angeles, CA**



### CA BOS04

#### The Calcium Channel, TRPV4, Is Required for Hypoxic Pulmonary Vasoconstriction

Hypoxic pulmonary vasoconstriction is a fundamental property of the lung vasculature. One of the end effectors of this process is the influx of calcium into the vascular smooth muscle cell. We have demonstrated that the calcium channel, TRPV4, is required for hypoxic pulmonary vasoconstriction in vivo and in isolated smooth muscle cells. **Neil Goldenberg, M.D., Ph.D., Liming Wang, Ph.D., Hannes Ranke, Cand. Med., Arata Tabuchi, M.D., Wolfgang M. Kuebler, M.D.; Anesthesia, Physiology, University of Toronto, Toronto, ON, Canada, Physiology, Charité - Universitaetsmedizin, Berlin, Germany.**

### NA BOS05

#### Critical Changes in Cortical Neuronal Interactions in Anesthetized and Awake Rats

Information theoretical indicators of neuronal interactions, integration and complexity derived from multichannel extracellular recordings of parallel spike trains in visual cortex of chronically instrumented, unrestrained rats reveal that (i) visual flash stimuli augment neuronal interactions in both wakefulness and anesthesia; (ii) critical changes in cortical neuronal interactions correlate with the transition between consciousness and unconsciousness. **Anthony G. Hudetz, D.B.M., Ph.D., Jeannette A. Vizuete, Ph.D., Siveshigan Pillay, Ph.D., Kristina M. Ropella, Ph.D.; Anesthesiology, Medical College of Wisconsin, Biomedical Engineering, Marquette University, Milwaukee, WI.**

### NA BOS06

#### Temporally Distinctive Neural Processes Leading to Propofol-Induced Unconsciousness in a Primate Cortical Network

Direct intracortical local field potentials (LFPs) were recorded in a primate cortical network in the awake - anesthetized continuum during propofol infusion. Disruption of inter-cortically coherent beta oscillations preceded loss of consciousness (LOC) and a transient peak of gamma oscillations corresponded to LOC. The slow oscillations became increasingly synchronized during the post-LOC period. **Yumiko Ishizawa, M.D., M.P.H., Ph.D., Omar J. Ahmed, Ph.D., Shaun Patel, Ph.D., Emery N. Brown, M.D., Ph.D., Emad N. Eskandar, M.D.; Anesthesia, Critical Care & Pain Medicine, Neurology, Neurosurgery, Massachusetts General Hospital, Boston, MA.**

### NA BOS07

#### Effects of Isoflurane on Presynaptic Voltage-Gated Calcium Channel Subtypes in Rat Hippocampal Neurons

The effects of volatile anesthetics on presynaptic neuronal N-type and P/Q-type voltage-gated calcium channels are poorly understood. We studied synaptic vesicle exocytosis coupled to calcium channel subtypes in cultured rat hippocampal neurons with live cell fluorescence microscopy and selective pharmacologic inhibition to isolate subtype-specific effects. Isoflurane inhibited exocytosis coupled to either N-type or P/Q-type calcium channels, with terminal specific differences in the contribution of each subtype. **Daniel Cook, B.S., Zhenyu Zhou, M.D., Ph.D., Masato Hara, M.D., Ph.D., Joel Baumgart, Ph.D., Hugh C. Hemmings, Jr., M.D., Ph.D.; Anesthesiology, Weill Cornell Medical College, New York, NY**

### NA BOS08

#### The Role of Glutamatergic and Dopaminergic Neurons in the Periaqueductal Gray on the Descending Inhibition of Pain

Using Designer Receptors Exclusively Activated by Designer Drugs (DREADDs) we targeted dopamine, glutamate and GABA neurons in the periaqueductal gray (PAG) of mice expressing cre recombinase. We found that activation of dopamine and glutamate neurons in the PAG produced profound analgesia without signs of anxiety, while inhibition of GABA interneurons had no antinociceptive effect. **Norman E. Taylor, M.D., Ph.D., Shu Zheng, B.S., Christa J. Van Dort, Ph.D., Emery N. Brown, M.D., Ph.D., Ken Solt, M.D.; Brain and Cognitive Sciences, Massachusetts Institute of Technology, Cambridge, MA, Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital, Boston, MA.**

### NA BOS09

#### Neuron-Targeted Caveolin-1 Attenuates Traumatic Brain Injury-Mediated Motor and Cognitive Deficits

SynCav1 TG mice have enhanced membrane/lipid raft-localized protein expression of Cav-1 and synaptic-associated pro-survival and pro-growth signaling components. Furthermore, SynCav1 TG mice are less vulnerable to TBI-mediated contextual fear memory deficits. **Junji Egawa, M.D., Weihua Cui, M.D., Edmund Posadas, Student, Jan M. Shilling, M.D., Piyush M. Patel, M.D., Ph.D., Brian P. Head, Ph.D.; Anesthesia, VASDHS/UCSD, San Diego, CA, Anesthesia, Beijing Tiantan Hospital/Capital Medical University, Beijing, China.**

### NA BOS10

#### Peroxiredoxin-1 and Toll-like Receptor 2 Pathway Contributes to Neurotoxic Microglial Activation After Cardiac Arrest

Survivors of cardiac arrest (CA) and cardiopulmonary resuscitation (CPR) suffer cognitive decline related to delayed neuronal death in the hippocampus. While microglia are activated to a neurotoxic phenotype after CA/CPR and mediate delayed neuronal death, the mechanism that activates microglia remains to be clarified. We found that the Peroxiredoxin-1 and Toll-like receptor 2 pathway contributes to neurotoxic microglial activation after CA. **Mizuko Ikeda, M.D., Ph.D., Tetsuhiro Fujiyoshi, M.D., Ph.D., Sarah Mader, B.S., Ines P. Koerner, M.D., Ph.D.; Oregon Health and Science University, Portland, OR.**

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain

**PN BOS11**

**A CCR2 Antagonist Suppresses Infiltration of Bone Marrow-Derived Microglia Into the Central Nervous System and Reverses Anxiety-Like Behavior As Well As Hypersensitivity Induced by Chronic Neuropathic Pain**

We investigated the effects of a C-C chemokine receptor type 2 (CCR2) antagonist on the infiltration of bone marrow-derived microglia (BMDM) into the CNS, anxiety-like behavior, and hypersensitivity induced by chronic neuropathic following partial sciatic nerve ligation (PSNL). Neuropathic pain induced anxiety-like behavior in PSNL-treated mice at day 28 after surgery. BMDM aggregate in the CNS by PSNL stimulation via the MCP-1/CCR2 axis. The blockade of CCR2 activity in BMDM reversed both anxiety-like behavior as well as hypersensitivity induced by chronic neuropathic pain. These findings indicate that a CCR2 antagonist is new possibility for the treatment of anxiety-like behavior and hypersensitivity induced by chronic neuropathic pain. **Atsushi Sawada, M.D., Ph.D., Yukitoshi Niiyama, M.D., Ph.D., Michiaki Yamakage, M.D., Ph.D.;** Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan.

**FA BOS12**

**Common MicroRNAs Regulate Liver Protection of Anesthetic and Ischemic Preconditioning**

We assessed the effects of anesthetic and ischemic preconditioning on the activation of a common pathway by conducting comprehensive miR screening tests and pathway analysis. The screening tests showed that APC and IPC induced similar changes in miR expression, whereas pathway analysis identified 5 miRs that were related to the Akt-GSK-cyclin D1 pathway and were significantly affected by ischemia and inhalation anesthesia treatment. We propose that APC and IPC decreased the expression of miRs, which in turn suppressed the Akt-GSK-cyclin D1 pathway, suggesting that APC and IPC imparted protective effects on the liver. **Tomonori Morita, M.D, Masashi Ishikawa, M.D., Atsuhiko Sakamoto, M.D., Ph.D.;** Anesthesiology and Pain Medicine, Nippon Medical School, Tokyo, Japan.

**SPE21 JOURNAL SYMPOSIUM: HOW TO MECHANICALLY VENTILATE PATIENTS IN THE OPERATING ROOM IN 2014**

**Tuesday, October 14 | 8-11 a.m. | Room 275-277**

**FA JS01**

**Effect of Anesthesia Type on Postoperative Mortality and Morbidities**

The effect of anesthesia technique on 30-day mortality is unclear and difficult to assess due to the abundance of confounders and small effect sizes. In this retrospective large multicenter database of elective surgeries in the United States, regional anesthesia was associated with significantly less mortality and other morbidities including postoperative stroke, respiratory and renal complications, after adjusting for clinical and demographic confounders. **Nahele N. Saied, M.B.B.Ch., Liza M. Weavind, M.B.,Ch.B., M.D., Mohammad A. Helwani, M.D., Xue Han, M.S, M.PH., Matthew Shotwell, Ph.D., Pratik Pandharipande, M.D.;** Anesthesiology and Critical Care, Vanderbilt University Medical Center, Nashville, TN, Washington University, St. Louis, MO, Saint Louis, MO.

**PI JS02**

**Factors That Correlate With the Decision to Delay Extubation Following General Surgery**

We found eight factors that independently correlated with the decision to delay extubation after a general anesthetic including ASA Class, emergency status, procedure duration, estimated blood loss, the case end time, patient age, and difficult intubation. We also found that the number of anesthesiology attendings involved in the case was an independent variable, not previously described in the literature, which correlated with the decision to delay extubation. **Zirka Anastasian, M.D., Minjae Kim, M.D., Eric J. Heyer, M.D., Ph.D., Kaitlin G Van Mallon, B.A., Mitchell F. Berman, M.D.;** Columbia University Medical Center, New York, NY.

**FA JS03**

**The Role of Tissue Oxygen Saturation (StO2) Monitoring in Cardiac Surgery**

This prospective study including 45 adult patients undergoing elective cardiac surgery with cardiopulmonary bypass shows that the tissue oxygen saturation StO2 at the eminence thenar is not correlated with SvO2 upon the occurrence of an event during or after surgery. **Khalil Jabbour, Sr., M.D., Eliane Khalil, M.D., Fadia Haddad, M.D., Hicham Jabbour, M.D., Gemma Hayek, M.D., Samia Madi-Jebara, M.D.;** Anesthesiology and Critical Care, Hôtel-Dieu de France Hospital, Saint-Joseph University, Beirut, Lebanon.

**FA JS04**

**Intraoperative Tidal Volume Trends and Practice Patterns: A Report From the Multicenter Perioperative Outcomes Group**

Using MPOG data from 9 U.S. academic centers, we describe trends and practice patterns of intraoperative tidal volumes. Our data shows a reduction in TV size over the time period, though a significant percentage of patients continue to receive large TV. Patients with high BMI, short stature, or female gender are at particular risk of receiving larger TV. **S. Patrick Bender, M.D., Lyle P. Gerety, M.D., W. Gabe Tharp, M.D., Ph.D., William C. Paganelli, M.D., Ph.D., Amy Shanks, M.S., Ph.D., Randal S. Blank, M.D., Ph.D., Douglas Colquhoun, M.B.,Ch.B., Ana Fernandez-Bustamante, M.D., Ph.D., Sachin Kheterpal, M.D., M.B.A.;** Anesthesiology, University of Vermont/Fletcher Allen Health Care, Burlington, VT, Anesthesiology, University of Michigan, Ann Arbor, MI, Anesthesiology, University of Virginia Health System, Charlottesville, VA, Anesthesiology, University of Colorado Hospital, Aurora, CO.

**FA JS05**

**Effects of One-lung Ventilation and Positional Changes on Exhalation Enthalpy**

Ventilation-perfusion matching (V/Q) plays an important role in the care of patients in acute and critical care settings and can be monitored using exhaled heat content (i.e. enthalpy). This study was designed to measure changes in exhalation enthalpy during one-lung ventilation and its associated positional changes. Preliminary data suggests that exclusion of the pathologic/operated lung and OLV in the lateral position improves V/Q matching while prolonged OLV in the lateral position worsens V/Q matching. **Bonny M. Lee, M.D., David Rose, CRNA, Ph.D., Igor Brodtkin, M.D., Neal W. Fleming, M.D., Ph.D.;** Anesthesiology and Pain Medicine, UC Davis Med Ctr, Sacramento, CA, Anesthesiology, University of British Columbia, Vancouver, BC, Canada.

**FA JS06**

**Alterations of Respiratory Mechanics in a Model of Prolonged Protective Mechanical Ventilation**

In a clinically relevant long-term (16 hours) protective mechanical ventilation mouse model (Vt=6-8 ml/kg, RR=180/min), increase in tissue elastance combined with increased hysteresis but normal inspiratory capacity suggests development of reversible atelectasis. In the injurious group (Vt=15-20 ml/kg, RR=80-52/min) the increase in elastance and decrease in inspiratory capacity suggest instead parenchymal injury. **Margit V. Szabari, M.D., Luiz Fernando R. Falcao, M.D., Ph.D., Joseph J. Locascio, Ph.D., Guido Musch, M.D.;** Department of Anesthesia, Critical Care and Pain Medicine, Department of Neurology, Massachusetts General Hospital/Harvard Medical School, Boston, MA, Federal University of São Paulo, Sao Paulo, Brazil.

**FA JS07**

**Intraoperative Protective Mechanical Ventilation and Risk of Post-Operative Pulmonary Complications**

This study analyzed 44,026 patients undergoing non-cardiac surgery at a tertiary care center to determine the association between intraoperative protective ventilation and pulmonary complications. Our analysis showed that patients receiving protective ventilation were less likely to have a postoperative pulmonary complication. Specifically, a tidal volume of less than 8.5 ml/kg predicted body weight and a low plateau pressure minimized the risk of ventilator-associated pulmonary complications. **Karim Ladha, M.D., Marcos F. Vidal Melo, M.D., Ph.D., Duncan J. Mclean, M.B., Ch.B., Arina Igumenshcheva, B.S., B.A., Tobias Kurth, M.D., Sc.D., Matthias Eikermann, M.D.;** Department of Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital, Boston, MA, Team Neuroepidemiology, Inserm Research Center for Epidemiology and Biostatistics, Bordeaux, France.

**CC JS08**

**Exaggerated Acute Lung Injury in Response to Infection in the Metabolic Syndrome**

After Staph aureus infection, LCR (MetaS) rats had higher level of inflammatory markers, bacterial load in blood, BALF, and the lungs, as well as lung permeability as compared with the HCR rats. The metabolic syndrome state may exacerbate lung response to injury because of an attenuation in the inflammation-resolving response as well as deleterious effects on antimicrobial defenses. **Xiaomei Feng, M.D., Ph.D., Judith Hellman, M.D., Mervyn Maze, M.B., Ch.B.;** Anesthesia and Perioperative Care, University of California, San Francisco, CA.



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### FA JS09

#### Dose-dependent Association Between Intermediate-acting Neuromuscular Blocking Agents and Postoperative Respiratory Complications: A Prospective Analysis of Data on File

In our single-centre analysis of data on file, we demonstrate that neuromuscular blocking agent dose was positively associated with an increased risk of postoperative respiratory complications. Furthermore, we demonstrate a positive association between neostigmine dose and postoperative respiratory outcomes. **Duncan J. McLean, M.D., Arina Igumensheva, B.S., B.A., Daniel Diaz-Gil, Medical Student, Jonathan Wanderer, M.D., M.Phil., Karim Ladha, M.D., Hassan Farhan, M.D., Tobias Kurth, M.D., Sc.D., Matthias Eikermann, M.D., Ph.D.;** Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital, Boston, MA, Anesthesiology, University of Rochester Medical Centre, Rochester, NY, University of Bordeaux, Bordeaux, France.

### FA JS10

#### Estimation of Minute Volume from Respiratory Inductance Plethysmography by Hilbert Huang Transform

Respiratory Inductance Plethysmography (RIP) permits assessment of ventilation when spirometry is not feasible, but calibration is difficult. We utilized the Hilbert Huang Transform (HHT) to generate magnitude and phase estimates from RIP and spirometry during transitions from pressure support to spontaneous ventilation during sevoflurane anesthesia. Linear regression of RIP magnitude and phase difference against spirometry yielded an average  $R=0.74$  across 52 patients. HHT may permit quantitative assessment of ventilatory depression in settings where spirometry is not practical. **Jeff E. Mandel, M.D., M.S., Joshua H. Atkins, M.D., Ph.D.;** Anesthesiology & Critical Care, Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA.



### FA JS11

#### Variation in Clinical Management of Ventilation During One Lung Ventilation

Protective ventilation strategies can improve postoperative pulmonary function and clinical outcomes following elective surgical procedures. Little information is available regarding optimal ventilator management in patients undergoing procedures involving one lung ventilation. As a first step to addressing this we report the variation in management of ventilation observed within a single academic medical center in patients undergoing OLV. **Douglas Colquhoun, M.B., Ch.B., M.Sc., M.P.H., Bhiken I. Naik, M.B., B.Ch., Marcel E. Durieux, M.D., Ph.D., Benjamin D. Kozower, M.D., Randal S. Blank, M.D., Ph.D.;** Department of Anesthesiology, University of Virginia, Charlottesville, VA, Department of Surgery, University of Virginia, Charlottesville, VA .

### FA JS12

#### Current National Practice Patterns for Intraoperative Ventilation

Intraoperative practice patterns have changed over time, with increased utilization of low tidal volume ventilation and PEEP Significant practicevariation exists between institutions. **Jonathan P. Wanderer, M.D., M.Phil., Jesse M. Ehrenfeld, M.D., Richard H. Epstein, M.D., Daryl J. Kor, M.D., Ana Fernandez-Bustamante, M.D., Ph.D., Leslie C. Jameson, M.D., Jean-Francois Pittet, M.D., Marcos F. Vidal-Melo, M.D., Ph.D., Raquel R. Bartz, M.D., James M. Blum, M.D.;** Department of Anesthesiology, Vanderbilt University, Nashville, TN, Thomas Jefferson Hospital, Philadelphia, PA, Mayo Clinic College of Medicine, Rochester, MN, University of Colorado Denver, Denver, CO, University of Colorado Health Sciences Center, Aurora, CO, University of Alabama at Birmingham Anesthesiology, Birmingham, AL, Massachusetts General Hospital, Boston, MA, Duke University Medical Center, Durham, NC, University of Michigan Health System, Ann Arbor, MI.

## SPE24 BEST OF ABSTRACTS: CLINICAL SCIENCE

Tuesday, October 14 | 1-3 p.m. | Room 275-277

### PI BOC01

#### Comprehensive, Patient-Centered Total Care of Patients With Total Knee Arthroplasty: The Practice and Outcomes of the Perioperative Surgical Home (PSH)

The practice of PSH for TKA in our facility has realized cost savings of \$943,000 in 405 TKA patients over 8 month period.This was accomplished without any additional resources or staff. **Chunyuan Qiu, M.D., M.S., Vu T. Nguyen, M.D., Atef Morkos, M.D., Maria A. Morkos, Medical Student, Andrew T-Y Ko, Student, Jessica Y. Qiu, Student, Chandra D. Heyman, M.B.A., Jamie M. Cabrera, PA., Narendra S. Trivedi, M.D., Diana LaPlace, M.D., Anesthesiology, Kaiser Permanente, Baldwin Park, Anesthesiology, Kaiser Permanente Baldwin Park Medical Center, Yorba Linda, Huntington Beach, and Orange, Anesthesiology, Kaiser Permanente Riverside Medical Center, Anaheim Hills, CA, Medical School, George Washington University, DC.**

### PI BOC02

#### Chronic Pain Management: A Closed Claims Update

Since 1980, malpractice claims, deaths and severe nerve injuries associated with chronic pain treatment have continued to grow. Claims associated with chronic pain management represented 18% of all anesthesia malpractice claims in 2000-2011, while they comprised just 3% of claims in the 1980s. **Kelly A. Pollak, M.D., Linda S. Stephens, Ph.D., Karen L. Posner, Ph.D., Dermot R. Fitzgibbon, M.D., James P. Rathmell, M.D., Edward Michna, M.D., Karen B. Domino, M.D., M.P.H.;** Anesthesiology and Pain Medicine, University of Washington and Seattle Cancer Care Alliance, Seattle, WA, Anesthesiology and Critical Care, Massachusetts General Hospital/Harvard Medical School, Pain Management Center, Brigham and Women's Hospital/Harvard Medical School, Boston, MA.

### PI BOC03

#### Development and Assessment of a Novel Perioperative Ultrasound Curriculum for Anesthesiology Residents: A FAER Sponsored Study

This study introduced a comprehensive ultrasound curriculum for anesthesia residents using model and simulation instruction. The results show improved ultrasound knowledge and potential to advance resident education. **Davinder S. Ramsingh, M.D., Catherine Hua, B.S., Adriana Capatina, B.S., Brenton S. Alexander, B.S., Khanhvan Le, B.A., Patrick Wu, M.D., Cecilia Canales, B.S., M.P.H., Maxime Cannesson, M.D., Ph.D.;** Department of Anesthesiology, University of California, Irvine, CA.

### PD BOC04

#### The Predictive Validity of 12 month to 36 month Neurodevelopmental Testing After Complex Neonatal Cardiac Surgery

Assessment of predictive validity of 12 month to 36 month neurodevelopmental outcomes indicates strong predictive relationship. The use of 12 month neurodevelopmental outcomes should continue in research. **Marcie R. Meador, M.S., R.N., Ashraf M. Resheidat, M.D., Ronald B. Easley, M.D., Ken M. Brady, M.D., Rachel Dugan, B.S.N., R.N., Robert Voigt, M.D., Turcich Marie, L.P.C., L.M.F.T., L.S.S.P., Dean B. Andropoulos, M.D.;** Pediatric Anesthesiology, Baylor College of Medicine/Texas Children's Hospital, Baylor College of Medicine, Developmental Pediatrics, Texas Children's Hospital, Houston, TX.

### AM BOC05

#### The Association of Postoperative Delirium and Cognitive Decline 4-6 Weeks after Cardiac Surgery

The objective of this study was to examine the association of postoperative delirium and cognitive decline at 4-6 weeks after cardiac surgery. In models adjusted for age, history of stroke, and cardiopulmonary bypass time, the presence of postoperative delirium compared to no delirium was associated with a decrease of  $-0.30\pm 0.14$  ( $P=0.04$ ) in composite cognitive Z-score. Further, each increase in quartile of delirium severity was associated with a decrease of  $-0.22\pm 0.07$  ( $P=0.004$ ) in composite cognitive Z-score. Further research is needed to confirm these findings in a larger sample with longer follow-up. **Charles H. Brown, M.D., M.H.S., Andrew LaFlam, B.S., Laura Max, BA, Karin Neufeld, M.D., M.P.H., Charles W. Hogue, M.D.;** Anesthesiology and Critical Care Medicine, Psychiatry, Johns Hopkins University School of Medicine, Baltimore, MD.

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**FA BOC06****Psychological Sequelae of Surgery in a Cohort of Patients From Three Intraoperative Awareness Prevention Trials**

We screened for postoperative PTSD symptoms in 35 intraoperative awareness (IA) patients matched with 185 non-IA controls. 42.9% with IA, and 15.8% without, had PTSD symptoms a median 2 years after surgery. A model with 6 factors may help identify those at risk for persistent PTSD symptoms. Elizabeth L. Whitlock, M.D., M.Sc., Thomas L. Rodebaugh, Ph.D., Afton L. Hassett, PsyD, Eric Jacobsohn, M.B., Ch.B., George A. Mashour, M.D., Ph.D., Michael S. Avidan, M.B., B.Ch.; Anesthesia and Perioperative Care, University of California, San Francisco, San Francisco, CA, Anesthesiology, Psychology, Washington University in St Louis, St Louis, MO, Anesthesia and Perioperative Medicine, University of Manitoba, Winnipeg, MB, Canada, Anesthesiology, University of Michigan, Ann Arbor, MI.

**PI BOC07****Prospective, Cohort Study on Unresolved Dilemmas in Non-cardiac Surgery After Previous PCI**

This prospective, multicenter cohort study analyzed the incidence and mechanism of MI after non cardiac surgery (NCS) in patients who underwent previous PCI. The results of this study showed that in spite of adherence to ACC/AHA guidelines and proper inhibition of platelet function by aspirin the incidence of MI in PCI patients undergoing NCS is high (19%). RCRI and perioperative anemia were strong predictors of postoperative MI. Marcin Wasowicz, M.D., Ph.D., Summer Syed, M.D., Lukasz Starzyk, M.D., Ph.D., Duminda N. Wijeyesundera, M.D., Ph.D., F.R.C.P.C., Scott W. Beattie, M.D., Ph.D., F.R.C.P.; Anesthesia and Pain Management, Toronto General Hospital/ University of Toronto, Toronto, ON, Canada, Anesthesia and Perioperative Medicine, Hamilton Health Science Hospital / McMaster University, Hamilton, ON, Canada, Anesthesia and Pain Management, Bern University Hospital, Bern, Switzerland.

**CA BOC08****Oxidative Stress Leads to Altered Gene Expression in Cardiac Myocytes Following Cardiopulmonary Bypass in Patients with Poorly Controlled Type II Diabetes versus Non-Diabetics**

Oxidative Stress associated with cardiopulmonary bypass leads to altered Gene Expression of the mitogen associated protein kinase pathway in Cardiac Myocytes of Patients with Poorly Controlled Type II Diabetes versus Non-Diabetics. Jeffrey Hubbard, M.D., M.S., Thomas Huang, B.A., Khurram Owais, M.D., Vwaire Orhurhu, B.A., M.P.H., Anam Pal, M.D., Mario Montealegre, M.D., Kamal Khabbaz, M.D., Feroze Mahmood, M.D., Robina Matyal, M.D.; Anesthesia, Critical Care, and Pain Medicine, Surgery, Beth Israel Deaconess, Epidemiology and Bioinformatics, Harvard School of Public Health, Boston, MA.

**RA BOC09****Patient Controlled Analgesia by Target Controlled Infusion of Hydromorphone During Postoperative Pain After Cardiac Surgery**

Patient controlled analgesia (PCA) with opioid analgesics is a commonly used method during acute postoperative pain therapy. In our study, we investigated the analgesic efficacy of the PCA with target controlled infusion (PCA-TCI) of hydromorphone during postoperative pain therapy after cardiac surgery. Pain intensity was assessed at rest and during deep inspiration every 15 min within the first hour and then every 30 min during PCA-TCI using the 11-point numerical rating scale (NRS). Sedation was assessed using modified Observer's Assessment of Alertness/Sedation Scale (MOAAS). PCA-TCI with hydromorphone shows a reduction of the therapeutic plasma concentration range when compared to PCA and a high analgesic efficacy during acute postoperative pain therapy. Doris Rohde, Ph.D., Jan Mell, Ph.D., Katharina Fröhlich, Ph.D., Harald Ihmsen, Ph.D., Jürgen Schüttler, Ph.D., Christian Jeleazcov, Ph.D.; Department of Anesthesiology, University Hospital Erlangen, Erlangen, Germany.

**RA BOC10****Long-acting Local Anesthesia With Neosaxitoxin in Combination With 0.2% Bupivacaine and Epinephrine Versus Bupivacaine Alone: A Randomized, Controlled, Double-blind FDA Phase 1 Trial**

We present the first human data on duration and intensity of local block with Neosaxitoxin combined with bupivacaine and epinephrine. Duration of blockade is significantly prolonged when compared to bupivacaine alone. Carolina Donado, M.D., Laura Cornelissen, Ph.D., Kimberly Lobo, M.S., M.P.H., Joseph Kim, M.A., Joseph Cravero, M.D., Charles B. Berde, M.D., Ph.D.; Department of Anesthesiology, Perioperative and Pain Medicine, Boston Children's Hospital/Harvard Medical School, Boston, MA.

**FA BOC11****Pharmacokinetic-Pharmacodynamic Modeling Study of the Reversal of Opioid-induced Respiratory Depression by the BK-channel Blocker GAL021**

GAL021 is a novel potent respiratory stimulant without significant effect on sedation, analgesia or hemodynamics. The effect of GAL021 on opioid-induced respiratory depression was modeled using a population-based pharmacokinetic-pharmacodynamic approach. Rapid onset of reversal of respiratory depression was observed with a blood-effect-site equilibration half-life not significantly different from zero, indicative of an effect at the carotid bodies. Margot Roozkrans, M.D., Erik Olofsen, M.Sc., Rutger van der Schrier, M.D., James McLeod, M.D., Albert Dahan, M.D., Ph.D.; Anesthesiology, Leiden University Medical Center, Leiden, Netherlands, Galleon Pharmaceuticals, Horsham, PA.

**FA BOC12****Oxygen Reserve Index - a New, Noninvasive Method of Oxygen Reserve Measurement**

The ORI is a noninvasive measure of the arterial oxygen reserve intended for monitoring oxygenation under hyperoxic conditions. It could help optimize oxygenation before desaturation occurs. Peter Szmuk, M.D., Jeffrey W. Steiner, D.O., Patrick N. Olomu, M.D., Joanna Dela Cruz, B.S., Daniel Sessler, M.D.; University of Texas Southwestern and Childrens Medical Center, Dallas, TX, Cleveland Clinic, Cleveland, OH.



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## OR09-1 EXPERIMENTAL CIRCULATION

8-9:30 a.m. | Room 244

### CA A1000

#### MiR-98 Regulates Apoptosis in Cardiomyocytes via PGC-1 and STAT3

Regulation of cardiomyocytes apoptosis by MiR-98 via PGC-1 and STAT3 is one of the mechanism underlying higher cardiac vulnerability to I/R injury in pregnancy. MiR-98 could serve as a novel target to protect pregnant women with cardiovascular complication. Jingyuan Li, M.D., Ph.D., Salil Sharma, Ph.D., Mansoureh Eghbali, Ph.D., UCLA, Los Angeles, CA.

### CA A1001

#### Altered Gene Expression Following Cardiopulmonary Bypass May Lead to Post Operative Atrial Fibrillation

Cardiopulmonary Bypass disrupts right atrial appendage cardiomyocyte's expression of genes involved in oxidative stress resulting in damage that leads to post operative atrial fibrillation. Jeffrey Hubbard, M.D., M.S., Thomas Huang, B.A., Khurram Owais, M.D., Vwaire Orhurhu, B.A., M.P.H., Anam Pal, M.D., Mario Montealegre, M.D., Kamal Khabbaz, M.D., Feroze Mahmood, M.D., Robina Matyal, M.D.; Anesthesia, Critical Care, and Pain Medicine, Surgery, Beth Israel Deaconess Medical Center, Epidemiology and Bioinformatics, Harvard School of Public Health, Boston, MA.

### CA A1002

#### How Tempol Restores Pharmacologic Preconditioning in the Aging Heart: Effects on Mitochondrial Autophagic Pathways

Autophagy/mitophagy is impaired in aging heart. We used young and old rats and primary cultured cardiomyocytes to elucidate antioxidant mediated normalization of isoflurane induced cardioprotection in aging heart. Our results showed that Tempol treatment may normalize impaired mitochondrial function in old rats and Tempol plus pharmacological preconditioning increased autophagy flux and induced mitophagic pathway activity by promoting Parkin translocation to mitochondria in old rats, thus protecting the aging heart from ischemia/reperfusion injury. Lixin Liu, M.D., Ph.D., Qun Gao, M.D., Ph.D., Jiang Zhu, M.D., Mario Rebecchi, Ph.D., Anesthesiology, Stony Brook University Medical Center, Stony Brook, NY, Anesthesiology, The Second Affiliated Hospital of Soochow University, Suzhou, China.

### CA A1003

#### Interleukin 6 (IL6) Serum Levels and Liver Regeneration Following Partial Hepatectomy, Acute Bleeding and RBC Transfusion

In animals undergoing PHx and bleeding, the delay in the liver regeneration process could partially be explained by the abolishment of the rise in circulating IL6 levels. Transfusion of fresh RBC partially restored liver regeneration capacity and the rise in IL6. Idit Matot, M.D., Rinat Abramovitch, Ph.D., Anesthesia & Intensive Care & Pain Management, Tel Aviv Sourasky Medical Center, Tel Aviv, Israel, Hadassah Hebrew University Medical Center, Jerusalem, Israel.

### CA A1004

#### Nitrite Protects Cardiac Mitochondrial Function Without a Detrimental Effect in Septic Rats

We previously demonstrated that administration of 1 mg/kg nitrite improved cardiac dysfunction in septic rats. In the present study, to elucidate the effect of nitrite at the cellular level, we investigated cardiac mitochondrial function in septic rats. Mitochondrial respiratory control ratio, which indicates oxidative phosphorylation, was significantly improved by nitrite. Detrimental effects of nitrite were not observed. Our future goal is to elucidate the detail protective mechanisms of cardiac mitochondrial function by nitrite. We consider that nitrite might ameliorate oxidative stress dysregulation of mitochondria in sepsis. Ryouichi Kawaguchi, M.D., Naoyuki Hirata, M.D., Ryo Miyashita, M.D., Daisuke Maruyama, M.D., Yusuke Yoshikawa, M.D., Michiaki Yamakage, M.D.; Department of Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan.

### CA A1005

#### Proteomic Analysis Reveals Potential Mechanisms of mitoBK<sub>ca</sub> Channel Translocation to Mitochondria

A proteomic analysis directed to identify proteins that specifically associate to mitoBK<sub>ca</sub> via its "DEC" splice sequence reveals potential mechanisms used in directing cardiac mitoBK<sub>ca</sub> to mitochondria. Jin Zhang, M.S., Zhu Zhang, Ph.D., Enrico Stefani, M.D., Ph.D., Ligia Toro, Ph.D., Anesthesiology, and Molecular & Medical Pharmacology, UCLA, Los Angeles, CA, Anesthesiology, Division of Molecular Medicine, UCLA, Los Angeles, CA .

## OR13-1 OUTCOMES AND DATABASE RESEARCH - CARDIAC

### OUTCOMES & RISK

8-9:30 a.m. | Room 243

### FA A1006

#### Simple Preoperative Blood Pressure Measurements Perform Similar to More Complicated Models in Identifying Poorly Controlled Hypertensives

In deciding whether to refer a patient postoperatively for evaluation of poorly controlled hypertension, complex day-of-surgery models offer little improvement over simply using preoperative and day-of-surgery blood pressures alone in determining who warrants referral. Robert B. Schonberger, M.D., M.A., Feng Dai, Ph.D., Cynthia Brandt, M.D., M.P.H., Matthew M. Burg, Ph.D., Anesthesiology, Yale School of Medicine; VA Connecticut Healthcare System, Yale School of Public Health, Emergency Medicine and Anesthesiology, Yale School of Medicine; VA Connecticut Healthcare System, Internal Medicine/ Cardiology, Yale School of Medicine, and Columbia College of Physicians and Surgeons, New Haven, CT.

### FA A1007

#### Steroid Supplementation After Anesthetic Induction With Etomidate Does Not Reduce In-Hospital Mortality or Cardiovascular Morbidity After Non-Cardiac Surgery

Steroid supplementation after induction of anesthesia with etomidate did not reduce mortality or cardiovascular morbidity. Ryu Komatsu, M.D., Zekun Xu, M.S., Jing You, M.S., Daniel Sessler, M.D., Alparslan Turan, M.D.; Anesthesiology Institute, Cleveland Clinic, Cleveland, OH, Department of Quantitative Health Sciences, and Department of Outcomes Research, Cleveland Clinic, Cleveland, OH.

### FA A1008

#### The SLUScore™: A Novel Method to Quantify the Adverse Impact of Intraoperative Hypotension on Patient Outcome Following Non-Cardiac Surgery

The present study in 116,541 patients introduces the SLUScore™, a novel scoring system for intraoperative hypotension based on the number of cumulative time limits exceeded for exposure below a range of mean arterial blood pressure thresholds between 75 and 45 mm Hg. It demonstrates that hypotensive exposures are common, affecting one in every three patients, that it doubles the risk of death within 30 days, and that this association occurs regardless of these patients' co-morbidity. Wolf H. Stapelfeldt, M.D., Peter Vuong, M.D., Hui Yuan, M.D., Christopher A. Paul, M.D., Jacek B. Cywinski, M.D., Jesse M. Ehrenfeld, M.D., Bhaswati Ghosh, M.S., Marc R. Reynolds, M.S.; Anesthesiology & Critical Care Medicine, Saint Louis University, Saint Louis, MO, Anesthesiology, Vanderbilt University, Nashville, TN, Talis Clinical, LLC, General Anesthesiology, Cleveland Clinic, Cleveland, OH.



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**FA A1009****Reduced Troponin Values After Volatile Anesthetic Pre-Conditioning - A Meta-Analysis of Coronary Bypass Trials**

This is a meta-analysis reviewing whether volatile anesthetic exposure influences troponin values after cardiac surgery. Although volatile exposure appears to reduce post-operative troponin levels there is significant heterogeneity between studies which is currently unexplained. Funnel plot analysis reveals significant publication bias with negative studies being under-reported. We will conduct further analyses to determine the cause for these differences and whether volatile anesthetic exposure influences clinical outcomes. **Nicholas J. Lightfoot, M.B.Ch.B, Stuart L. Hastings, M.B.,B.S., Angela Jerath, FANZCA, Marcin Wasowicz, M.D., Scott Beattie, M.D.;** Department of Anesthesia, University of Toronto, Toronto, ON, Canada, Department of Anesthesia, Monash University, Melbourne, Australia.

**FA A1010****Use of ACE Inhibitors or AR Blockers and 30-days Mortality After Noncardiac Surgery in a Large Cohort Study**

In a large patient cohort of intermediate to high risk noncardiac surgery, we found an association between preoperative use of ACE inhibitor or AR blocker drugs and increased all cause 30-days mortality. However, there was no commensurate increased incidence of intraoperative hypotension, use of vasopressors or positive fluid balance, nor of postoperative myocardial injury, infarction or acute kidney injury. **Suzanne Flier, M.D., M.S.C., Judith A.r. Van Waes, M.D., Leo Van Wolfswinkel, M.D., Ph.D., Hendrik M. Nathoe, M.D., Ph.D., Wolfgang F. Buhre, M.D., Ph.D., Wilton A. Van Klei, M.D., Ph.D., Linda M. Peelen, Ph.D., Anesthesiology, Cardiology, Julius Center, University Medical Center Utrecht, Utrecht, Netherlands, Anesthesiology, Maastricht University Medical Center, Maastricht, Netherlands.**

**FA A1011****Perioperative  $\beta$  - blocker Utilization in Patients Undergoing Intermediate to High Risk Non-Cardiac Surgery**

In the current study we describe perioperative initiation of  $\beta$ -blockers before moderate- to high-risk non-cardiac elective surgery in the United States between 2003 and 2012. After a period characterized by rapidly increasing perioperative  $\beta$ -blocker initiation, rates started decreasing in the second half of 2008, subsequent to the publication of a large RCT (POISE trial). Initiation rates in some subgroups of patients remain relatively high, which suggests the need for more research to define which patients, if any, may benefit from perioperative  $\beta$ -blockade. **Elisabetta Patorno, M.D., Dr.PHShirley Wang, Ph.D., Sebastian Schneeweiss, M.D., Sc.DJun Liu, M.D., M.S., Brian T. Bateman, M.D.;** Brigham and Women's Hospital, Massachusetts General Hospital, Harvard Medical School, Boston, MA.

**OR17-1 RESPIRATION-VENTILATION****8-9:30 a.m. | Room 245****FA A1012****Defining Minute Ventilation in Obese Surgical Patients: New Perioperative Findings**

We determined a new reference formula for physiologic minute ventilation (MV) against an intraoperative standard in an obese population. Using a respiratory volume monitor (RVM, ExSpirom, Respiratory Motion, Inc., Waltham, MA) in the obese, we discovered a wide range of MV values in the PACU, some of which at a very low range. The RVM allows for individualized respiratory performance assessment postoperatively, inform PACU management protocols and may improve patient safety. **Roman Schumann, M.D., Sam Gumbert, M.D., Jordan Braynov, Ph.D., Julie Kim, M.D., Iwona Bonney, Ph.D., Evan G. Pivalizza, M.B.;** Tufts Medical Center, Boston, MA, University of TX Medical School-Houston, Houston, TX, Respiratory Motion, IncWaltham, MA.

**FA A1013****Concomitant Use of Alcohol and Oxycodone: The Influence on Opioid-induced Respiratory Depression**

In this study the interaction between opioid-induced respiratory depression (OIRD) and concomitant use of alcohol is explored. The slope of the Vi-CO<sub>2</sub> response curve decreased with ingestion of alcohol, the severity proportionally increased with escalating alcohol dosages. Alcohol worsened the measured opioid-induced respiratory depression significantly in our group of healthy fit volunteers. **Rutger M. Van der Schrier, M.D., M.S.C., Margot Roozekrans, M.D., Erik Olofsen, M.S.C., Albert Dahan, M.D., Ph.D.,** Anesthesiology, Leiden University Medical Centre, Leiden, Netherlands.

**FA A1014****Tolerability and Physiological Effects of High CO<sub>2</sub> Concentrations on the Human System**

The current study describes the effects of exposure to relatively high CO<sub>2</sub> concentrations with special attention to changes in the cardiorespiratory system, blood gas, cognitive function, subjective effects and tolerability in healthy volunteers. For pH, pCO<sub>2</sub> and cardiac output, the effects occurred within 5 min and remained constant during the remaining exposure time which was well tolerated in a group of fit young male volunteers. Tolerability to the observed changes in pH, pCO<sub>2</sub> and cardiac output will be less in people with less reserve, i.e., the elderly and individuals with cardiac and/or pulmonary disease. **Rutger M. Van der Schrier, M.D., M.S.C., Margot Roozekrans, M.D., Albert Dahan, M.D., Ph.D.,** Anesthesiology, Leiden University Medical Centre, Leiden, Netherlands.

**FA A1015****Preoperative Evaluation of the Airway via Sonography(PEAS) Protocol in Pediatric Patients- A Pilot Study**

We propose the PEAS (perioperative evaluation of the airway via sonography) protocol to identify cricothyroid membrane to assess difficulty in performing surgical airway access in pediatric patients. A pilot study of PEAS in pediatric patients is introduced here. **Mai Kishi, M.D., Akihiro Suzuki, M.D., Ph.D., Keishi Tamashiro, M.D., Michiko Sato, M.D., Yuko Nawa, M.D., Ph.D., Takayuki Kunisawa, M.D., Ph.D., Hiroshi Iwasaki, M.D.;** Nayoro City General Hospital, Nayoro, Japan, Asahikawa Medical College, Asahikawa, Japan, Hokkaido Medical Center for Child Health and Rehabilitation, Sapporo, Japan.

**FA A1016****The Role of the Pontine Parabrachial Nucleus in Opioid-induced Respiratory Depression**

The brainstem area mediating opioid-induced respiratory slowing and apnea is undetermined. Our adult, decerebrate rabbit model proves that a sub-area of the lateral Parabrachial Nucleus plays a decisive role at clinical concentrations of systemic opioids. **Astrid G. Stucke, M.D., Justin R. Miller, Ph.D., Eckehard A. Stuth, M.D., Francis A. Hopp, M.S., Edward J. Zuperku, Ph.D.,** Medical College of Wisconsin, Zablocki VA Medical Center, Milwaukee, WI.

**FA A1017****Efficacy of Ventilation through a Novel Cuffed Airway Exchange Catheter: An Animal Model Study**

Cuffed AEC and ICU vent or Bag to establish adequate ventilation without using jet ventilator. **Yandong Jiang, M.D., Ph.D., Jun Oto, M.D., Ph.D., Zhenbo Su, M.D., Ph.D., Michael Duggan, D.V.MJingwen Wang, M.D., David R. King, M.D., Robert Kacmarek, Ph.D.,** Anesthesia, Critical Care and Pain Medicine and Respiratory Care, Trauma, Emergency Surgery and Surgical Critical Care, Massachusetts General Hospital, Boston, MA.

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## OR04-1 CLINICAL CIRCULATION: OUTCOMES

1-2:30 p.m. | Room 244

### CA A1018

#### Surgical Correction of Moderate MR Defined by Intraoperative TEE During CABG Surgery Is Associated With Improved Long-Term Survival Compared to Revascularization Alone

We determined whether surgical correction of moderate mitral regurgitation (MR) as defined by intraoperative TEE is associated with a survival advantage over revascularization alone in 660 CABG surgery cases. We found that the mitral valve surgery group (n=232) had superior long-term outcomes compared with the CABG only cohort in a weighted multivariable regression model. We conclude that moderate MR during CABG surgery should be considered for surgical correction to optimize postoperative outcomes. Madhav Swaminathan, M.D., FASE, FAHA, Igor Akushevich, Ph.D., Alina Nicoara, M.D., Mani Daneshmand, M.D., Mark Stafford-Smith, M.D., Miklos D. Kertai, M.D., Joseph P. Mathew, M.D., Mihai V. Podgoreanu, M.D.; Anesthesiology, Surgery, Duke University, Durham, NC.

### CA A1019

#### Hyper-Insulinemic Normoglycemia Does Not Improve Myocardial Performance During Cardiac Surgery: A Randomized Trial

Glucose-insulin-potassium (GIK) solutions given to improve myocardial performance are inconsistently effective, perhaps because hyperglycemia negates benefits of GIK. Targeting normoglycemia, using a hyperinsulinemic normoglycemic clamp (HNC), may enhance GIK effects. Our investigation evaluated benefits of HNC on myocardial function during cardiac surgery. HNC did not improve myocardial performance. Andra I. Duncan, M.D., Babak Kashy, M.D., Sheryar Sarwar, M.B.B.S., Andrej Alfirevic, M.D., Shiva M. Sale, M.B.,B.S., Zekun Xu, M.S., James D. Thomas, M.D., Marc A. Gillinov, M.D., Daniel Sessler, M.D.; Cardiothoracic Anesthesia, Cardiothoracic Surgery, Outcomes Research, University Hospitals, Cleveland Clinic, Cleveland, OH.

Resident Research Award 2nd Place

### CA A1020

#### A High-Fidelity Analysis of Perioperative QTc-Prolongation in General, Spinal, and Local Anesthesia

QTc prolongation is not an isolated postoperative phenomenon and is common during surgery under general and spinal anesthesia. The incidence of LQTc episodes may be more likely with general anesthesia than with regional anesthesia. Andreas Duma, M.D., Swatlika Pal, M.B.B.S., M.S., Daniel L. Helsten, M.D., Phyllis K. Stein, Ph.D., Peter Nagele, M.D., M.S.C.; Department of Anesthesiology, Internal Medicine, Cardiovascular Division, Washington University of St. Louis, Saint Louis, MO.

### CA A1021

#### Impact of the Implementation of a Perioperative Goal Directed Therapy Performance Improvement Program on the Postoperative Outcome of Patients Undergoing High-Risk Abdominal Surgery: A Historical-Prospective, Comparative Effectiveness Study

This study suggests that the implementation of a QI program focusing on the implementation of a protocol for fluid management and hemodynamic optimization based on PGDT strategies has the ability to transform fluid administration patterns and to improve postoperative outcome in patients undergoing high-risk abdominal and pelvic surgeries. Maxime Cannesson, M.D., Ph.D., Davinder S. Ramsingh, M.D., Joseph B. Rinehart, M.D., Trung Q. Vu, M.D., Cameron J. Ricks, M.D., Zhaoxia Yu, Ph.D., Zeev N. Kain, M.D., M.B.A.; Anesthesiology & Perioperative Care, UCI Medical Center, Orange, CA, University of California, Irvine, CA, Biostatistics, University of California, Irvine, CA .

### CA A1022

#### Intraoperative Opioids and Myocardial Protection: Methadone Versus Fentanyl

Methadone has been reported to produce potent cardioprotective effects in animal models. In this clinical trial in cardiac surgical patients, no evidence of a reduction in cardiac injury or an improvement in cardiac function was observed in patients randomized to receive methadone. Glenn S. Murphy, M.D., Joseph W. Szokol, M.D., Michael J. Avram, Ph.D., Torin D. Shear, M.D., Stephen Greenberg, M.D.; Anesthesiology, NorthShore University HealthSystem, Evanston, IL, Northwestern University Feinberg School of Medicine, Chicago, IL.

### CA A1023

#### Effects of Routine Postoperative Troponin Monitoring After Noncardiac Surgery on Cardiovascular Interventions and One-year Mortality

The aim of this study was to evaluate the effect of routine troponin monitoring as part of standard postoperative care after noncardiac surgery on cardiovascular events and death. Implementation of this protocol resulted in more frequent diagnosis of postoperative myocardial infarction and subsequent coronary interventions. However, this had no effect on one-year mortality. Judith V. Waes, M.D., Remco B. Grobbee, M.D., Hendrik M. Nathoe, M.D., Ph.D., Linda M. Peelen, Ph.D., Wilton A. Van Klei, M.D., Ph.D., Anesthesiology, Cardiology, Epidemiology, University Medical Center Utrecht, Utrecht, Netherlands.

## OR06-1 CRITICAL CARE

1-2:30 p.m. | Room 243

### CC A1024

#### Anemia and End-Organ Dysfunction in Critically Ill Medical and Surgical ICU Patients

In our population of surgical and medical ICU patients, lower hemoglobin levels were not associated with daily risk of development of brain or renal dysfunctions, or death. However, lower hemoglobin levels were associated with more severe respiratory dysfunction the following day. Sarah J. Hemauer, M.D., Ph.D., Adam J. Kingeter, M.D., Xue Han, Ph.D., Matthew S. Shotwell, Ph.D., Pratik Pandharipande, M.D., M.S.C.I, Liza M. Weavind, M.B.Ch.B., M.D.; Anesthesiology, Biostatistics, Vanderbilt University Medical Center, Nashville, TN.

### CC A1025

#### Hydrocortisone Fails to Abolish NF-κB Nuclear Translocation in Deletion Allele Carriers of the NFKB1 Promoter Polymorphism (-94ins/delATTG) and Is Associated With Increased 30-day Mortality in Septic Shock

The heterogeneous results reported for hydrocortisone treatment in septic shock relate to a genetic variation (-94ins/delATTG) of NFKB1. Simon T. Schaefer, PD, Dr. MHBA, Sophia Gessner, M.S., André Scherag, Prof. DrKatharina Rump, M.S.C., Ulrich H. Frey, PD. Dr. MHBA, Winfried Siffert, Prof. DrAstrid M. Westendorf, Prof. DrJoachim Fandrey, Prof. DrJuergen Peters, Prof. DrMichael Adamzik, Prof. Dr.; Klinik für Anästhesiologie und Intensivmedizin, Universitätsklinikum Essen, Klinische Epidemiologie, Universität Jena, Institut für Pharmakogenetik, Universitätsklinikum; Universitätsklinikum, Institut für Medizinische Mikrobiologie, Institut für Physiologie, University Duisburg-Essen, Klinik für Anästhesiologie und Intensivmedizin, Universitätsklinikum Essen and Bochum, Essen, Germany.



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**CC A1026**

**Obesity-induced Hyperleptinemia Improves Survival and Immune Response in a Murine Model of Sepsis**

Obesity reflects hyperleptinemia and an improved cellular immune system. Relative hyperleptinemia whether obesity related or induced by leptin treatment acts protective in sepsis by increasing the cellular immune response and diminishing the pro-inflammatory cytokine response. Therefore, leptin treatment could offer a new way of an individual sepsis therapy. Johannes Tschoep, M.D., Ph.D., Daniel Siegl, MD, Nadine Huber, M.D., Bobby L. Johnson III, M.D., Andre Martignoni, M.D., Peter Conzen, M.D., Charles C. Caldwell, Ph.D., Thorsten Annecke, M.D.; Department of Anaesthesiology, Walter-Brendel-Centre of Experimental Medicine, Ludwig-Maximilians-University Munich, Munich, Germany, Department of General and Visceral Surgery, University Hospital Ulm, Ulm, Germany, Division of Research, Department of Surgery, University of Cincinnati, Cincinnati, OH.



**CC A1027**

**Cumulative Incidence and Time to Reintubation in United States Intensive Care Units**

In a retrospective cohort study of US ICUs, the cumulative incidence of reintubation was approximately 9% and median time to reintubation was 19 hours. We propose a 96-hour window to evaluate patients for reintubation as this captured 90% of reintubation events. These data may be used for benchmarking and patient safety across U.S. ICUs. Andrea N. Miltiades, M.D., May S. Hua, M.D., Hayley B. Gershengorn, M.D., Andrew A. Kramer, Ph.D., Guohua Li, Dr.PHM.D., Hannah Wunsch, M.D., M.S.C., Department of Anesthesiology, Columbia University, Department of Medicine, Albert Einstein College of Medicine, Montefiore Medical Center, Departments of Anesthesiology and Epidemiology, Columbia University, New York, NY, Critical Care, Cerner Corporation, Vienna, VA.



**CC A1028**

**Association between Monitoring Tissue Oxygenation and Mortality in Sepsis: A Systematic Review and Meta-analysis**

Tissue oxygen saturation (StO2), monitored noninvasively at bedside using near-infrared spectroscopy (NIRS), is associated with mortality within septic patient samples. Given observational design and the significant heterogeneity of the studies, there exists a significant need for prospective, randomized controlled trials incorporating StO2 within a treatment algorithm. Zhuo Sun, M.D., Jing You, M.S., Dongsheng Yang, M.S., Edward Mascha, Ph.D., Eric F. Kaiser, M.D., Tanya Richvalsky, M.D., Silvia Perez Protto, M.D., Andrea M. Kurz, M.D., J. Steven Hata, M.D.; Department of Outcomes Research, Department of Quantitative Health Sciences, Center for Critical Care, Cleveland Clinic, Cleveland, OH.

**CC A1029**

**Validation of a Pseudomonas Aeruginosa Quantitative PCR for the Diagnosis of Ventilator-acquired Pneumonia in the Intensive Care Unit**

Inappropriate or delayed antibiotic therapy can increase morbidity in VAP. Rapid initiation of broad spectrum empirical antibiotic therapy is recommended, but has recently been challenged. We compared a quantitative PCR (qPCR) specific to Paeruginosa with Gram stain results, for patients with a suspicion of VAP. 123 samples of mini-BAL underwent qPCR analysis (results available in 115 minutes) and Gram staining. qPCR showed strong performances (Se 80%, Sp 98%, VPP 86% VPV 96%), better than Gram stain. qPCR is a reliable and specific method for rapid diagnosis of Paeruginosa in mini-BAL. François Malavieille, JrM.D., Bernard Allouchiche, M.D., Ph.D., Bernard Floccard, M.D., Mathieu Page, M.D., Charles-Eric Ber, M.D., Laure Fayolle-Pivot, M.D., Etienne Hautin, M.D., Christophe Magnin, M.D., Thomas Rimmelé, M.D., Ph.D., Anesthesiology and Intensive Care Unit, Hôpital Edouard Herriot - Hospices Civils de Lyon, Lyon, France.

**OR14-1 PATIENT SAFETY AND PRACTICE MANAGEMENT**

1-2:30 p.m. | Room 245

**PI A1030**

**Measuring and Improving the Quality of Pre-Operational Assessments**

This study aimed to collect quality ratings from anesthesia providers on the quality of pre-procedural evaluations and identify recurring deficiencies. Over an 8-week period, 20.5% were rated as “exemplary”, 77.6% as “satisfactory”, and 1.8% as “unsatisfactory”. The most common categories for an “unsatisfactory” rating were missing information, incomplete/missing assessments, and inadequate assessments. This data enabled assessment of the outcome of our pre-operative process and the ability to shape targeted improvements of our assessments and development of best practices. Farah N. Manji, M.D., Kelsey McCarty, M.S., M.B.A., Eden Brand, M.PH., James P. Rathmell, M.D., Adam J. Carinci, M.D., Aalok Agarwala, M.D., M.B.A.; Department of Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital, Boston, MA.



**PI A1031**

**Comparing Apples to Apples: Updated Clinical Productivity Benchmarking Survey of Academic Anesthesiology Departments Demonstrates Importance of Benchmarking Using Data on Similar Facilities**

We performed a nationwide survey of clinical productivity for academic anesthesiology departments since the last previous data was published in 2003. Productivity benchmarks were reported by facility type, surgical staff type, and size of facility. The results included more than 2.5 million cases given in 143 different facilities. Academic departments are providing care at more facilities and larger facilities. Shorter surgical duration lead to more units billed per hour of care (tASA/h) which results in not having as many billed hours for similar productivity per OR (tASA/OR). Amr E. Abouleish, M.D., M.B.A., Charles W. Whitten, M.D., Donald S. Prough, M.D., Ronald S. Levy, M.D., Jeffrey L. Apfelbaum, M.D.; University of Texas Medical Branch, Galveston, TX, University of Texas Southwestern Medical Center, Dallas, TX, University of Chicago, Chicago, IL.

**PI A1032**

**Preoperative Electronic Communication Supports the Goals of the Perioperative Surgical Home**

The Perioperative Surgical Home aims to optimize outcomes by enhancing patient satisfaction, improving quality and evidence-based practice, and reducing inefficiency. Preoperative assessment centers are positioned to coordinate this care. Electronic communications regarding patients seen in a preoperative clinic of a tertiary care center fostered information exchange, with the potential to improve patient-centered, value-enhanced quality and safety outcomes. Vinca W. Chow, M.D., Angela M. Bader, M.D., Martyna Skowron, M.PH., David L. Hepner, M.D.; Department of Anesthesiology, Perioperative, and Pain Medicine, Surgical Services, Brigham and Women’s Hospital, Boston, MA.



**PI A1033**

**Anesthesia Preoperative Clinic: Memorial Hermann Hospital TMC Experience**

Development of an anesthesia preoperative clinic (APC) serves multiple purposes of optimizing patient medical conditions, improving hospital resource utilization, and reducing case cancellations. A classification system of cancellations, designed by Emanuel and Macpherson<sup>1</sup>, examined the efficacy of APC by categories of non-preventable misadventure, patient/system errors, clinical disagreement, and clinical deterioration. A similar system has been implemented at our institution with the introduction of systematic measurements and quality metrics that includes nurse phone triage, waiting times, consultation requests, and patient surveys with the aim of quality improvement, anxiety reduction and patient satisfaction improvement. Huong-Tram Vu Hoang, M.D., Peter V. Killoran, M.D., Mihir N. Rane, D.O. Carin A. Hagberg, M.D., Davide Cattano, M.D., Ph.D., Anesthesiology, University of Texas Health and Science Center at Houston, University of Texas Health and Science Center at Houston, Houston, TX.



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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### PI A1034

#### Total Joint Perioperative Surgical Home at UC Irvine Health: A Cost Analysis

This study examines the costs of the Total Joint Perioperative Surgical Home (PSH) implemented at UC Irvine Health in 2012 for all elective total knee arthroplasty and total hip arthroplasty. We have found that direct hospital costs can be driven substantially below benchmark levels using the Total Joint-PSH pathway, and suggest that implementation of a PSH model of care could help institutions to better control process costs and identify unwarranted costs. **Darren R. Raphael, M.D., M.B.A., Maxime Cannesson, M.D., Ph.D., Leslie M. Garson, M.D., Shermeen B. Vakharia, M.D., M.B.A., Ran Schwarzkopf, M.D., Ranjan Gupta, M.D., Ph.D., Zeev N. Kain, M.D., M.B.A., ; Anesthesiology and Perioperative Care, Orthopedic Surgery, University of California, Irvine, CA.**



### PI A1035

#### Appropriateness of Chest Radiograph in the Intensive Care

The use of chest radiograph is commonly employed in Intensive care patients for diagnostic purposes. The aim of our study was to evaluate the use of chest radiograph in Intensive Care patients and the rationale for request against the ACR appropriateness Criteria. We looked at 100 people and found our practise was 98% compliant. However, the indications for chest radiograph is a contentious point. Its use for confirmation of an endotracheal tube has poor evidence and the advantage of a reduced number of chest radiographs is less radiation to the patient, improved radiology service and cost saving to the trust. **Nazia Khan, M.B.B.S., Minnie Kibiro, M.B.B.S., F.R.C.R.; Anaesthetics, Peterborough Hospital, Peterborough, United Kingdom, Toronto Hospital, Toronto, ON, Canada.**

### OR11-1 HISTORY AND EDUCATION: NOVEL WAYS TO TEACH AND LEARN

3-4:30 p.m. | Room 243

### PI A1036

#### A 12-Month Multi-Institutional Episodic Daily Learning Online Mobile Curriculum (STARTprep) Designed to Prepare Anesthesia Residents for Preparedness in the American Board of Anesthesiology (ABA) Part I Basic Examination

This interim study found that a 12-month multi-institutional online course called STARTprep delivering basic science curriculum to residents in daily modules contributes to feelings of greater preparedness and positive learning outcomes for the American Board of Anesthesiology Part I Basic Examination. **Larry F. Chu, M.D., M.S., Andrea J. Fuller, M.D., Reuben Eng, M.D., FRCPC, Lynn Ngai, B.A., Paula Trigo Blanco, M.D., Sanford Roberts, B.A., Estee Piehl, M.D., Amy Ahearn, M.ASTART, Prep Partner Site Group, M.D.; AIM Lab, 13 Institutions, Stanford University School of Medicine, Stanford, CA, Department of Anesthesia, University of Colorado at Denver, Denver, CO, University of Southern California School of Medicine, Los Angeles, CA, Department of Anesthesia, Yale University School of Medicine, New Haven, CT.**

### PI A1037

#### Implementation of a Basic Curriculum for Perioperative Ultrasound During Anesthesiology Residency

Perioperative ultrasound (US) has become an essential part of anesthesiology practice. Despite that, there is a lack of structures training programs for perioperative US during anesthesiology residency. We implemented a multimodal structured 13-day US training program for anesthesiology interns at our institution using web didactics, live teaching sessions, simulation and workshops. At the end of the course the trainees demonstrated increased knowledge and ability to obtain multiple unassisted images for transesophageal and transthoracic echocardiography, peripheral nerve blocks, vascular access and lung ultrasound. **Mario Montealegre-Gallegos, M.D., John D. Mitchell, M.D., Khurram Owais, M.D., Anam Pal, M.D., Feroze Mahmood, M.D., Vanessa Wong, B.S., Brian Ferla, M.D., Robina Matyal, M.D.; Beth Israel Deaconess Medical Center, Boston, MA .**

### PI A1038

#### An Anesthesiology Case Teleconference Series Between the United States and Rwanda

We evaluated the impressions of the US participants in a monthly anesthesiology case teleconference between the University of Virginia and the University of Rwanda. Virtually all participants felt that the conferences improved their understanding of the practice of medicine in other parts of the world and their ability to communicate with practitioners from other cultures. Teleconferences may be an effective way to introduce global health and international medicine in an anesthesiology training program. **Marcel E. Durieux, M.D., Ph.D., Julia L. Weinkauff, M.D., Sean T. Runnels, M.D., Christine A. Baer, M.B.A., Charles A. Lewis, TCE, CTC, Joseph L. Ngenzi, PDT, Theogene Twagirumugabe, M.D.; Anesthesiology, Telemedicine, University of Virginia, Charlottesville, VA, College of Medicine and Health Sciences, University of Rwanda, Kigali, Rwanda, Anesthesiology, University of Rwanda, Butare, Rwanda.**

### PI A1039

#### Personality Types and High Fidelity Simulation Training: Does Teaching to Type Matter?

The operating Room is a high-stress workplace where interpersonal conflict can be intense. The ability to cope appropriately with conflicts is dependent on experience and the unique set of behavioral skills of every individual. This study showed that feedback tailored to individual personality type and conflict management style improved performance scores in the simulated environment and may have potential to be directly applied to everyday life and improve future clinical performance. **Herodotos Ellinas, M.D., Chris Fox, Ph.D., Jutta Novalija, M.D., Ph.D., Anesthesiology, Medical College of Wisconsin, Milwaukee, WI.**

### PI A1040

#### 3-Dimensional Simulation of Cadaver Dissection Can Improve Sono-Anatomical Structure Identification During Resident Regional Anesthesia Education

This study assesses the efficacy of a novel 3D cadaver dissection simulator used as an aid during identification of sonoanatomical structures by residents. Residents were found to improve their identification of structures relevant to four nerve blocks after use of this program. **Pulsar Li, D.O., Joseph P. Resti, M.D., Steven L. Orebaugh, M.D.; Anesthesiology, University of Pittsburgh Medical Center, Pittsburgh, PA, Anesthesiology, Children's Hospital of Philadelphia, Philadelphia, PA .**

### PI A1041

#### The New CA1 Residents Are So Shell Shocked Anyways, Would They Notice If We Flipped Their Classroom?

Use of a flipped classroom model to improve resident and faculty engagement and satisfaction with introductory CA1 didactics. We utilized a combined online and problem based learning discussion to replace a traditional live lecture in the introductory CA1 didactic program. Our results indicate that the new technique was comparable to the live lecture for medical knowledge transfer, but satisfaction was higher for both learner and teacher with the new approach. **Michael R. Hernandez, M.D., Ross G. Gaudet, M.D.; University of Chicago, Chicago, IL, DACC, University of Chicago, Chicago, IL.**

### POSTER DISCUSSIONS

#### PD03-1 CHRONIC AND CANCER PAIN 10-11:30 a.m. | ROOM 245

### PN A1042

#### Quantitative Urine Toxicology Can Help in Improving Compliance and Opioid Dose Adjustment in Chronic Pain Patients

Repeated urine toxicology tests demonstrated improved compliance, emphasizing the importance of these tests in all pain clinics in terms of providing an inducement to patients using opioids for pain management. Furthermore, results of this study demonstrated that repeated quantitative urine toxicology analyses could be a relevant tool to accurately adjust the dosing of opioid medication, enhance proper management of pain, and improve patient compliance. **Nebojsa Nick Knezevic, M.D., Ph.D., Omar Khan, M.D., Afsaneh Beiranvand, M.D., Kenneth D. Candido, M.D.; Anesthesiology, Advocate Illinois Masonic Medical Center, Chicago, IL.**



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**PN A1043****Changes in RNA Expression in Patients With Chronic Pain After Total Knee Replacement**

RNA analysis demonstrated that chronic knee pain at 6 months after Total Knee Replacement surgery is associated with immune and signaling interactions in leukocytes. **Asokumar Buvanendran, M.D., Hyung-Suk Kim, Ph.D., Mario Moric, M.S., Youping Deng, Ph.D., Yan Li, M.S., Kenneth J. Tuman, M.D., Jeffrey S. Kroin, Ph.D., Anesthesiology, Bioinformatics, Rush University Medical Center, Chicago, IL, Pain Research, National Institute of Nursing Research, Bethesda, MD.**

**PN A1044****An International Survey to Understand Infection Control Practices for Neuromodulation**

Evidence-based infection control policies are critical for the field of neuromodulation. The survey provided significant insight into current practices and will assist in the development of specific neuromodulation infection control policies. **David A. Provenzano, M.D., Timothy R. Deer, M.D., Asokumar Buvanendran, M.D., Salim M. Hayek, M.D., Ph.D., Samer N. Narouze, M.D., Ph.D., Maunak Rana, M.D., Simon Thompson, M.D., Zachary Drennen, B.A., Tyler Watson, B.A., ; Pain Diagnostics and Interventional Care, Pittsburgh, PA, The Center for Pain Relief, IncCharleston, WV, Rush University Medical Center, Chicago, IL, University Hospitals of Cleveland, Cleveland, OH, Summa Health System, Akron, OH, Advocate Illinois Masonic Medical Center, Chicago, IL, Basildon and Thurrock University, Essex, United Kingdom.**

**PN A1045****Outcome of Percutaneous Lumbar Synovial Cyst Rupture in Patients with Lumbar Radiculopathy: A Case Series**

There is little information available concerning the efficacy with treatment of synovial cyst by percutaneous rupture. Twenty nine patients with radicular symptoms undergoing fluoroscopic cyst rupture were evaluated. This case series showed immediate relief of radicular symptoms. However, in some of the patients, it did not prevent future surgical interventions in the long-term. **Yashar Eshraghi, M.D., Vimal N. Desai, M.D., Keval Yerigeri, B.S., Calvin G. Cajigal, M.D., Kutaiba Tabbaa, M.D.; Anesthesiology, Case Western Reserve University, School of Medicine, MetroHealth Medical Center, Cleveland, OH, Northeast Ohio Medical University, Rootstown, OH.**

**PN A1046****Prolonged Relief of Chronic Extreme PTSD and Depression Symptoms in Veterans Following a Stellate Ganglion Block**

In a case-series study of 15 veterans with chronic extreme posttraumatic stress disorder (PTSD) a single right-sided stellate ganglion block (SGB) procedure provided rapid and prolonged relief of their PTSD and concurrent depression symptoms in 75% of participants, with the positive effects lasting around 3 months. The findings support the use of SGB in select cases of PTSD and further suggest the potential for efficacy in the rapid treatment of depression. **Michael T. Alkire, M.D., Michael Hollifield, M.D., Rostam Khoshsar, MD, Linda Nguyen, MPH, Stephanie R. Alley, MA, Christopher G. Courtney, Ph.D., Christopher Reist, MD; Long Beach VA Healthcare System, Long Beach, CA.**

**PN A1047****Time to Cessation of Postoperative Opioids: A National-level Cross-sectional Analysis of the Veterans Affairs Healthcare System**

Little information exists at a population level to identify predictors for time to cessation of postoperative opioid use. Preoperative opioid use is a better predictor for prolonged postoperative opioid use than pain, substance use disorder, or affective disorder diagnosis. Particular attention may be necessary for patients using short-acting opioids on an acute or intermittent basis to transition back to preoperative opioid prescribing levels. **Seshadri Mudumbai, M.D., M.S., Kirsten Unger-Hu, M.S., Elizabeth Oliva, Ph.D., Eleanor Lewis, Ph.D., Jodie Trafton, Ph.D., Edward Mariano, M.D., Randall Stafford, M.D., Ph.D., Todd Wagner, Ph.D., David J. Clark, M.D., Ph.D., Anesthesia Service, VA Palo Alto HCS/ Stanford University, Center for Health Care Evaluation, VA Palo Alto HCS, Medicine, Stanford University, Palo Alto, CA .**

**PN A1048****Systematic Review and Meta-Analysis of Comparative Studies for Lumbosacral Radicular Pain: Transforaminal Versus Interlaminar Approaches to Epidural Steroid Injections**

The findings show that both transforaminal epidural steroid injections and interlaminar epidural steroid injections are effective in reducing pain and improving functional scores in unilateral radicular low back pain. **Kenneth D. Candido, M.D., George Chang Chien, D.O,Nebojsa N. Knezevic, M.D., Ph.D., Anesthesiology, Advocate Illinois Masonic Medical Center, Rehabilitation Institute of Chicago, Chicago, IL .**

**PD08-1 EQUIPMENT, MONITORING AND ENGINEERING TECHNOLOGY: UTILIZING TECHNOLOGY - IMAGING AND CLOSED LOOP SYSTEMS**

10-11:30 a.m. | Room 244

**FA A1049****Goal-Directed Fluid Therapy With Closed-loop Assistance During Moderate Risk Surgery Using Noninvasive Cardiac Output Monitoring**

Prospective pilot study in moderate risk surgical patients using the closed-loop fluid administration system with a noninvasive cardiac output monitoring (NEXFIN®). Compliance with GDFT management was defined as acceptable when a patient spent more than 85% of the surgery time in a preload independent state ( defined as PPV < 12% ) or when average Cardiac index (CI) during surgery was >2.5 l/min/m<sup>2</sup>. **Alexandre P. Joosten, Jr.M.D., Trish Huynh, B.S., Cecilia Canales, B.S., M.P.H., Maxime Cannesson, M.D., Ph.D., Joseph B. Rinehart, M.D.; Anesthesiology and Perioperative Care, UCI Medical Center, Irvine, CA, UCI Medical Center, Irvine, CA .**

**FA A1050****Goal-Directed Fluid Therapy Using Closed-Loop Assistance in Hepatobiliary Surgical Patients**

Goal-directed fluid therapy using closed-loop assistance in hepatobiliary surgical patients resulted in higher stroke volume and lower stroke volume variation than provider-only protocol implementation. **Joseph B. Rinehart, M.D., Marc Lilot, M.D., Alexandre P. Joosten, M.D., Trish Huynh, B.S., Christine Lee, B.S., Davinder S. Ramsingh, M.D., Cameron J. Ricks, M.D., Maxime Cannesson, M.D., Ph.D., Department of Anesthesiology & Perioperative Care, University of California, Irvine, Irvine, CA, Édouard Herriot hospital, Lyon, France.**

**FA A1051****A Randomized Study Comparing a Novel Needle Guidance Technology for Cannulation of a Simulated Internal Jugular Vein**

The aim of this randomized, crossover study is to compare needle positioning under ultrasound with and without a novel needle navigation technology (EZono 4000) in a model gel phantom. A total of 79 physicians were recruited. The rate of posterior wall puncture was 3.5 times lower with the navigation guidance system. **Stanley Yuan, M.D., Alyse Rymer, F, M.D., Neil A. Hanson, M.D., David Auyong, M.D.; Anesthesiology, Virginia Mason Medical Center, Seattle, WA .**

**FA A1052****Response to Noxious Stimuli During Closed-Loop Controlled Propofol Anesthesia at Different Remifentanil Effect Site Concentrations**

Closed-loop controlled anesthesia continually adjusts drug infusion rates using depth of hypnosis feedback. Data suggest that a higher remifentanil effect site concentration at the time of intubation (CeRemi >3.1 ng/ml) is more successful in blunting the hemodynamic response to intubation, reducing the heart rate increase by a median of 3 bpm and the systolic blood pressure increase by a median of 12mmHg. However, automated control of analgesia may perform better than target controlled infusion. **Matthias Gorges, Ph.D., Klaske Van Heusden, Ph.D., Nicholas West, M.S.C., Aryannah Umedaly, B.S., cChristian L. Petersen, Ph.D., Guy A. Dumont, Ph.D., J. Mark Ansermino, M.BB.ChRichard N. Merchant, M.D.; Electrical and Computer Engineering Department, Department of Anesthesiology, Pharmacology, & Therapeutics, University of British Columbia, Vancouver, BC, Canada.**



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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### FA A1053

#### The Benefits and Risks of Intraoperative Transesophageal Echocardiography During Liver Transplantation

Intra-operative transesophageal echocardiography (TEE) has been proven safe during cardiac surgeries. Concern that the insertion of the TEE probe will result in rupture of esophageal varices in the presence of coagulopathy common to end stage liver disease may dissuade some anesthesiologists from its use. We investigated the risks and benefits of intra-operative TEE during liver transplantation and found TEE being relatively safe with a low incidence of major hemorrhagic complications in patients with documented esophagogastric varices and coagulopathy. Sher-Lu Pai, M.D., Stephen Aniskevich, III, M.D., Timothy S. Shine, M.D., Beth L. Ladlie, M.D., M.P.H., Prith Peiris, M.D., Claudia C. Crawford, M.D., Klaus D. Torp, M.D., Neil G. Feinglass, M.D.; Anesthesiology, Mayo Clinic, Jacksonville, FL.

### FA A1054

#### A Novel Three-Dimensional Guidance System for Neuraxial Block Using Augmented Reality Technology: A Mannequin Study

A Novel Three-Dimensional Guidance System for Neuraxial Block using Augmented Reality Technology: A mannequin study. Hiromichi Kurosaki, M.D., Fumitaka Kikukawa, B.A., (Eng.), Katsutoshi Nakahata, M.D., Yukari Doko, M.D., Masato Soga, Dr. (Eng.), Tomoyuki Kawamata, M.D., Ph.D., Department of Anesthesiology, Wakayama Medical University, Graduate School of System Engineering, Wakayama University, Wakayama, Japan.

### FA A1055

#### Control of Experimental Perioperative Hypotension Using Phenylephrine Infusion Controlled by Anesthesiologist versus Computerized Closed Loop Algorithm

Understand the need and performance of a prototype system for automated control of blood pressure using a closed loop processor algorithm. Nicole Ribeiro Marques, M.D., Joe Sean Funston, M.D., William Whitehead, M.D., Michael Kinsky, M.D., Mindy Milosch, M.D., Muzna Khan, M.S., R.R.Tupendar Kallu, Ph.D., Karolos Grigoriadis, Ph.D., George Kramer, Ph.D., Anesthesiology, University of Texas Medical Branch, Mechanical Engineering, University of Houston, Houston, TX.

### FA A1056

#### The Reliability of Three-dimensional Transesophageal Echocardiography in Measuring Cardiac Output

The reliability of three-dimensional transesophageal echocardiography (3D TEE) was clinically acceptable in measuring cardiac output (CO) and nearly at a clinically acceptable level in tracking CO changes after hemodynamic interventions. It was less influenced by systemic vasomotor tones and had better accuracy as compared with the FloTrac/Vigileo system. When conducting intraoperative goal-directed therapy in patients with low or high systemic vascular resistance state, 3D TEE could be interchangeable with pulmonary artery catheter for CO monitoring. Koichi Suehiro, M.D., Ph.D., Katsuaki Tanaka, M.D., Ph.D., Tadashi Matsuura, M.D., Ph.D., Tomoharu Funao, M.D., Ph.D., Tokuhiko Yamada, M.D., Ph.D., Takashi Mori, M.D., Ph.D., Kiyonobu Nishikawa, M.D., Ph.D., Department of Anesthesiology, Osaka City University Graduate School of Medicine, Osaka City, Japan.

### PD12-1 OBSTETRIC ANESTHESIA: CESAREAN DELIVERY 10-11:30 a.m. | ROOM 243

### OB A1057

#### Dose Response to Spinal Morphine for Post-cesarean Analgesia

A blinded RCT of three doses (50, 100, 150 mcg) in of spinal morphine for postoperative analgesia was performed in 50 women undergoing elective cesarean delivery. No significant differences were found in analgesia, use of IV morphine, or side effects. Richard Smiley, M.D., Ph.D., Antonio Gonzalez-Fiol, M.D., Jeffrey S. Berger, M.D., M.B.A., Jaime Aaronson, M.D., Adam J. Sachs, M.D., Allison J. Lee, M.D., Amir Manoochehri, B.S., Taghreed Alshaeri, M.D., Amanda Hopkins, M.D.; Anesthesiology, Columbia University, New York, NY, Anesthesiology, UMDNJ-New Jersey Medical School, Newark, NJ, Anesthesiology, George Washington School of Medicine & Health Sciences, Washington, DC, Anesthesiology, Wayne State University School of Medicine, Detroit, MI.

### OB A1058

#### Combined Spinal-Epidural: The Untested Catheter?

The mean time for the recognition of a failed catheter was much more than the 1-2 hr period during which the catheter from a CSE could be viewed as “untested. Our findings support CSE as a reliable technique for labor analgesia and tend to refute the theory of the “untested catheter.” Antonio Gonzalez-Fiol, M.D., Jaime Aaronson, M.D., Adam J. Sachs, M.D., Richard M. Smiley, M.D., Ph.D., Anesthesiology, Rutgers-New Jersey Medical School, Secaucus, NJ, Anesthesiology, Columbia University, Anes Dept PH-, Columbia University, New York, NY .

### OB A1059

#### Preterm Gestation Is Associated With an Increased Failure Rate of Spinal Anesthesia for Cesarean Delivery

The purpose of this study was to investigate the hypothesis that preterm gestation is associated with an increased incidence of failed spinal anesthetics for cesarean delivery (CD) compared to term gestation. Our findings suggest that an increased spinal dose may be necessary to reliably ensure adequate anesthesia in preterm parturients, or, preferably, a combined spinal epidural technique allowing the epidural augmentation of inadequate spinal blocks would be recommended. Lisa M. Einhorn, M.D., Adeyemi Olufolabi, M.B.B.S., FRCA, Igor Akushevich, Ph.D., Ashraf S. Habib, M.B.,B.Ch, M.S.C., FRCA; Anesthesiology, Center for Population Health and Aging, Duke University, Durham, NC.

### OB A1060

#### Second Line Uterotonic Agents and Hemorrhage-Related Morbidity

Using data from a cesarean registry, we observed that patients exposed to carboprost were at higher risk of hemorrhage-related morbidity (OR=1.9) compared to those exposed to methylergonovine maleate after accounting for potential confounders. Alexander Butwick, M.B.B.S., F.R.C.A.M.S., Brendan Carvalho, M.B.B.Ch.F.R.C.A.Yaiir Blumenfeld, M.D., Yasser Y. El-Sayed, M.D., Brian T. Bateman, M.D.; Obstetrics and Gynecology, Stanford University School of Medicine, Stanford, CA, Anesthesiology, Massachusetts General Hospital, Boston, MA.

### OB A1061

#### Complications of Spinal Anesthesia for Cesarean Delivery Following Inadequate Labor Epidural

The purpose of this study was to investigate the incidence of high blocks and failed blocks in patients who received a spinal for CD after an inadequate labor epidural, and whether these outcomes were impacted by the administration of an epidural top up prior to spinal dosing. Our findings show that administration of a spinal anesthetic following a topped up epidural is associated with a high risk of failure. There was no significant difference in the incidence of high spinal blocks based on whether patients had previous epidural top up. Lisa M. Einhorn, M.D., Igor Akushevich, Ph.D., Ashraf S. Habib, M.B.,B.Ch, M.S.C., FRCA; Anesthesiology, Center for Population Health and Aging, Duke University, Durham, NC.

### OB A1062

#### Variations in Baseline Blood Pressure Readings Correlate With Reactive Hypertension Following Prophylactic Phenylephrine Infusions

Obtaining accurate baseline blood pressures (BP) is critical to the management of spinal anesthesia induced hypotension. A post hoc analysis of previously obtained data was performed to assess variation in preoperative holding versus initial BP readings in the operating Room prior to spinal placement. Results indicate that baseline BP readings in the OR are significantly elevated compared to preoperative readings, and this was positively correlated to reactive hypertension following initiation of phenylephrine infusion. Bradford E. Berndt, M.D., Ronald George, M.D., FRCPC, Terrence K. Allen, M.B.B.S., William White, M.P.H., Ashraf S. Habib, M.B.B.Ch.M.S.C., FRCA; Anesthesiology, Duke University Health System, Durham, NC, IWK Health Centre, Halifax, NS, Canada.



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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**OB A1063****Anticipated Pain, Perceived Analgesic Needs and Psychological Traits Predict Post-Cesarean Delivery Pain and Analgesic Usage**

Study findings suggest that asking patients their anticipated pain and analgesic needs is useful in predicting post-CD pain and analgesic usage. Although ASI and FPQ contributed to opioid use predictive modeling, these time-consuming questionnaires appear less useful than simple rating questions in post-CD pain prediction. **Brendan Carvalho, M.BB. ChF.R.C.A** Ming Zheng, Ph.D., Scott Harter, M.D., Pervez Sultan, M.BCh. B.F.R.C.A.; Anesthesiology, Stanford University School of Medicine, Stanford, CA, Anesthesiology, Ministry Saint Michael's Hospital, Amherst Junction, WI, Royal Free Hospital London, London, United Kingdom.

**OB A1064****Perioperative Inflammation in Obese Cesarean Section Patients**

Obese patients have a baseline inflammatory state and patients undergoing surgical procedures show a robust inflammatory response. However, it is unknown whether obese patients undergoing surgical procedures will have an altered response to this stress and whether an altered inflammatory response may be associated with increased complications. This study demonstrates that obese parturients undergoing cesarean section do not have an altered response to the surgical insult. Obese patients do suffer more infectious complications, and post-operative infection was predicted by a perioperative elevation in one pro-inflammatory cytokine and one anti-inflammatory marker. **Mullein D. Thorleifson, M.D., B.S., C. Hons, Duane J. Funk, M.D., Kent HayGlass, Ph.D.,** Department of Anesthesiology and Perioperative Medicine, University of Manitoba, Department of Immunology, University of Manitoba, Winnipeg, MB, Canada.

**PD15-1 PEDIATRIC ANESTHESIA: CARDIAC**

3-4:30 p.m. | ROOM 244

**PD A1065****Diffusion Tensor Imaging of Corpus Callosum Microstructure After Neonatal Cardiac Surgery Is Strongly Associated With 12-Month Neurodevelopmental Outcome Scores**

This prospective cohort study examines neonates undergoing cardiac surgery within the first 30 days of life. We examined associations between corpus callosum microstructure after surgery and 12 month neurodevelopmental outcomes. **Nathaniel H. Greene, M.D., Andrew Emerald, B.S., Ronald B. Easley, M.D., Ken M. Brady, M.D., Marcie Meador, R.N.** Elisabeth Wilde, Ph.D., Jill Hunter, M.D., Robert Voigt, M.D., Marie Turcich, LPC, Dean B. Andropoulos, M.D.; Pediatric Anesthesiology, Baylor College of Medicine/Texas Children's Hospital, University of Texas Health Science Center at Houston, Physical Medicine and Rehabilitation, Baylor College of Medicine/Texas Children's Hospital, Houston, TX, Radiology, Baylor College of Medicine/Texas Children's Hospital.

**PD A1066****A Closer Look at Early Extubation After Cardiac Surgery Utilizing CPB in Neonates and Infants**

Early tracheal extubation in infants after cardiac surgery has resulted in the emergence of new challenges during the postoperative period. In this review, 17 infants (9.9%) failed extubation. Increased agitation with escalation of pain and sedation regimen was one of the main factors that ultimately lead to reintubation. We have established a new paradigm for the provision of sedation and analgesia in these patients and will continue to follow the impact this has on postoperative outcomes. **Aymen N. Naguib, M.D., Anna M. Staudt, M.D., Tarun Bhalla, M.D., Peter D. Winch, M.D., Marco Corridore, M.D., Janet Simsic, M.D., Mark Galantowicz, M.D., Joseph Tobias, M.D.;** Department of Anesthesia and Pain Medicine, The Heart Center, Nationwide Children's Hospital, Columbus, OH .

**PD A1067****Structural Differences Between Neonatal and Adult Clots: Implications on Treatment of Post-Bypass Bleeding**

Significant differences exist between the hemostatic systems of neonates and adults, among them a qualitatively dysfunctional form of 'fetal' fibrinogen. In this study, we use confocal microscopy to examine structural differences between baseline neonatal and adult clot and between various stages of clot formation in neonates after cardiopulmonary bypass. **Nina A. Guzzetta, M.D., F.A.A.P** Ashley C. Brown, Ph.D., Janet D. Fernandez, CCRC, Thomas H. Barker, Ph.D., Department of Anesthesiology, Emory University School of Medicine, Children's Healthcare of Atlanta, Department of Biomedical Engineering, Georgia Institute of Technology, Department of Clinical Research, Children's Healthcare of Atlanta, Atlanta, GA .

**PD A1068****Anesthetic Exposure, MRI Brain Injury and Neurodevelopmental Outcomes at Age 36 Months Following Neonatal Cardiac Surgery**

Neonates undergoing cardiac surgery have significant subsequent anesthetic exposures. In this analysis we demonstrated association between the total number and duration of anesthetics and lower neurodevelopmental outcomes at 36 months of age with univariate regression analysis, but not in a multivariate model. We are now studying variation in anesthetic technique, specifically VAA exposure and other anesthetic and sedative dosing data, to determine if this modifiable factor is associated with neurodevelopmental outcomes in this population at 36 months. **Ashraf M. Resheidat, M.D., Marcie Meador, R.N.M.S., Ronald B. Easley, M.D., Ken Brady, M.D., Rachel Dugan, R.N.Voight** Robert, M.D., M Turcich, LPC, LMFT, LSSP, Dean Andropoulos, M.D.; Baylor College of Medicine, Houston, TX.

**PD A1069****Acute Degradation of the Endothelial Glycocalyx in Infants Undergoing Cardiac Surgery**

The present data demonstrate first evidence that infants have a vascular endothelial glycocalyx. Like in adults, it was shed by ischemia and reperfusion during major cardiac surgery. **Florian Brettner, M.D., Dirk Bruegger, M.D., Isabel Rossberg, Student, Christian Kowalski, MD, Peter Conzen, M.D., Bernhard F. Becker, MD, Ph.D., Daniel Chappell, MD;** Department of Anaesthesiology, Walter-Brendel-Center of Experimental Medicine, University of Munich, Munich, Germany.

**PD A1070****Hemodynamic Response to Ketamine in Children with Pulmonary Hypertension**

Ketamine is associated with minimal hemodynamic changes in sedated, mechanically ventilated children with pulmonary hypertension. These findings suggest that the increases in PAP and PVR noted in prior studies may have been associated with airway obstruction/hypoventilation. **Robert Friesen, M.D., Mark D. Twite, M.BB.Ch** Christopher S. Nichols, M.D., Kathryn Cardwell, B.S., Dunbar Ivy, M.D.; Anesthesiology, Cardiology, Children's Hospital Colorado, Aurora, CO, Anesthesiology, Children's Hospital Colorado, Golden, CO.

**PD A1071****Pulmonary and Cardiac Partitioning of Gas Exchange Abnormality and Alveolar Deadspace in Neonates After the Stage 1 Palliation of HLHS**

Occult pulmonary gas exchange abnormalities are significant in CHD, associated with mortality, and quantifiable using these methods. **George M. Hoffman, M.D., Eckehard A. Stuth, M.D., John P. Scott, M.D., Nancy S. Ghanayem, M.D., James S. Tweddell, M.D., Kathleen A. Mussatto, Ph.D.,** Pediatric Anesthesiology and Critical Care Medicine, Pediatric Anesthesiology, Cardiology, Cardiovascular Surgery, Children's Hospital and Medical College of Wisconsin, Milwaukee, WI.



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### PD A1072

#### To Pretreat or Not to Pretreat That is the Question: Bradycardia during Dexmedetomidine Sedation in Children

Hemodynamic parameters were compared in patients who received an anticholinergic prior to dexmedetomidine (Dex) sedation to those that did not during radiological imaging. Our study concludes that preemptive anticholinergic administration increases the heart rate and diastolic blood pressure initially during the scan period; however, hemodynamics were similar at baseline, in the PACU, and prior to discharge. **Rajeev Subramanyam, M.D., M.S., Elizabeth M. Cudilo, M.D., Md Monir Hossain, Ph.D., Mario Patino, M.D., Joel B. Gunter, M.D., Mohamed A. Mahmoud, M.B.,B.Ch, Anesthesia, Biostatistics and Epidemiology, Cincinnati Children's Hospital, Cincinnati, OH.**

### PD16-1 REGIONAL ANESTHESIA AND ACUTE PAIN

3-4:30 p.m. | ROOM 245

### RA A1073

#### Lipophilic Buffering and a Cardiotoxic Effect Combine to Accelerate Bupivacaine Redistribution in Vivo: A Comprehensive Mechanism of Lipid Resuscitation

Herein we demonstrate using an in vivo rat model of LAST, that treatment with lipid emulsion accelerates pharmacokinetic redistribution of radiolabeled-bupivacaine via a cardiotoxic effect and concurrent lipophilic buffering. The accelerated redistribution is accompanied by increased metabolism and excretion but ketoconazole inhibition of bupivacaine metabolism does not modify recovery. Taken together these provide a comprehensive mechanism of lipid resuscitation. **Michael R. Fettiplace, M.S., Kinga Lis, B.S., Richard Ripper, C.V.T, Adrian B. Pichurko, M.D., Katarzyna Kowal, B.S., Israel Rubinstein, M.D., Belinda Akpa, Ph.D., Guy L. Weinberg, M.D.;** Anesthesiology, Medicine, Chemical Engineering, University of Illinois at Chicago, Chicago, IL.

### RA A1074

#### SABER®-Bupivacaine Reduced Pain Intensity for 72 Hours Following Abdominal Surgery Relative to Bupivacaine HCl

SABER®-Bupivacaine is an extended-release depot formulation of bupivacaine directly instilled into the surgical incision at wound closure, designed to deliver longer acting pain control than bupivacaine HCl. This trial compared pain intensity and opioid use in laparoscopic surgery patients receiving either SABER-Bupivacaine or bupivacaine HCl. SABER-Bupivacaine sustained a consistently lower pain intensity score at each time point throughout 72 hours and may safely fulfill an unmet need for a true 72-hour postoperative local anesthetic. **Tong J. Gan, M.D., Neil Verity, Ph.D., Alex Yang, M.D., David J. Ellis, Ph.D.,** Duke University School of Medicine, Durham, NC, **Durect Corp** Cupertino, CA, **Xelay Acumen**, Belmont, CA.

### RA A1075

#### Continuous Sciatic Nerve Blocks: Do Concentration and Volume Influence Infusion Effects, or Is Dose the Only Factor?

For continuous popliteal-sciatic nerve blocks, we found no evidence that local anesthetic concentration and volume influence block characteristics, suggesting that local anesthetic dose (mass) is the primary determinant of perineural infusion effects in this anatomic location. **Sarah J. Madison, M.D., Amanda M. Monahan, M.D., Rishi R. Agarwal, M.D., Timothy J. Furnish, M.D., Edward J. Mascha, Ph.D., Michael Donohue, Ph.D., Anya C. Morgan, M.ACCRC, Brian M. Ilfeld, M.D., M.S.;** Anesthesiology, University of California, San Diego, San Diego, CA, **Quantitative Health Sciences and Outcomes Research**, Cleveland Clinic, Cleveland, OH .

### RA A1076

#### Single-Injection Thoracic Paravertebral Nerve Blocks for Post-Mastectomy Analgesia: A Retrospective Cohort Study

We present a retrospective cohort study of postoperative analgesia in patients who underwent either unilateral or bilateral mastectomy with or without single-injection thoracic paravertebral block (tPVB). Our results showed that postoperative analgesia was significantly improved in patients who received tPVB up until their transfer from the PACU to the floor, but not thereafter. **Rishi R. Agarwal, M.D., Anne M. Wallace, M.D., Jennifer Baker, M.D., Edward J. Mascha, Ph.D., Brian M. Ilfeld, M.D., M.S.;** University of California, San Diego, San Diego, CA, **Cleveland Clinic**, Chesterland, OH .

### RA A1077

#### A Phase 1, Randomized, Double-blind, Dose Escalation Safety Study of Neosaxitoxin (NeoSTX), Alone and in Combination with 0.2% Bupivacaine and Epinephrine

Our Phase 1 study under an FDA approved investigator-initiated IND had a primary aim of evaluating safety and adverse symptom profile of Neosaxitoxin (NeoSTX), alone and in combination with 0.2% bupivacaine. As a separate add-on arm of the study we also studied NeoSTX in combination with 0.2% bupivacaine and 5mcg/cc epinephrine. We report the first detailed safety, symptom, and physiologic data for NeoSTX in awake humans. NeoSTX combinations do not produce adverse physiologic effects when used at the doses studied. Addition of epinephrine reduces the frequency and severity of systemic symptoms. **Kimberly Lobo, M.S., M.PH., Joseph Kim, M.A, Carolina Donado, M.D., Laura Cornelissen, Ph.D., James M. Peyton, M.BCh.BMRCp, FRCA, Aykut Bilge, M.D., Ph.D., Charles B. Berde, M.D., Ph.D., Joseph Cravero, M.D.;** Department of Anesthesiology, Perioperative and Pain Medicine, Boston Children's Hospital/Harvard Medical School, Boston, MA.

### RA A1078

#### Continuous Transversus Abdominis Plane (TAP) Blocks for Postoperative Pain Control After Hernia Surgery: A Randomized, Triple-Masked, Placebo-Controlled Study

This randomized, triple-masked, placebo-controlled trial provides no evidence that following inguinal and lower abdominal surgery, adding a multiple-day, ambulatory, continuous ropivacaine TAP block to a single-injection ropivacaine results in improved analgesia or other benefits. **Ken Nakanote, B.A., Justin W. Heil, M.D., Sarah J. Madison, M.D., Vanessa J. Loland, M.D., Edward R. Mariano, M.D., NavParkash S. Sandhu, M.D., Michael J. Bishop, M.D., Rishi R. Agarwal, M.D., James A. Proudfoot, M.D., Brian M. Ilfeld, M.D., M.S.;** Anesthesiology, University of California, Naval Medical Center San Diego, San Diego, CA, **University of Washington**, Seattle, WA, **VA Palo Alto Health Care System**, Palo Alto, CA.

### RA A1079

#### TAP Block Vs. Wound Infiltration For Pain Management After Open Abdominal Hysterectomy: A Randomized Controlled Trial

In this preliminary study, wound infiltration with liposomal bupivacaine provided superior pain relief at rest and on coughing for up to 48 h after open total abdominal hysterectomy. We used "regular" bupivacaine, rather than liposomal bupivacaine for TAP block because it was only approved for wound infiltration at the time of study design. Our findings are in contrast to our hypothesis that the analgesia after TAP block would be superior to wound infiltration for up to 12 h. **Irina Gasanova, M.D., Ph.D., John Alexander, M.D., Girish P. Joshi, M.B.,B.S., M.D.;** Anesthesiology and Pain Management, **UT Southwestern Medical Center**, Dallas, TX.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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## POSTER PRESENTATIONS

## PO03-2 CHRONIC AND CANCER PAIN

8-10 a.m. | HALL B1-AREA A



## PN A1080

**Retigabin Alleviates Neuropathic Pain in Oxaliplatin-induced Pain Rat Model**

We tested the efficacy of Retigabin in alleviating chronic pain in an Oxaliplatin-induced pain rat model. Our study included 8 rats and we used the Ugo Basile Orofacial Stimulation Test System® (ComerioVA, Italy). The baseline data were obtained by performing orofacial operant tests on the animals at temperatures of 24°C (neutral) and 12°C (noxious cold). Our results suggest that Retigabin can be an effective drug in treating neuropathic pain caused by Oxaliplatin treatment. **Alaa A. Abd-Elseyed, M.D., M.P.H., Jianguo Gu, Ph.D., University of Cincinnati, Cincinnati, OH.**

## PN A1081

**Methyltransferase G9a/Glp Complex Controls NR2B Expression by Methylating GRIN2B in Neuropathic Pain**

Peripheral nerve injury induces upregulation of both spinal G9a/Glp and NR2B. G9a/Glp inhibitors increase NR2B expression via decreasing GRIN2B methylation, and sensitize pain perception suggesting that G9a/Glp controls NR2B at a new level by methylating GRIN2B to prevent the over-sensitization from nerve injury-induced pain. **Shan W. Feng, SrM.D., Xian Wang, M.D., Shiqin Xu, M.D., Xiaofeng Shen, M.D., Fuzhou Wang, M.D., Ph.D., Nanjing Maternity and Child Health Care Hospital, Nanjing Medical University, Nanjing, China.**

## PN A1082

**Tissue-Specific Conditional Activation of  $\beta$ -Catenin Leads to Discogenic Back Pain in Mice**

Cartilage tissue specific conditional activation of  $\beta$ -catenin signaling in mice leads to progressive disc degeneration which is correlated with development of chronic back pain-related behavior. **Jeffrey S. Kroin, Ph.D., Wanqing Xie, Ph.D., Hee-Jeong Im, Ph.D., Di Chen, M.D., Ph.D., Anesthesiology, Biochemistry, Rush Medical College, Chicago, IL.**

## PN A1083

**CXCL10-Mediated Decrease of Morphine Analgesia Involves p38 MAPK and PI3K/Akt Pathway**

CXCL10 attenuated morphine analgesia by differential activation of signaling proteins, which inhibited p38 MAPK phosphorylation and increased pAKT phosphorylation, respectively. **Feng Gao, M.D., Huilian Bu, Ph.D., Fei Cao, Ph.D., M.D., Genhua Guo, Student, Peng Wang, M.D., Ailin Luo, Ph.D., Yuke Tian, M.D.; Department of Anesthesiology, Tongji Hospital of Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China.**

## PN A1084

**Urinary Trypsin Inhibitor Attenuate the Progress of Neuropathic Pain**

Ulinastatin has increased paw withdrawal threshold after SNL and may attenuate the progress of neuropathic pain through inhibiting the production of IL-6 in a rat model of neuropathic pain. **Ki Tae Jung, M.D., Hyun Young Lee, M.D., Sang Hun Kim, M.D., Ph.D., Myung Ha Yoon, M.D., Ph.D., Kyung Joon Lim, M.D., Ph.D., Department of Anesthesiology and Pain Medicine, School of Medicine, Chosun University, Department of Anesthesiology and Pain Medicine, Medical School, Chonnam National University, Gwangju, Korea, Republic of.**

## PN A1085

**Spinal Peroxynitrite Contributes to Remifentanyl-Induced Postoperative Hyperalgesia Via Enhancement of DMT1(-)IRE-mediated Iron Accumulation in Rats**

Aberrant PN-dependent iron accumulation via DMT1(-)IRE contributes to remifentanyl-induced postoperative hyperalgesia in vivo, hydrogen-rich saline and iron chelation protect against the development of hyperalgesia. This concept may be generalizable to other pain states related to PN over-expression and may open avenues for the novel therapies of pain. **Ruichen Shu, Ph.D., Linlin Zhang, M.D., Haiyun Wang, Ph.D., Guolin Wang, Ph.D., Tianjin Medical University General Hospital, Tianjin, China.**

## PN A1086

**Changes of Messenger RNA Expression in the Prefrontal Cortex of Pain Model Rats by Electroconvulsive Stimulation**

We hypothesized electroconvulsive stimulation (ECS) affects expression of messenger RNA (mRNA) changes in the prefrontal cortex of the neuropathic pain model, and examined it. ECS participated in mRNA expression changes such as inflammatory cytokines and receptors about the pain in the prefrontal cortex of neuropathic pain model rats. **Yusuke Kimura, M.D., Yoko Hori, M.D., Masashi Ishikawa, M.D., Ph.D., Atsuhiko Sakamoto, M.D., Ph.D., Nippon Medical School, Tokyo, Japan.**

## PN A1087

 **$\mu$  Opioid Receptor-Dependent Activation of Spinal mTOR During Chronic Morphine Exposure**

mTOR and its downstream effectors are activated through a  $\mu$  opioid receptor-mediated pathway in dorsal horn neurons during chronic morphine exposure. **Linlin Sun, Ph.D., Lingli Liang, M.D., Ph.D., Shaogen Wu, Ph.D., Xiyao Gu, Ph.D., Brianna M. Lutz, Ph.D., Alex Y. Bekker, M.D., Ph.D., Yuanxiang Tao, M.D., Ph.D., Anesthesiology, Rutgers Graduate School of Biomedical Sciences, Rutgers New Jersey Medical School, Newark, NJ.**

## PN A1088

**Chemical Chaperones Modulate the Development of Morphine Antinociceptive Tolerance**

We investigated the relationship between endoplasmic reticulum (ER) stress and the development of morphine antinociceptive tolerance by using knock-in mice expressing a mutant ER chaperone. The results suggest that an ER chaperone, BiP, may play an important role in the development of morphine tolerance. Furthermore, we also found that chemical chaperones that improve the capacity for protein folding in the ER also attenuated the development of morphine tolerance in wild-type mice, suggesting a possible clinical application of chemical chaperones in preventing morphine tolerance. **Tomohiko Aoe, M.D., Ph.D., Yota Okuyama, M.D., Hisayo Jin, M.S., Hiroshi Kokubun, M.D.; Anesthesiology, Chiba University Graduate School of Medicine, Chiba, Japan.**

## PN A1089

**Does Genetic Susceptibility to Persistent Post-op Pain (Thermal Hyperalgesia) Correlate with Other Phenotypes in the Mouse Phenome Database (MPD)?**

The thermal withdrawal phenotype after chronic constriction injury in mice is heritable and it correlates with neurobehavioral phenotypes in the Mouse Phenome Database. **Eugene S. Fu, M.D., Houda Boucekkine, B.S., Sarah Wishnek, Ph.D., Eden R. Martin, Ph.D., Roy C. Levitt, M.D.; Anesthesiology, John P Hussman Institute for Human Genomics, University of Miami, Miami, FL.**

## PN A1090

**AMPA Potentiators as Novel Pharmacotherapy for Relieving Symptoms of Persistent Neuropathic and Inflammatory Pain**

Novel pharmacologic options that do not suppress the respiratory drive are urgently needed. Central pain pathways involve glutamate signaling through the  $\alpha$ -amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid receptor (AMPA). We found that administration of AMPA potentiators, which augment AMPAR signaling, alleviates sensory and affective symptoms of chronic pain. Since AMPA potentiators can also stimulate the respiratory drive, AMPAkinases may be a novel class of analgesics used for the treatment of persistent postoperative and chronic pain. **Alexander M. Le, M.S., Michelle M. Lee, B.S., Chen Su, B.S., Anthony H. Zou, Undergraduate Student, Jing Wang, M.D., Ph.D., Anesthesiology, New York University School of Medicine, Columbia University, New York, NY.**

## PN A1091

**Circulating MicroRNAs as Potential Biomarkers for Neuropathic Pain**

We have previously described two spared nerve injury variants that display different pain phenotypes and identified differentially expressed microRNAs in the dorsal root ganglia of these two variants. At least two of the dysregulated microRNAs identified in dorsal root ganglia are also dysregulated in plasma. Circulating microRNAs could thus serve as biomarkers and therapeutic targets for different neuropathic pain states. **Lisa V. Doan, M.D., Monica Norcini, Ph.D., Mojolaoluwa Mabayoje, B.S., Thomas J. Blanck, M.D., Ph.D., Esperanza Recio-Pinto, Ph.D., Anesthesiology and Neuroscience and Physiology, Pharmacology, NYU Langone Medical Center, New York, NY.**

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain

### PN A1092

#### Time-Dependence of Expression Levels of Differentially Dysregulated miRNAs in DRG Between Tibial-SNI and Sural-SNI

The expression of 7 miRNAs was confirmed to be differentially dysregulated in lateral DRGs derived from Tibial-SNI and Sural-SNI. Moreover, the magnitude of the dysregulation changed over time. These results suggest that these miRNAs may contribute differently to the initiation, transition and maintenance of chronic neuropathic pain, as well as to the recovery from chronic neuropathic pain, resulting from a peripheral nerve injury. **Monica Norcini, Ph.D., Alexandra Sideris, Ph.D., Lourdes A. Martin Hernandez, B.S., Jin Zhang, M.D., Thomas J. Blanck, M.D., Ph.D., Esperanza Recio-Pinto, Ph.D., NYU Langone Medical Center, New York, NY .**

### PN A1093

#### Differential Methylation in the Regulatory Regions of Multiple Major Histocompatibility Complex (MHC) Genes Predicts the Development of Chronic Widespread Musculoskeletal Pain After Motor Vehicle Collision

This pilot study suggests that differential methylation in genes coding for proteins that play a critical role in immune regulation may influence the development of chronic widespread pain after MVC. **Andrey Bortsov, M.D., Ph.D., Theresa Swift-Scanlan, Ph.D., Robert A. Swor, D.O., David A. Peak, M.D., Jeffrey S. Jones, M.D., Niels K. Rathlev, M.D., David C. Lee, M.D., Robert M. Domeier, M.D., Phyllis L. Hendry, M.D., Samuel A. McLean, M.D., M.P.H., ; Anesthesiology, University of North Carolina, Chapel Hill, NC, William Beaumont Hospital, Royal Oak, MI, Massachusetts General Hospital, Boston, MA, Spectrum Health Hospital, Grand Rapids, MI, Baystate Medical Center, Springfield, MA, North Shore University Hospital, Manhasset, NY, St. Joseph Mercy Hospital, Ann Arbor, MI, University of Florida and Shands Jacksonville, Jacksonville, FL.**

### PN A1094

#### In Silico Screening of Novel SPAK/OSR1 Inhibitors

In this study, we utilized the Rosetta Molecular Modeling Software Suite to predict chemical fragments that would favorably bind to the CCT domain as a means of screening for possible SPAK/OSR1 inhibitors. We believe that these results will lead us one step closer to the production novel pharmaceuticals with analgesic and/or antihypertensive properties. **Thomas M. Austin, M.D., Eric Delpire, Ph.D., Vanderbilt University, Nashville, TN.**

### PO06-4 CRITICAL CARE 8-10 a.m. | HALL B1-AREA B

### CC A1095

#### Investigation of the Organ Types Under the Two Chest Compression Points in Cadaver Patients

We investigated the safety of two chest compression points, where the sternum and the inter nipple line (INL) meets and the lower half of the sternum (LHS), in an autopsy imaging study. We examined the organ types just under each chest compression point in CT images and compared the number of organs. A total of 126 cadavers of patients were studied. In the McNemar test, the number of liver appearances under the INL point was significantly higher than that under the LHS point. There was no statistically significant difference in parameters between the two chest compression points when the McNemar-Bowker test was used. As a landmark, the LHS point would be favorable for avoiding liver injury. **Yoshinobu Kimura, M.D., Shinzou Sumita, M.D., Ph.D., Michiaki Yamakage, M.D.; Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan, Anesthesia, Asahikawa Redcross Hospital, Asahikawa, Japan.**

### CC A1096

#### Effects of Aspirin on NGAL and Cystatin-C in Renal Ischemic Reperfusion Model of Diabetic Rats

After renal ischemia-reperfusion injury in diabetic rats, this study found that aspirin pretreatment decreased NGAL expression and serum releases of NGAL and cystatin-C, indicating that aspirin may be renal protective when suffering ischemia/reperfusion injury. **Linong Yao, Ph.D., Intensive Care Unit, Tangdu Hospital, Xi'an, China.**

### CC A1097

#### Beta-Blocker Therapy Preserves the Number of Normal Spleen T-Lymphocytes Which Is Reduced in Proportion to the Severity in Septic Model

In the experimental septic model, we examined whether lymphocyte apoptosis was affected by the severity of disease and beta-blocker therapy could modulate apoptosis. We demonstrated that the number of normal T-lymphocytes was reduced in proportion to the severity of disease and beta-blocker therapy could preserve the number of normal T-lymphocytes. **Takeshi Suzuki, M.D., Ph.D., Kei Inoue, M.D., Toru Igarashi, M.D., Shizuka Minamishima, M.D., Ph.D., Nobuyuki Katori, M.D., Ph.D., Hiroshi Morisaki, M.D., Ph.D., Anesthesiology, Keio University School of Medicine, Tokyo, Japan.**

### CC A1098

#### Impact of Morphine Administration Timing on Lipopolysaccharide-Mediated Lethal Shock in Mice

In mice with LPS-mediated lethal shock, morphine completely changes the survival rate and cytokine production, and the effects differ depending on the timing of administration. **Tomoko Fukada, M.D., Hidehito Kato, Ph.D., Rika Nakayama, M.D., Hiroko Iwakiri, M.D., Yuri Tsuchiya, D.D.SJunji Yagi, M.D., Makoto Ozaki, M.D.; Department of Anesthesiology, Department of Microbiology and Immunology, Tokyo Women's Medical University, Tokyo, Japan.**

### CC A1099

#### Fluid Choice During Resuscitation and Major In-Hospital Outcomes Among Critically Ill Adults with Sepsis

In a retrospective cohort study of 60,734 critically ill adults admitted with sepsis, the receipt of balanced crystalloids during initial resuscitation was associated with lower in-hospital mortality regardless of the receipt of colloids. Costs and length of stay were significantly greater for colloid recipients. Chloride-content of resuscitation fluids may be more important than the conventional crystalloid versus colloid distinction. **Anthony S. Bonavia, M.D., Karthik Raghunathan, M.D., Brian Nathanson, Ph.D., Andrew D. Shaw, M.B.,B.S., Peter Lindenauer, M.D., M.Sc.; Anesthesiology, Duke University Medical Center, Durham VA Medical Center, Durham, NC, OptiStatim, LLC Longmeadow, MA, Baystate Medical Center, Springfield, MA .**

### CC A1100

#### Prolonged Translaryngeal Intubation May Cause Less Airway Complications Than General Recognition in Adults

We compared the incidence rates of severe airway complications in prolonged translaryngeal intubation (TLI) group and control group. This study suggests that the incidence rates of severe airway complications may be lower than general recognition even if TLI is prolonged in adults. **Takeru Shimizu, M.D., Ph.D., Keiichi Hagiya, M.D., Yuichiro Yamasaki, M.D., Makoto Tanaka, M.D., Ph.D., Taro Mizutani, M.D., Ph.D., Department of Anesthesiology and Critical Care Medicine, University of Tsukuba/Mito Kyodo General Hospital, Emergency and Critical Care Medicine, Tsukuba University Hospital, Tsukuba, Japan.**

### CC A1101

#### Sevoflurane Primary Metabolite Attenuates Organ Damage in a Rat Sepsis Model

This in vivo study reveals that the use of the water-soluble primary metabolite of sevoflurane is protective in endotoxemia. **Beatrice Beck-Schimmer, M.D., Martin Schlapfer, M.D., Roman Schimmer, Melanie Hasler, Martin Urner, M.D.; Institute of Anesthesiology, Zurich Center of Integrative Human Physiology ZIHP, University of Zurich, Zurich, Switzerland.**

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**CC A1102****Burn-Induced Skeletal Muscle Insulin Resistance Is Associated With the Warburg Effect-like Metabolic Reprogramming: Role of Protein Farnesylation**

Burn-induced insulin resistance is associated with the Warburg effect-like metabolic reprogramming in mouse muscle, as indicated by induction of HIF-1 $\alpha$  and PKM2 expression as well as increased lactate production and hyperlactatemia. Farnesyltransferase (FTase) inhibitor reversed all of these alterations in burned mice. Our study identifies FTase as a novel potential molecular target to reverse metabolic derangements and insulin resistance, a major complication of burn injury, so as to improve the clinical outcome of burn patients. Harumasa Nakazawa, M.D., Ph.D., Marina Yamada, Ph.D., Ming Fu, Ph.D., Tomokazu Tanaka, M.D., Ph.D., Masao Kaneki, M.D., Ph.D., Department of Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital, Shriners Hospitals for Children, Harvard Medical School, Boston, MA .

**CC A1103****Postreperfusion Syndrome and Elevation of Procalcitonin After Orthotopic Liver Transplantation**

Association between the occurrence of postreperfusion syndrome during orthotopic liver transplantation and the elevation of procalcitonin after surgery. Bertrand Dévigne, Intern, Thomas Geffriaud, M.D., Arnaud Grégoire, M.D., Thomas Rimmelé, M.D., Ph.D., Service d'Anesthésie-Réanimation, Hôpital Edouard Herriot, Hospices Civils de Lyon, Lyon, France.

**CC A1104****Emulsified Isoflurane Inhibits Cardiac Apoptosis and Preserves Myocardial Mitochondrial Function after Severe Burn in Rats**

Post-burn cardiac shock causes myocardial damage and cardiac dysfunction at the early stage of severe burns. We found that emulsified isoflurane postconditioning inhibited cardiac apoptosis and prevented myocardial mitochondrial damages by preserving ATP production and  $\Delta\Psi_m$ , decreasing cytochrome c release and preventing mPTP opening after severe burn in rats. Zhaoyang Hu, Ph.D., Yadong Fang, M.D., Xiaying Peng, M.D., Zegang Yin, M.D., Jin Liu, M.D.; Anesthesiology, West China Hospital, Sichuan University, Chengdu, China, Institute of Burn Research, State Key Laboratory of Trauma, Burn and Combined Injury, Southwest Hospital, Third Military Medical University, Chongqing, China.

**CC A1105****Endocannabinoid CB2 Receptor Expression on Leukocytes in an In Vitro Sepsis Model**

Immuno-endocannabinoid signaling during inflammatory stress in an in vitro sepsis model is modulated by CB2 cannabinoid receptor expression on leukocytes. This mechanism may represent an adaptive response to different stimuli and a potential therapeutic target. Christian Hoppstock, M.S., Daniela Hauer, M.D., Patrizia Campolongo, Ph.D., Matthias Feurecker, M.D., Alexander Chouker, Ph.D., Gustav Schelling, Ph.D., Ines Kaufmann, M.D.; Department of Anesthesiology, University of Munich, City Hospital of Munich, Munich, Germany, Sapienza University of Rome, Rome, Italy.

**CC A1106****Validation of ROTEM 5 Minute Amplitudes of Clot in Severe Trauma Patients in the Resuscitation Room**

The goal of this study is to evaluate the performance of 5 minute amplitudes of ROTEM in order to detect an INR > 1.5 and a hypofibrinogenemia  $\leq 1.5$ g/L in trauma patients in the resuscitation Room. The results showed that 5 minute amplitudes seem to be as effective as 10 and 15 minute amplitudes and can be used to decide the best strategy to transfuse. Maeva Durand, Resident, Guillaume Marcotte, M.D., Mathieu Page, M.D., Jean Stephane David, M.D., Ph.D., Bernard Floccard, M.D., Thomas Rimmelé, M.D., Ph.D., Hôpital Edouard Herriot, Hospices Civils de Lyon, Lyon, France.

**CC A1107****Hydrogen Gas Inhibits Oxidative Stress in Lungs of Septic Mice by Nrf2/HO-1 Pathway in Vivo**

Sepsis is a kind of systemic inflammatory response syndrome (SIRS). Hydrogen (H<sub>2</sub>) has a magical effect in the treatment of sepsis. In the present study, we investigated whether the protective effect of H<sub>2</sub> on septic lung injury in mice was through the activation of Nrf2/HO-1 pathway. Through the observation of many indicators, we found that mice in the severe sepsis group had a low survival rate and the lung injury was much heavier. However, therapy with H<sub>2</sub> increased survival rate and alleviated the lung injury, attenuated the expression of HMGB1 in the serum and lung, stimulated the expression of HO-1 and Nrf2. Yuan Li, Master, Keliang Xie, Doctor, Hongguang Chen, Master, Weina Wang, Master, Guolin Wang, Doctor, Yonghao Yu, Ph.D., Anesthesiology, Tianjin Medical University General Hospital, Tianjin, China.

**CC A1108****Hydrogen Inhalation Reverses Brain Injury in Mice Submitted to Sepsis by Cecal Ligation and Puncture**

Several studies have demonstrated that 80% sepsis survivors present long-term cognitive impairment. We previously reported that molecular hydrogen could markedly improve the survival rate of septic mice and organ damage, such as heart, liver, lung and kidney. In this study, it was demonstrated that H<sub>2</sub> inhalation can ameliorate brain injury and cognitive dysfunction of septic mice, associated with up-regulating Nrf2 to increase the activities of antioxidant enzymes and decrease the levels of oxidative products.

Lingling Liu, M.D., Keliang Xie, M.D., Hongguang Chen, M.D., Xiaoqing Dong, M.D., Guolin Wang, M.D., Yonghao Yu, M.D.; Department of Anesthesiology, Tianjin Medical University General Hospital, Tianjin, China.

**CC A1109****Importance of Toll-like Receptor 2 in Mitochondrial Dysfunction during Polymicrobial Sepsis**

In current study, we demonstrate that activation of TLR2/1, but not TLR3/4/9, is sufficient to induce cellular H<sub>2</sub>O<sub>2</sub> and mitochondrial O<sub>2</sub><sup>-</sup> production. TLR2 also contributes to mitochondrial dysfunction during polymicrobial sepsis. The study offers a perspective of targeting TLR2 signaling and mitochondrial dysfunction as a novel therapeutic strategy in the management of sepsis. Yu Gong, Ph.D., Lin Zou, M.D., Ph.D., Yan Feng, M.D., Ph.D., Dan Li, M.D., Jiayan Cai, B.S., Dunjin Chen, M.D., Ph.D., Wei Chao, M.D., Ph.D.; Massachusetts General Hospital, Harvard Medical School, Boston, MA, Key Laboratory for Major Obstetric Disease of Guangdong Province, The Third Affiliated Hospital of Guangzhou Medical University, Guangzhou, China.

**CC A1110****Intraoperative Management for Liver Transplantation and Combined Liver-intestinal Transplantation**

Herein we report the first comparison between perioperative parameter in LT and CLIT patients. While the patients did not significantly differ preoperatively, CLIT patients were more prone to develop intraoperative acid-base imbalance, electrolyte disorders, and required more blood transfusion. Postoperatively, CLIT patients required longer ventilation compared with LT patients. Victor Xia, M.D., Xiaoxing Song, M.D.; Anesthesiology, Ronald Reagan UCLA Medical Center, Los Angeles, CA, Shanghai Jiatong University School of Medicine, Ruijing Hospital, Shanghai, China.



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8-10 a.m. | HALL B1-AREA C



**FA A1111**

**Pulse Contour Cardiac Output and Dynamic Preload Assessment in Patients With Impaired Left Ventricular Function**

This study investigates the reliability of uncalibrated arterial pulse contour analysis in patients with impaired left ventricular function. The results indicate that this promising technique is not yet suitable for application in this patient group. Leonard Montenij, M.D., Hans Sonneveld, M.D., Ph.D., Arno Nierich, M.D., Ph.D., Wolfgang Buhre, M.D., Ph.D., Eric de Waal, M.D., Ph.D.; Anesthesiology, Utrecht University Medical Center, Utrecht, Netherlands, Anesthesiology and Intensive Care, Isala Klinieken, Zwolle, Netherlands, Maastricht University Medical Center, Maastricht, Netherlands.

**FA A1112**

**Fluid Responsiveness Using Left Ventricular End-Diastolic Volume Measured by TEE in High Risk Surgical Patients During Craniotomy**

Thirteen patients referred for craniotomy were enrolled in our study. The results show that LVEDVV measured by left ventricular short diameter of axle using M type echocardiographic measurement seems an acceptable monitoring indicator for fluid responsiveness in ASA III-IV patients during craniotomy. This accessible method has potential clinical applications for situations in which volume and cardiac function monitoring during surgery is important. Guo Chen, M.D., Jing Xue, M.D., Guo Zhou, M.D.; Anesthesiology and Perioperative Care, West China Hospital, Sichuan University, Chengdu, China.

**FA A1113**

**Accuracy of Arterial Pulse Contour Method Cardiac Output After Infusion of Phenylephrine**

To determine the accuracy of arterial pulse contour method cardiac output (APCO) measured by a FloTrac/Vigileo monitor after infusion of phenylephrine, we compared cardiac output values obtained by APCO and transesophageal echocardiogram (TEE-CO) before and after infusion of phenylephrine. Prior to infusion, the bias and precision of APCO shown by a Bland-Altman plot was  $-0.13 \pm 2.67$  L/minute, while that increased to  $0.92 \pm 2.63$  L/minute after infusion. Our results indicate that APCO overestimates cardiac output by approximately 1.0 L/minute after phenylephrine infusion. Ryuji Nakamura, Ph.D., Hirotusgu Miyoshi, M.D., Toshiaki Haraki, Ph.D., Takashi Kondoh, M.D., Hiroshi Hamada, Ph.D., Masashi Kawamoto, Ph.D.; Anesthesiology, Hiroshima University, Hiroshima, Japan.



**FA A1114**

**The Comparison Between Aortic Photoplethysmographic Waveform and Doppler Flow Pattern**

The descending aortic photoplethysmographic (PPG) waveform was compared with Doppler flow pattern acquired from the same site, and the results showed that the aortic PPG derived metrics correlated significantly with the parameters extracted from Doppler flow pattern. Peng Ling, M.M., Wei Wei, M.D., Ph.D.; Anesthesiology, West China Hospital, Sichuan University, China, Chengdu, China.

**FA A1115**

**Evaluation of the Ultrasound Guided Subclavian Vein Cannulation With the Use of xPlane Mode**

The use of xPlane mode which applies three-dimensional ultrasound technology, so that it may enable puncture that benefits from the merits of both methods. The xPlane mode was considered beneficial in terms of enabling visualization of the orthogonal cross-section and the point of puncture forming an acute angle toward the superior side with the center as the insertion site. Although the relatively low resolution obtained at certain frequencies was identified as a disadvantage, the absence of complications suggested the usefulness of the present method. Shuto Harada, M.D., Takayuki Kunisawa, M.D., Ph.D., Atushi Kurosawa, M.D., Tomoki Sasakawa, M.D., Hiroshi Iwasaki, M.D., Ph.D.; Anesthesiology, Asahikawa-Kosei General Hospital, Asahikawa, Hokkaido, Japan, Anesthesiology and Critical care, Asahikawa Medical University, Asahikawa, Hokkaido, Japan.

**FA A1116**

**Comparison of Single and Recalibrated Measurements of Cardiac Index Obtained by ProAQT-Pulsioflex with Those of FloTrac/Vigileo**

We compared single calibrated and recalibrated cardiac index (CI) measurements of the ProAQT-PulsioFlex™ with our clinical standard CI measurement, i.e. FloTrac/Vigileo™ in seventy patients undergoing off-pump coronary artery bypass surgery. Recalibration of the ProAQT-PulsioFlex™ will increase its accuracy, precision and trending ability, although both CI measurements are not interchangeable with those obtained by FloTrac/Vigileo™. Johannes P. Van den Berg, M.D., Pieter L. Buisman, B.Sc., Marieke Poterman, M.D., Bart-Jan Lichtenbelt, M.D., Jayant S. Jainandunsing, M.D., Alain F. Kalmar, M.D., Thomas Scheeren, Ph.D.; Anesthesiology, University Medical Center Groningen, Groningen, Netherlands.

**FA A1117**

**Simulation Study for Accidental Withdrawal of Adult and Child Central Venous Catheters**

Accidental withdrawal of a central venous catheter (CVC) after placement has been reported. We compared the peak traction forces required to remove adult and child CVCs secured by different methods. CVCs secured with adjunctive devices are easily removed, especially in children, and securing CVCs directly with sutures would therefore be most appropriate. However, CVCs directly secured with sutures are easily deformed or kinked. Knowing the characteristics of methods for securing CVC, and how to use them are important because optimum methods for securing CVCs remain a matter of debate and multiple choices are available including several types of suture, tape, and specially-developed securement devices. Masahito Omote, M.D., Hideaki Sasaki, M.D., Tomohisa Niiya, M.D, Ph.D., Michiaki Yamakage, M.D, Ph.D.; Department of Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Hokkaido, Japan.

**FA A1118**

**Comparison of a Non-Invasive with Two Minimally Invasive Cardiac Output Monitors During Off-Pump Coronary Artery Bypass Surgery**

We compared cardiac index (CI) measurements of two minimally invasive monitors FloTrac/Vigileo™ (CIFTV) and ProAQT-Pulsioflex™ (CIPA) with each other and the average of these (AVRvp) with the non-invasive monitor ccNexfin™ (CINF) in 70 patients undergoing off-pump coronary artery bypass surgery. CIFTV and CIPA revealed a similar agreement and trending ability with each other as with CINF. Therefore the noninvasive CINF can be considered as interchangeable with the minimal invasive CI monitors. Thomas Scheeren, M.D., Ph.D., Pieter L. Buisman, B.Sc., Elma Visser, B.Sc., Jan Brommundt, M.D., Ph.D., G. W. Rietman, M.D., Marieke Poterman, M.D., Alain F. Kalmar, M.D., Ph.D.; Anesthesiology, University Medical Center Groningen, Groningen, Netherlands.

**FA A1119**

**Effect of Intraoperative Magnesium Intravenous Infusion on the Haemodynamic Changes Associated With Right Lobe Living Donor Hepatectomy**

Intraoperative prophylactic intravenous magnesium helped to reduce the associated hemodynamic changes post-liver resection and lead to a lower anesthetic consumption with an improvement in postoperative pain relief. Khaled A. Yassen, FFARCSI, Eman Sayed Ebrahim, M.D., Ashraf Magdy Eskander, M.D., Maha ElSheikh, M.D., Ghada Mohamed, MBBCh, Mamdouh Lotfy, M.D.; Anesthesia and Intensive Care, Liver Institute, Menoufiya University, Shebeen El Kom, Egypt.

**FA A1120**

**Simultaneous Comparison of Cardiac Output Measurement using LiDCOrapid™, FloTrac-Vigileo™, and Pulmonary Artery Catheters**

This study compares the cardiac output measurements of two newer, less invasive systems: LiDCOrapid™ and FloTrac-Vigileo™ to that of the pulmonary artery catheters, as a reference method in cardiac surgical patients. Emphasis was placed on the ability of the devices to detect changes in cardiac output, and thus investigate their utility as trend monitors. A relatively new method of analysis, the Polar Plot, was utilized in addition to traditional methods such as Bland & Altman and Concordance plots. Michael B. Miller, M.D., Neal W. Fleming, M.D., Ph.D.; Anesthesiology and Perioperative Medicine, Oregon Health and Science University, Portland, OR, Anesthesiology and Pain Medicine, UC Davis, Davis, CA.



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**FA A1121****Correlation between Positioning Injury and Monitoring of the Blood Volume Index with INVOS in Patients Undergoing Robot-Assisted Laparoscopic Prostatectomy**

Short summary: During robot-assisted laparoscopic prostatectomy (RALP), patients are in the steep Trendelenburg position and it sometimes causes positioning injuries. We monitored the Blood Volume Index (BVI) of the lower extremity with the INVOS®. To monitor the BVI is a potential tool for the avoiding positioning injury after RALP. **Yasuko M. Ikeda, M.D., M.Sc., Hiromi Kaneko, M.D., Tsuneo Tataru, M.D., Ph.D., Munetaka Hirose, M.D., Ph.D.;** Department of Anesthesiology, Hyogo College of Medicine, Nishinomiya, Japan.

**FA A1122****Efficacy of an Intravenous Fluid Flow Monitor**

While using the gravity-fed IV delivery systems, the Fluid IV Alert (FIVA) is an effective monitor to alert the clinician when the IV fluid bag is empty and to promptly change the IV fluid bag. **Orlando R. Hung, M.D., FRCPC;** Anesthesia, Dalhousie University, Halifax, NS, Canada.

**FA A1123****Validation of a New Multi-Signal Analysis for Continuous and Minimally Invasive Cardiac Output Monitoring**

A method was developed for estimating cardiac output changes from a radial arterial blood pressure signal and standard non-invasive signals. The method was tested in critically ill patients instrumented with pulmonary artery catheters for reference cardiac output measurements. The method showed improved cardiac output estimation accuracy over competing devices during hemodynamic instability. **Ramakrishna Mukkamala, Ph.D., Varun Agrawal, Ph.D., Keerthana Natarajan, M.S., Mingwu Gao, M.S., Nima Torabkhan, Ph.D., Nina T. Yoh, Marc Zemel, M.B.A., Gebhard Wagener, M.D., James M. Blum, M.D.;** Retia Medical, East Lansing, MI, Columbia University, New York, NY, University of Michigan, Ann Arbor, MI.

**FA A1124****PVI Decreases Following a Fluid Bolus Administered in the PACU to Treat Hypotension**

The pleth variability index (PVI, Masimo, Irvine CA) decreased in 11 of 13 patients who were given a fluid bolus to treat hypotension in the PACU with a significant decrease in PVI from an average of 20.8% (+/- 12.3) before fluid administration dropping to an average of 15.4% (+/-9.1) after (p=0.01). PVI may have clinical utility in the fluid management of awake, spontaneously ventilating patients. **Donald M. Mathews, M.D., Alexandra Piel, B.A., Alex Friend, M.S., Till Geib, Ph.D.;** Anesthesiology, University of Vermont College of Medicine, Burlington, VT, Masimo Corporation, Irvine, CA.

**FA A1125****Radial Pulse Pressure Does Not Decrease Compared to Femoral Pulse Pressure with Caval Cross Clamping and Vasopressor Use During Liver Transplantation**

Femoral in addition to radial arterial invasive blood pressure monitoring is frequently used during liver transplantation to ensure an interpretable blood pressure tracing while the vena cava is clamped and vasopressors are used. However we found in nine liver transplant patients that the radial artery pulse pressure did not decrease after caval clamping or with the use of vasopressors. Femoral artery catheterization may therefore not be necessary during liver transplantation. **Nina T. Yoh, M.S., Keerthana Natarajan, Engineer, Ramakrishna Mukkamala, Ph.D., Gebhard Wagener, M.D.;** Anesthesiology, Columbia University, New York, NY, Retia Medical, East Lansing, MI, Michigan State University, Okemos, MI.

**FA A1126****The Plethysmography Wave from Pulse Oximeter May Allow Accurate Calculation of the Pulse Pressure Variation**

Tracings from the plethysmography wave allowed manual calculations of Pulse Pressure Variation that showed a very significant correlation with calculations obtained from the arterial line tracing. **Pedro P. Amorim, M.D., André Rato, M.D.;** Anesthesiology, Hospital Santo Antonio, Porto, Portugal, Anesthesiology, Hospital de Viseu, Viseu, Portugal.

**PO14-2 PATIENT SAFETY AND PRACTICE MANAGEMENT  
8-10 a.m. | HALL B1-AREA D****PI A1127****Airway Conditions Are Significantly Altered During General Anesthesia**

The intraoral space and neck thickness can significantly decrease and increase, respectively, after general anesthesia, and this increases the risk of difficult laryngoscopy and intubation if/when airway management is required after extubation following general anesthesia. This is of particular relevance to patients with pre-existing risk factors associated with difficult airway. **Junko Ushiroda, D.D.S., Satoki Inoue, M.D., Masahiko Kawaguchi, M.D.;** Anesthesiology, Nara Medical University, Kashihara, Nara, Japan.

**PI A1128****Inexperienced Users Can Intubate a Manikin With a Smaller Degree of Retrocollis and a Lower Incidence of Tooth Injury Using a McGrath MAC Compared to a Macintosh Laryngoscope**

An inexperienced users (25 medical students in clinical training for anesthesiology) could intubate a manikin with a smaller degree of retrocollis and a lower incidence of tooth injury using a McGrath MAC laryngoscope compared to a Macintosh laryngoscope. **Miyako Hayashi, M.D., Takasumi Katoh, M.D., Takayuki Katsuragawa, M.D., Hitomi Asaba, M.D., Tetsuro Kimura, M.D., Hiroshi Makino, M.D., Shigehito Sato, M.D.;** Hamamatsu University School of Medicine, Hamamatsu, Japan.

**PI A1129****Visualization of the Endotracheal Tube Placement by Using Real Time Ultrasonography**

We investigated the accuracy of direct ultrasonographic findings for detection of the tube itself. The presence of "double line" have the high potential to confirm the successful tracheal intubation. Visualization of "double line" may be affected by gender, age, and depth of the trachea, not by body-mass index. **Hiroshi Tanaka, M.D., Akihiro Suzuki, M.D., Hajime Iwasaki, M.D., Akihito Tampo, M.D., Yuki Toyama, M.D., Atsushi Kurosawa, M.D., Tomoki Sasakawa, M.D., Takayuki Kunisawa, M.D., Osamu Takahata, M.D., Hiroshi Iwasaki, M.D.;** Asahikawa Medical University, Asahikawa, Japan.

**PI A1130****Postoperative Disposition of OSA Patients, Patient Satisfaction and Related Cost Savings**

We evaluated the use of a discharge algorithm to establish a protocol to identify postoperative patients with OSA who could be safely discharged home. Follow up on postoperative day one revealed no complications. Outcome: 1. Patient safety 2. Patient and surgeon satisfaction 3. Significant reduction in hospital admission, cost and workload. **Bina E. Dara, M.B.B.S., DA, Linda M. Joseph, M.B.B.S., Jessica Maris, M.S.N., C.R.N.A., Omana Mathew, B.S.N., Jean Crosby, M.S.N., C.R.N.A., Prasad V. Atluri, M.D.;** Anesthesiology, Michel E DeBaakey VA Medical center, Houston, TX.

**PI A1131****Effects of Tracheal Intubation With Airwayscope® on the Injury Around Glottis in a Manikin With Normal Airway**

It is well known that videolaryngoscopes are useful for airway management. But we sometimes give damage around vocal cords when we fail to advance endotracheal tube (ETT) into trachea. We tested the hypothesis that intubation with Airwayscope® (AWS) has a shorter time to intubation and reduces damage around the vocal cords as compared to McGrath MAC® or direct vision. Our results suggest that time to intubation with AWS shortens time to intubation as compared to direct vision and reduces damage around the vocal cords. **Noriko Kambe, M.D., Ryosuke Kawanishi, M.D., Yoshimi Nakaji, M.D., Tomomi Matsumoto, M.D., Katsuyoshi Kume, M.D., Katsuya Tanaka, M.D.;** Tokushima University Hospital, Tokushima, Japan.

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### PI A1132

#### The Effect of Two-handed Jaw-thrust Technique (Open Mouth and Ant Displacement of Mandible) on the Success Rate of Lightwand Intubation by Novice Practitioners: Comparison with One-handed Technique (Conventional Method)

The success rate and the intubation time of lightwand intubation vary with the experience and the skill of the practitioner. While previous data showed that novice practitioners needed longer time and had less chance of successful intubation compare to experienced practitioners, two-handed jaw thrust instead of conventional one-handed technique could be more helpful for successful lightwand intubation. In this study, we compared conventional one-handed jaw thrust and two-handed jaw thrust for lightwand intubation in novice practitioners, and our result showed that two-handed jaw thrust by an assistant improves first attempt success rate compare to one-handed jaw thrust during lightwand intubation in novice practitioners.

Hyuk Soo Chang, Doctor, Han Bum Joe, Dr., Ph.D., Yun Jeong Chae, Ph.D.; Anesthesiology and Pain Medicine, Ajou University School of Medicine, Suwon, Korea, Republic of.



### PI A1133

#### The Effect of Using the Simplified Airway Risk Index Compared With a Routine Airway Assessment on the Frequencies of Unanticipated Difficult and Easy Intubation: A Cluster Randomized Trial With 77,900 Patients - The DIFFICAIR Trial

The DIFFICAIR trial is a cluster randomized trial including 77,900 patients comparing pre-operative airway assessment using the Simplified Airway Risk Index with routine practice. Anders K. Nørskov, M.D., Charlotte V. Rosenstock, M.D. Ph.D., Jørn Wetterslev, M.D. Ph.D., Arash Afshari, M.D. Ph.D., Grethe Astrup, M.D., Lars H. Lundstrøm, M.D. Ph.D.; Department of Anesthesia, Nordsjællands Hospital - Hillerød, Hillerød, Denmark, Copenhagen Trial Unit, Rigshospitalet - Copenhagen University Hospital, Copenhagen, Denmark, Juliane Marie Center, Department of Anesthesia, Aarhus University Hospital, Aarhus, Denmark.



### PI A1134

#### Preoxygenation Is Safe: Evidence from the Literature

Our review of the literature revealed that preoxygenation is a safe maneuver. The main concern is absorption atelectasis, which can be prevented by using FiO2 = 0.8 or a recruitment maneuver. Kamyar Bahmanpour, M.D., M. Ramez Salem, M.D., George J. Crystal, Ph.D.; Anesthesiology, Advocate Illinois Masonic Medical Center, Chicago, IL.

### PI A1135

#### Estimation of the Diameter of the Trachea Using Data Derived From the Endotracheal Tube Cuff

The study describes simple method to estimate the diameter of the trachea using data on the volume of inflation of the ETT cuff while simultaneously measuring the ETT cuff pressure during intubation. A formula for calculation of tracheal diameter was derived from a multiple linear regression model. A data validation step revealed excellent agreement between the predicted and actual tracheal diameters. Eric B. Rosero, M.D., M.Sc., Esra Ozayar, M.D., Tiffany Williams, M.D., Mohamed A. Hamza, M.D., Noel M. Giesecke, M.D.; Anesthesiology and Pain Management, UT Southwestern Medical Center, Dallas, TX.

### PI A1136

#### Optimal Length of Pre-inserted ETT for Excellent Laryngeal Opening View in Nasal Fiberoptic Intubation

When an Anesthesiologist would insert a nasal endotracheal tube in advance for nasal fiberoptic intubation, prediction of optimal length of pre-inserted part of the tube can promise easy intubation to even an inexperienced performer. We found a simple equation to predict the optimal length of it from patient height and the distances from the mid-point of lateral border of the nares to the mandibular angle (NM distance), which were the readily measureable parameters of patient. Jung-Man Lee, M.D., Jiwon Lee, M.D., Chong-Soo Kim, M.D., Department of Anesthesiology and Pain Medicine, Seoul National University Hospital, Seoul, Korea, Republic of, Department of Anesthesiology and Pain Medicine, SMG-SNU Boramae Medical Center, Seoul, Korea, Republic of.

### PI A1137

#### Use of Oxygen Nebulizer for Preventing Post-Operative Sore Throat: A Randomized Controlled Trial

Oxygen nebulizer supplement could not prevent post-operative sore throat in adult patients undergoing endotracheal general anesthesia in elective general surgery, but oxygen supplement was likely to reduce desaturation. Other outcomes were too rare to detect significance difference. Panthila Rujirojindakul, M.D., FRCAT, Virasakdi Chongsuvivatwong, M.D., Ph.D., Edward McNeil, M.Sc.; Anesthesiology, Epidemiology Unit, Prince of Songkla University, Hat Yai, Songkhla, Thailand.

### PI A1138

#### Management of the Unexpectedly Difficult Airway After Induction of Anesthesia When Ventilation Is Good: A Survey

A survey of Canadian anesthesiologists on the unexpectedly difficult airway after the induction of general anesthesia showed that the vast majority have experienced this in their practice and their first choice for a second attempt was to use direct laryngoscopy again with a stylet. The next most common choices were to use a bougie and then a video laryngoscope. If the second attempt was unsuccessful, most would then use a video laryngoscope and a small number would use a flexible fiberoptic scope. The respondents were mostly Canadian trained with FRCPC certification and half were from academic practice and half were in community practice. Fady Ebrahim, M.D., James E. Paul, M.D., M.Sc., FRCPC, Michael Gallagher, M.D.; Anesthesia, McMaster University, Hamilton, ON, Canada, McMaster University and Hamilton Health Sciences, Hamilton, ON, Canada, Niagara Health System, St. Catharines, ON, Canada.

### PI A1139

#### Radiologic Evaluation of Internal Airway Anatomy Dimensions

We present preliminary results of the dimensions of external airway landmarks and radiographic measurements of internal airway anatomy for 17 patients. The primary aim of this study was to compare paired measurements of external neck landmarks and internal neck and airway landmarks to establish any correlation. This study is part of a comprehensive investigative effort to better delineate predictors and markers for appropriate sizing of airway devices. Davide Cattano, M.D., Ph.D., Rashida Callender, B.S., Jacek Wojtczak, M.D., Ph.D., Chunyan Cai, Ph.D., Jacob Birnbaum, M.D., Rabail Chaudhry, Carin A. Hagberg, M.D.; Anesthesiology, Clinical & Translational Science, University of Texas Health Science Center Houston, Houston, TX, Anesthesiology, University of Rochester Medical Center, Rochester, NC.

### PI A1140

#### An Intervention to Reduce Inappropriatepreoperative Chest X-ray Ordering Is Associated With Reductions in Otherpreoperative Testing

We conducted an intervention to reduce the number of inappropriate preoperativeCXR orders. Following the intervention, there was a sustained significant decrease in the number of CXRs ordered at VUMC. The reduction in the utilization of preoperativeCXR had a collateral effect on the utilization of 10 other tests. Targetedinterventions such as this can be successful in decreasing inappropriatepreoperative testing. Daniel H. Hagaman, H.S., Jesse M. Ehrenfeld, M.D., Russell J. Kunic, FNP-BC, Jack Starmer, M.D., Jonathan P. Wanderer, M.D., M.Phil; Department of Anesthesiology, Department of Biomedical Informatics, Vanderbilt University, Nashville, TN.

### PI A1141

#### Difficult Mask Ventilation in Obese Patients: An Analysis of Predictive Factors

We present a retrospective-subgroup analysis of patients undergoing preoperative airway assessment before elective surgery, where we aimed to identify predictive factors for DMV, including OSA. Davide Cattano, M.D., Ph.D., Peter V. Killoran, M.D., Chunyan Cai, Ph.D., Alfonso Altamirano, M.D., Ruggero M. Corso, M.D., Salma El Marjiya, MD, Carin A. Hagberg, M.D.; Anesthesiology, Clinical & Translational Science, The University of Texas at Houston Medical School, Houston, TX, Emergency, GB Morgagni L. Pierantoni Hospital, Forli, Italy.

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**PI A1142****The Use of Laryngeal Mask Airway in a Teaching Institution: Analysis of Predictive Factors for Effectiveness**

The aim of this study was to identify predictive factors for difficult Extraglottic Airway Devices placement, utilizing the LMA as the proto-typical EAD, as well as composite score value, based on a comprehensive airway assessment and recorded outcomes at a major teaching hospital. In conclusion, two risk factors for LMA placement difficulty were identified: female gender and large neck circumference. **Davide Cattano, M.D., Ph.D., Peter V. Killoran, M.D., Alfonso Altamirano, M.D., Chunyan Cai, Ph.D., Ruggero M. Corso, M.D., Salma El Marjiya, M.D., Rabail Chaudhry, M.D., Carin A. Hagberg, M.D.;** Anesthesiology, Clinical & Translational Science, The University of Texas at Houston Medical School, Houston, TX, Emergency, GB Morgagni L. Pierantoni Hospital, Forli, Italy.

**PO15-1 PEDIATRIC ANESTHESIA**

8-10 a.m. | HALL B1-AREA E

**PD A1143****Lidocaine/Tetracaine Patch Versus Lidocaine/Prilocaine Cream for Pediatric Peripheral Venous Access**

Venipuncture is one of the most stressful procedure in children during induction of general anesthesia. Therefore, many clinicians use local anesthetic cream containing a mixture of lidocaine and prilocaine in order to reduce procedure-related stress for pediatric patients. This study compares the efficacy and safety of an heated topical anesthesia delivery system containing lidocaine and tetracaine to lidocaine and prilocaine cream in sedated children before intravenous cannulation. **Noemi Vicchio, M.D., Valeria Mossetti, M.D., Giulia Mineo, M.D., Alessandro Meli, M.D., Claudia Filippini, Ph.D., Giorgio Ivani, M.D.;** Regina Margherita Children's Hospital, Turin, Italy, Department of Surgical Sciences San Giovanni Battista Hospital, Turin, Italy.

**PD A1144****Dexmedetomidine in the Magnetic Resonance Imaging Suite: Cases of Safety Problems With Administration of Intravenous Contrast**

Dexmedetomidine use for MRI is relatively new, being used at a record amount and is increasing. We report 3 cases of dexmedetomidine use in MRI where potential for injury occurred with the use of intravenous contrast. As far as we know, there have been no published reports of this safety issue. The 3 cases we describe involved patients ages 2, 6, and 11 undergoing elective MRI brain with and without contrast. This has also occurred in other patients. After the infusion of gadolinium contrast, each patient woke up agitated in the MRI scanner. The anesthesia team and MRI technicians then stopped the scan, and quickly attended to the patient. Additional sedative was given to resedate the patient and no injury occurred. **Franklin B. Chiao, M.D., Lana R. Kuang, M.D., Denise Murphy, C.R.N.A.;** Anesthesiology, New York Presbyterian Medical Center- Cornell University, New York, NY.

**PD A1145****Transcranial Doppler Ultrasound Use During Cardiopulmonary Bypass for VSD Repair in a Child With Sickle Cell Disease**

Management of children with sickle cell disease (SCD) undergoing cardiopulmonary bypass (CPB) for congenital cardiac disease has ranged from conservative approaches without preoperative transfusion to pre- and intra-operative exchange transfusions. We describe the case of a 12 month-old patient diagnosed with a moderate ventricular septal defect (VSD) and SCD-HgbSC who had a negative history for sickle cell crisis or transfusions and in whom CPB was performed without pre-operative exchange transfusion. Transcranial doppler ultrasound was performed before and during cardiopulmonary bypass, as well as at the lowest core temperature to monitor cerebral blood flow velocities and evaluate the risk of cerebrovascular complication. **Krystal Malek, M.D., Olga Pawelek, M.D.;** Department of Anesthesiology, University of Texas Health Science Center at Houston - Medical School, Houston, TX.

**PD A1146****Impact of Video Laryngoscope in School-Aged Children With Microtia**

We investigated the trends of airway management in school-aged children with microtia who required endotracheal intubation. The introduction of pediatric video laryngoscopy resulted in a significant decrease in the frequency of direct laryngoscopy and fiberoptic intubation in these patients. **Shoichi Uezono, M.D., Hidetsugu Kobayashi, M.D., Masaharu Tomita, M.D., Mariko Ito, M.D., Ichiro Kondo, M.D.;** Jikei University, Tokyo, Japan.

**PD A1147****Functional Fibrinogen in Pediatric Cardiac Surgery**

Viscoelastic assesment of functional fibrinogen using thromboelastography can be used as a point of care test to assess changes in whole blood clot mechanics in pediatric cardiac surgery. **Nischal Gautam, M.B.B.S., Olga Lyuksyutova, M.D., Muhammad Rafique, M.B., B.S., Davide Cattano, M.D., Ph.D., Evan G. Pivalizza, M.B.;** Anesthesiology, UT Health Houston, Houston, TX, University of Texas Health Science Center Houston, Houston, TX, University of Texas -Houston, Houston, TX.

**PD A1148****Prognostic Value of the Inferior Vena Cava Oxygen Saturation (ScviO2) After Pediatric Cardiac Surgery**

This prospective observational study including 70 patients undergoing elective congenital cardiac surgery shows that the value of central venous oxygen saturation taken at the femoral level (SivcO2) is not an indicator of prognosis after congenital heart surgery unlike its corollary at the superior vena cava. **Khalil Jabbour, Sr., M.D., Rana Yamout, M.D., Fadia Haddad, M.D., Gemma Hayek, M.D., Samia Madi-Jebara, M.D.;** Anesthesiology and Critical Care, Hôtel-Dieu de France Hospital, Saint-Joseph University, Beirut, Lebanon.

**PD A1149****Urinary Albumin Levels Predict Development of Acute Kidney Injury Following Pediatric Cardiac Surgery**

We undertook the present study to evaluate the utility of early postoperative urinary albumin as a diagnostic marker for AKI. A single-center prospective observational study was performed. Urinary albumin was measured at ICU admission. Of 504 children, AKI was identified in 338 patients (67.1%); 193 for Risk (38.3%), 45 for Injury (8.9%), 100 for Failure (19.8%). The worse category in pRIFLE criteria was, the higher urinary albumin was [median (inter quartile range)], [urinary albumin(mcg/ml): N 7.8 (4.2-20.4), R 12.4 (5.6-32.7), I 29.7 (9.0-85.5), F 40.4(17.7-103.1)]. **Kentarō Sugimoto, M.D., Yuichiro Toda, M.D., Tatsuo Iwasaki, M.D., Kazuyoshi Shimizu, M.D., Ph.D., Tomoyuki Kanazawa, M.D., Noriko Ishii, M.D., Hirokazu Kawase, M.D., Kenji Kawade, M.D., Isao Nahara, M.D., Hiroshi Morimatsu, M.D.;** Okayama University Hospital, Okayama, Japan.

**PD A1150****Emergency Anaesthetic Management in a Child With Glutaric Aciduria Type1**

Glutaric aciduria is a rare inborn error of metabolism that results from a deficiency of glutaryl-CoA dehydrogenase. This disorder mainly detects in early childhood. Most patients have a dystonic-dyskinetic syndrome. There were only very few cases with glutaric aciduria type 1 who underwent elective general anaesthesia reported in literature. We are reporting the acute anaesthetic management of a 3-year-old child with glutaric aciduria type 1 which presented with seizures. **Deepak Subramani, M.B.B.S., D.A., F.C.A.I., Vinod Gopinathan, M.B.B.S., F.R.C.A., Samundeeswari Deepak, M.B.B.S., MRCPCH;** Department of Anaesthetics, Nottingham University Hospitals NHS Trust, Nottingham, United Kingdom, Department of Anaesthetics, Sherwood Forest Hospitals NHS Trust, Mansfield, United Kingdom, Specialty Registrar in Paediatrics, Nottingham, United Kingdom.



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**PD A1151****The Relationship Between Early Post-operative Bleeding in Neonates after CPB and Major Adverse Postoperative Events**

The purpose of this study is to examine the relationship between early postoperative bleeding in neonates after CPB and major postoperative adverse events. We found that early postoperative bleeding in neonates after CPB is independently associated with postoperative ECMO and dialysis.

Nadine N. Allen, M.D., Greg S. Foster, B.S., Elizabeth C. Wilson, M.D., Alexandra C. Ehrlich, M.P.H., Nina A. Guzzetta, M.D.; Anesthesiology, Emory University School of Medicine/Children's Healthcare of Atlanta at Egleston, Atlanta, GA, Georgia Regents University/University of Georgia Medical Partnership School of Medicine, Augusta, GA, Anesthesiology, Children's Healthcare of Atlanta/Sibley Heart Center, Atlanta, GA.

**PD A1152****Post-Induction Hypotension in the Pediatric Population**

Higher incidence of diastolic hypotension 35 to 45% was observed in comparison to systolic hypotension. No difference was observed in the incidence of post induction hypotension between premedicated and non-premedicated children. Co-induction was not associated with increased incidence of hypotension. Tariq Wani, M.D., Khalid Sofi, M.D., Archana Ramesh, M.D., Andrew Gable, B.Sc., Joseph Tobias, M.D.; Anesthesiology and Pain Medicine, Nationwide Children's Hospital, Columbus, OH, Sheri-Kashmir Institute of Medical Sciences, Soura, India.

**PD A1153****Prediction of Fluid Responsiveness by Noninvasive Cardiac Output Monitor (NICOM) in Children Undergoing Cardiac Surgery**

SVV measured by NICOM system did not predict fluid responsiveness in pediatric patients during cardiac surgery. In addition, there was no correlation between CI measured by NICOM and echocardiography. Clinicians should be careful to decide fluid management when using NICOM during pediatric cardiac surgery. Ji-Hyun Lee, M.D., Yong-Hee Park, M.D., Jin-Tae Kim, M.D., Ph.D.; Anesthesiology and Pain Medicine, Seoul National University Hospital, Seoul, Korea, Republic of, Chung-Ang University Hospital, Seoul, Korea, Republic of.

**PD A1154****Learning from Experience: Improving Early Extubation Success After Congenital Cardiovascular Surgery**

A quality improvement project was initiated to analyze the consequences of an early or late extubation strategy for neonates and infants undergoing congenital heart or great vessel surgery. Specifically, records of 416 patients under 1 year of age were divided into those who were extubated in the OR at surgical conclusion or extubated later in the CTICU. Age, weight, length of admission after surgery, mortality, STAT and RACH scores, and re-intubation rates were examined for variations between the 2 groups. Analysis suggests that an early extubation strategy is associated with reduced length of stay and overall mortality. Peter D. Winch, M.D., M.B.A., Anna Staudt, M.D., Aymen N. Naguib, M.D., Marco Corridore, M.D., Mark Galantowicz, M.D., Joseph Tobias, M.D.; Nationwide Children's Hospital, Columbus, OH.

**PD A1155****Role of Dexmedetomidine in Emergence Agitation Prevention in Children Undergoing Tonsillectomy and Adenoidectomy**

In this retrospective chart review of pediatric patients undergoing combined tonsillectomy and adenoidectomy, 42 patient charts were reviewed, 14 of whom received 0, 14 received 0.5 mcg/kg, and 14 received 1 mcg/kg dexmedetomidine. MRASS scores of agitation in the post anesthesia care unit (PACU), along with time to discharge and fentanyl requirement in the PACU, of the three groups were not found to be statistically significant. This study stands against the beliefs that intraoperative use of dexmedetomidine has an effect on postoperative agitation or discharge times from the PACU.

Daniel Moy, B.A., Kuntal Jivan, M.D., Jonah A. Lopatin, M.D.; Georgetown University School of Medicine, Washington, DC, Georgetown University Hospital, Washington, DC.

**PD A1156****Parental Perceptions and Understanding of Caudal Block in Pediatric Surgeries: A Single Center Survey Study**

Multiple factors are included into the survey in order to identify those parents at most risk of declining a caudal block. Parental satisfaction with prior postoperative pain control, as well as adequate maternal pain control during labor remain the important factors that influence parent's decision regarding caudal block for their minors. Adequate discussion with the surgeon and/or anesthesiologist about the pain control options prior to the surgery is essential. Igor Shkubel, D.O., Jerry Y. Chao, M.D.; Anesthesiology, Albert Einstein College of Medicine, Montefiore Medical Center, Bronx, NY.

**PD A1157****Trauma Trends for Tots: A National Survey**

This survey reveals intriguing trends and areas for performance improvement in the attainment of the ultimate quality of trauma care for the pediatric patient. Lisa Fazi-Diedrich, M.D., Heather McClung, M.D., Mora Hazlett-O'Neill, C.R.N.A., Dawn Bent, Ph.D.; Anesthesia, St. Christopher's Hospital for Children, Philadelphia, PA.

**PO04-2 CLINICAL CIRCULATION: OUTCOMES**

10 a.m.-12 p.m. | Hall B1 - Area A

**CA A1158****Acute Kidney Injury in Patients Undergoing Emergency Endovascular Repair of Aortic Aneurysm Rupture**

The incidence rate of AKI was 42.9% in patients undergoing emergency EVAR for aortic aneurysm rupture. The AKI group had lower hemoglobin levels on hospital arrival, greater intraoperative blood transfusion volumes, and longer durations of surgery/anesthesia than the non-AKI group. Kenzo Fujikura, M.D., Kyoko Motokawa, M.D., Maiko Ishigaki, M.D., Hiroshi Sakurai, M.D., Ai Fujikura, M.D., Hiroshi Yamaguchi, M.D.; Tsukuba Medical Center Hospital, Tsukuba Gakuen Hospital, Tsukuba, Japan.

**CA A1159****Preoperative Infusion of Glutamine on Myocardial Injury, Cardiac Function and Recovery Indexes in Patients Undergoing Cardiac Surgery**

Preoperative infusion of glutamine can attenuate myocardial injury and reduce postoperative dopamine consumption in patients undergoing cardiac surgery and CPB, which may be concerned with the reduction of systemic oxidative stress injury. However, the limited number of cases failed to confirm glutamine pretreatment can improve cardiac function and recovery indexes. Yuejiang Liu, M.S., Bin Li, B.S., Baoling Zhang, Master, Kang Zheng, Master, Liang Jing, M.D.; Department of Anesthesiology, Zhongda Hospital Affiliated Southeast University, Nanjing, China.

**CA A1160****Mild Vasopressor Use Is Not Associated With Adverse Outcomes in Patients Undergoing Orthopedic Trauma Anesthesia**

The hypothesis of this retrospective study was that vasopressor use is not associated with adverse outcomes in multiple trauma patients undergoing major orthopedic surgery. Data was obtained from a database of trauma patients if they had mechanically unstable fractures treated surgically and from hospital electronic medical records. Phenylephrine and ephedrine use was common during major orthopedic trauma anesthesia (67%) and was not associated with any adverse outcomes compared to no use of vasopressors. Jordan Stoecker, Medical Student, Karl Wagner, M.D., Charles E. Smith, M.D., Adithya Bhat, Medical Student, Xiaofeng Wang, Ph.D., Heather A. Vallier, M.D.; Department of Anesthesia, The Metrohealth System, Department of Quantitative Health Sciences, Cleveland Clinic, Orthopedic Surgery, The Metrohealth System, Cleveland, OH .

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**CA A1161****Comparison of Vasoconstrictors Versus Vasodilators for Ventricular Septal Defects With Severe Pulmonary Hypertension**

We randomly administered two different therapies after cardiac surgery in VSD patients with severe pulmonary hypertension, and compared the effects of these therapies on cardiac function by monitoring patients' hemodynamics and clinical prognosis. We found, compared to vasodilators, vasoconstrictors can reduce the incidence of postoperative complications, significantly decrease mortality, and provide new options for clinical treatments for these patients. **Mu Jin, M.D., Shuwen Li, M.D., Yanwei Yang, M.D., Jiakai Lu, M.D., Weiping Cheng, M.D.;** Anesthesiology, Beijing Anzhen Hospital, Beijing, China.

**CA A1162****Role of Pentoxifylline in Reducing Neurocognitive Decline After Coronary Artery Bypass Grafting Surgery**

Various attempts have been made for attenuating the postoperative cognitive dysfunction after open heart surgery using cardiopulmonary bypass. We hypothesized that administration of pentoxifylline which reduces inflammation and has rheological properties, may help preserving postoperative cognitive function. In a randomized controlled study we compared use of pentoxifylline with control and observed that cognition was better preserved in patients who received pentoxifylline. **Sambhunath Das, M.D., Suparna Kailash, Ph.D., Akshya K. Bisoi, M.ChR Lakshmy, Ph.D., Manju Mehta, Ph.D.,** Cardiac Anaesthesia, Psychiatry, Cardiothoracic and Vascular Surgery, AIIMS, New Delhi, India.

**CA A1163****The Association Between Intraoperative Hypotension and Postoperative Myocardial Injury After Vascular Surgery**

The aim of this study was to determine the association between intraoperative hypotension and postoperative myocardial injury in vascular surgery patients. Intraoperative hypotension as defined as a 40% decrease from the pre-induction mean arterial blood pressure and a duration of more than 30 minutes may be associated with postoperative myocardial injury. Shorter durations of intraoperative hypotension were not associated with postoperative myocardial injury. **Judith V. Waes, M.D., Wilton A. Van Klei, M.D., Ph.D., Leo Van Wolfswinkel, M.D., Ph.D., W. Scott Beattie, M.D., Ph.D.,** Anesthesiology, University Medical Center Utrecht, Utrecht, Netherlands, Anesthesiology, University Health Network Toronto, Toronto, ON, Canada.

**CA A1164****Pre-emptive Strategy for Haemodynamic Optimization Minimizes Incidence of Triple Low in High Risk Vascular Surgical Patients**

Identification of Triple Low in MAP, BIS and MAC has been associated with increased morbidity and mortality. Using a pre-emptive strategy, Triple Low can be minimised in high risk patients and can be achieved without detriment to cardiac output and cerebral oxygenation. **Hugo Araujo, B.S., James Gill, M.B.B.S., F.R.C.A David W. Green, M.D., Eric Mills, M.S.c.;** Department of Informatics, King's College London, King's College Hospital NHS Foundation Trust, LiDCO Ltd, Sawston, London, United Kingdom.

**CA A1165****Implementation of the Third Universal Definition of Myocardial Infarction After CABG Surgery**

This was a cross-sectional, survey based study, including 298 cardiothoracic surgeons from 181 European cardiac centers. The diagnostic criteria used to diagnose postoperative myocardial infarction following coronary artery bypass grafting differ among the different cardiac centers. While in general cardiac biomarkers are considered the cornerstone for the diagnosis, there is no consensus on the type of biomarker that should be used, how often the lab values should be measured routinely and whether or not the cut-off level of the third universal definition should be implemented. **Dianne Van Beek, M.D., Bas Van Zaane, M.D., Ph.D., Marc Buijsrogge, M.D., Ph.D., Wilton Van Klei, M.D., Ph.D.,** Division of Anesthesiology, Intensive Care and Emergency Care Medicine, Division of Heart and Lungs, University Medical Center Utrecht, Utrecht, Netherlands.

**CA A1166****Protective Effects of Dexmedetomidine in Myocardial Ischemia-Reperfusion Injury During Cardiopulmonary Bypass**

Dexmedetomidine (DEX) has been shown to have anti-oxidative properties. The present study was conducted to investigate the effects of DEX in patients undergoing cardiopulmonary bypass. A significant reduction in plasma MDA, cTn-T, CK-MB and a significant increase in plasma SOD and nitrite were observed in patients receiving DEX, both in the period of myocardial ischemia and reperfusion. DEX could increase eNOS phosphorylation and the mRNA expression of SOD1, SOD3, GPX1 and eNOS, whereas decreased the mRNA expression of NOX2 and NOX4, as well as the ROS production in cardiac atrium tissue. DEX improves cardiac contractility and has protective effects in myocardial I/R injury during extracorporeal circulation, which may be due to its anti-oxidative properties. **Hui Xu, M.D., Pei Lu, M.D.;** Anesthesiology, Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China.

**CA A1167****Does Perioperative Carbohydrate Loading Improve Outcomes in Elective Gynaecological Surgery?**

Oral carbohydrate loading is now an established part of the Enhanced Recovery After Surgery (ERAS) programme in colorectal surgery. However, its application in elective gynaecology cases is still in its infancy, with little objective data on its acceptability, efficacy and impact on surgical outcomes. We conducted a pilot single center cohort control study to evaluate the impact of preoperative carbohydrate loading on patient outcome following elective gynaecological surgery. **Zainab Hussein, B.Sc., M.B.B.S., Ciara Mackenzie, B.M., Ch.B., B.Sc., Maribel Gomez, B. Sn., R.N., Elizabeth Fajemirokun, B.Sc., M.B., Ch.B., FRCA, LLB, Wai Yoong, M.B., BCH, BAO, FRCOG, M.D.;** Enhanced Recovery Team, Departments of Anaesthesia and Gynaecology, North Middlesex University Hospital, London, United Kingdom.

**CA A1168****Effects of Intensive Insulin Therapy on Inflammatory Response in Patients Undergoing Cardiopulmonary Bypass**

To investigate the effects of intensive insulin therapy on inflammatory response in patients undergoing cardiopulmonary bypass. Thirty patients were randomly assigned to intensive insulin therapy group (IT group) and control group. TNF- $\alpha$ , IL-6 plasma level at the different time point were measured and postoperative clinical materials were recorded. We found that the TNF- $\alpha$ , IL-6 plasma level in IT group at the time point of at the end of CPB 0h, 6h, 24h were significantly lower than in control group. The mechanical support time was shorter in IT group. Therefore we initially speculated that intensive insulin therapy attenuated the systemic inflammatory response effectively in patients undergoing cardiopulmonary bypass. **Qi-lin Liu, MMed, Xiao-lin Yang, Doctor, Bin Chen, MMed;** Department of Anaesthesiology, Affiliated Hospital of North Sichuan Medical College, Nanchong, China.

**CA A1169****Perioperative Risk Factors and Mid-Term Prognosis of Orthotopic Heart Transplantation in Patients  $\geq 60$  years old**

We studied the incidence, prognosis and risk factors of elderly patients undergoing orthotopic heart transplantation. This group of patients had higher incidence of preoperative comorbidities, increased quantity of postoperative bleeding and reduced hospital and mid-term survival. **Juan C. Bianco, M.D., Pablo Rossi, M.D., Cesar Belziti, M.D., Gustavo García Fornari, M.D., Ricardo Marenchino, M.D.;** Anesthesiology, Cardiology, Cardiovascular Surgery, Hospital Italiano de Buenos Aires, Buenos Aires, Argentina.



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain



### CA A1170

#### Hemodynamic Optimization in Revision Total Hip Arthroplasty Reduces Postsurgical Complications and Length of Hospital Stay

More than 230 million major surgical procedures are performed every year worldwide with morbidity rates of more than 25% in this population. The aim of our study was to evaluate whether implementation of goal-directed fluid therapy (GDFT) based on stroke volume optimization compared to a pressure-based clinical management can reduce postsurgical complications. In our study we were able to show that implementation of GDFT reduced postsurgical complications and decreased hospital stay in patients undergoing revision total hip arthroplasty. **Marit Habicher, M.D., Claudia D. Spies, M.D., Felix Balzer, M.D., Michael Müller, M.D., Carsten Perka, M.D., Michael Krämer, M.D., Michael Sander, M.D.;** Department of Anesthesiology and Intensive Care Medicine, Charité Universitätsmedizin Berlin, Centre for Musculoskeletal Surgery, Department of Orthopedics, Charité Universitätsmedizin Berlin, Berlin, Germany.

### CA A1171

#### The Effect of Dexmedetomidine and Amiodarone on Postcardiotomy Atrial Fibrillation

Autonomic imbalance and pharmacologic intervention alone may not be effective in decreasing the incidence of new onset post operative atrial fibrillation after cardiac surgery. **Mary E. Arthur, M.D., Matthew G. Bean, D.ONadine Odo, B.A., Tiffany M. Richburg, M.D., Vinayak Kamath, M.D.;** Anesthesiology and Perioperative Medicine, Georgia Regents University, Surgery, Georgia Regents University, Augusta, GA .

### CA A1172

#### A Comparison Among Lidocaine, Dexmedetomidine, and Their Combined Infusion in Subjects Undergoing Coronary Artery Bypass Graft: A Randomized Trial

The authors compared the infusion of lidocaine and dexmedetomidine during off-pump coronary artery bypass graft (OPCAB) regarding cardioprotective effect, hemodynamics and arrhythmia incidence. The authors also attempted to evaluate whether combined infusion of lidocaine and dexmedetomidine has a synergistic effects. **Won Ho Kim, M.D., Haeng Seon Shim, M.D., Ph.D., Chang Jin Oh, M.D., Seung Won Choi, M.D., Hyung Sung Cho, M.D., Ph.D.,** Anesthesiology and Pain Medicine, Samsung Changwon Hospital, Changwon, Samsung Medical Center, Seoul, Korea, Republic of.

### PO09-3 EXPERIMENTAL CIRCULATION

10 a.m.-12 p.m. | Hall B1-Area B



### CA A1173

#### Impaired Sublingual Microcirculation Correlates With Primary Postoperative Ileus in Colorectal Surgery Patients

Primary postoperative ileus (PPOI) is a multifactorial complication of colorectal surgery that causes significant patient morbidity and costs the U.S. health-care system \$1.4 billion annually. Since impaired bowel microcirculation after surgery contributes to anastomotic leak and ischemic injury, there is a need to evaluate if this impairment also plays a role in PPOI. Using sublingual microcirculation as an accepted surrogate of bowel microcirculation, this observational study revealed that sublingual microcirculatory flow was correlated with the presence of PPOI and significantly lower in PPOI patients. **Jin Qian, M.D., Mohamed Badawy, M.D., Juan Gomez-Izquierdo, M.D., Michael Procino, B.Sc., David Bracco, M.D., Sender Liberman, M.D., Barry Stein, M.D., Patrick Charlebois, M.D., Gabriele Baldini, M.D.;** Anesthesia, Surgery, McGill University, Montreal, QC, Canada.

### CA A1174

#### Effect of Propofol on Vessel Tone After Cooling and Rewarming and Its Mechanism

To assess the effect of propofol on cooling and rewarming-induced isometric tension generation and protein kinase C (PKC) activity with phenylephrine pretreatment, we determined isometric tension changes and PKC activity by Western blotting. Cooling and rewarming with propofol significantly increased isometric tension. Comparison of before cooling and after rewarming showed that PKC activity was significantly increased after rewarming with propofol, whereas the activity was not changed without propofol. In the presence of a PKC inhibitor, PKC activity was not changed with propofol before cooling and after rewarming. The augmentation of changes in tension and PKC activity after rewarming may be due to activation of PKC by propofol. **Yasuyuki Tokinaga, M.D., Ph.D., Yukimasa Takada, M.D., Shunsuke Hayashi, none, Satoshi Kazuma, M.D., Michiaki Yamakage, M.D., Ph.D.;** Anesthesiology, Sapporo Medical University, Sapporo, Japan.

### CA A1175

#### Periodontal Application of Lipopolysaccharide Reduces Endothelium-Dependent Relaxation Via Increased Production of Hydrogen Peroxide in Rats

The present study showed a rat model of periodontal disease to evaluate vascular endothelial malfunction. In this model, periodontal application of LPS did not affect hemodynamics, whereas it reduced endothelium-dependent relaxation caused by activation of nitric oxide synthase. Increased production of hydrogen peroxide following activation of NADPH oxidase probably mediates the impairment of vasodilation. **Takahiko Akahori, M.D., Hiroyuki Kinoshita, M.D., Ph.D., Yasuhiro Yamamoto, D.D.S., Takumi Saito, D.D.S, Yoshitaka Yasuda, M.D., Yoshiaki Kazaoka, D.D.S., Ph.D., Yoshihiro Fujiwara, M.D., Ph.D., M.B.A.;** Anesthesiology, Oral and Maxillofacial Surgery, Aichi Medical University School of Medicine, Nagakute, Japan.

### CA A1176

#### The Exploration of the Protective Effects of the LPD Solution Containing HOE642 on the Donor Lung for Prolonged Cold Ischemia Duration With the Lung Transplantation Model in Rabbits

The new organ preservation solution containing HOE642 can prolong the transplanted lung cold ischemia time and reduce its ischemia reperfusion injury. **Wenqin Zhou, M.S., Bin Liu, M.S., Tianqing Gong, M.S., Deshui Yu, M.D.;** Anesthesiology, West China Hospital of Sichuan University, Chengdu, China.

### CA A1177

#### The Effects of 48 Hour Exposure of Cultured Rat Cardiomyocytes to Milrinone on Myocardial Necrosis-related Gene Expressions

Summary:Milrinone is a potent inotrope used to treat patient with CHF. However the clinical outcome of Milrinone use has been controversial. Milrinone can benefit some patients but may potentially increase hospital stay and mortality. We studied the effects of Milrinone on myocardial necrosis-related gene expression in cardiomyocytes. We found STK4 and NAMPT were upregulated while MYH6 and NOG downregulated. These changes indicated Milrinone induced favorable gene expression changes in cultured rat cardiomyocytes. **Yan Hong, M.S., Huiming Zhan, M.S., Jingli Chen, M.S., Ruolan Wu, M.S., Qitao Yan, B.S., Peter Foldes, M.D., Patrick McCarty, M.D., Henry Liu, M.D.;** Department of Anesthesiology, Wuhan Central Hospital, Wuhan, China, Tulane University Medical Center, New Orleans, LA.

### CA A1178

#### The Role of PI3K and STAT3 Signaling Pathways in Intralipid-induced Cardioprotection in Late Pregnancy

STAT3 and PI3K signaling pathways are involved in intralipid-induced cardioprotection against ischemia/reperfusion injury in late pregnancy. **Jingyuan Li, M.D., Ph.D., Mansoureh Eghbali, Ph.D.;** UCLA, Los Angeles, CA.

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**CA A1179****Fentanyl Attenuates Myocardial Injury Following Administration of High Doses of Epinephrine in Pigs**

The objective of this study was to evaluate the cardiac effects of fentanyl on myocardial function in pigs exposed to high doses of epinephrine. Twenty-six pigs were allocated randomly into Fentanyl group (n=10), which received fentanyl five minutes before five doses of epinephrine; saline group (n=10), which received saline instead fentanyl; and Sham group (n=6). Fentanyl group showed lower levels of troponin and less myocardial injury in transmission electron microscopy and immunohistochemistry. Fentanyl promotes attenuation of myocardial injury caused by high dose of epinephrine. Vinicius F. Da Luz, Sr., M.D., Denise Aya Otsuki, Ph.D., Maria Margarita Gonzalez, Ph.D., Elnara Marcia Negri, Ph.D., Bruno Gonçalves Viana, Medical Student, Maria Jose Carmona, Ph.D.; Anesthesiology, Pathology, University of São Paulo Medical School, São Paulo, Brazil.

**PO10-2 EXPERIMENTAL NEUROSCIENCES: MECHANISMS****10 a.m.-12 p.m. | HALL B1 - AREA C****NA A1180****De Novo Assembly of Musk Shrew Hindbrain Transcriptome and Comparison of Gene Expressions in Animals With High and Low Incidence of Postanesthesia Nausea and Vomiting**

This assembly may provide a powerful approach for genetic mechanisms involved in PONV. Furthermore, the comparisons of gene expressions in the hindbrains of high and low responders indicate the presence of discrete differences in the several gene expression between our low and high PONV responders. Shigekazu Sugino, M.D., Ph.D., Charles C. Horn, Ph.D., Piotr K. Janicki, M.D., Ph.D.; Laboratory of Perioperative Genomics, Department of Anesthesiology, Penn State College of Medicine, Hershey, PA, Departments of Anesthesiology & Medicine, University of Pittsburgh Cancer Institute, University of Pittsburgh School of Medicine, Pittsburgh, PA.

**NA A1181****Identification of a New Missense Mutation in SCN9A in a Patient With Hereditary Congenital Indifference to Pain**

We encountered a 73-year-old woman born from consanguineous parents, who manifested congenital indifference to pain. Some clinical symptoms and results of physiological examinations did not match those of congenital indifference to pain reported to date. We carried out a genetic analysis of this patient and identified a new mutation in SCN9A gene. Yuki Sugiyama, M.D., Tomoki Kosho, M.D., Hiroshi Morita, M.D., Satoshi Tanaka, M.D., Mikito Kawamata, M.D.; Anesthesiology and Resuscitology, Medical Genetics, Medicine (Neurology and Rheumatology), Shinshu University School of Medicine, Matsumoto, Japan.

**NA A1182****Sevoflurane Inhalation Accelerates the Long-Term Horror Learning Ability in Young Adult Mice**

Sevoflurane exposure to young adult mice accelerated the long-term horror learning ability with increased F-actin constitution in the hippocampus. Hiroyuki Kinoshita, M.D., Ph.D., Emi Naamura, M.D., Guo-Gang Feng, M.D., Ph.D., Jiazheng Li, M.D., Jiazheng Jiang, M.D., Kensuke Sakakibara, M.D., Yoshihiro Fujiwara, M.D., Ph.D., M.B.A.; Anesthesiology, Pharmacology, Aichi Medical University School of Medicine, Nagakute, Japan.

**NA A1183****Volatile Anesthetics Inhibit Voltage-Gated Sodium Channels Directly Without Altering Bulk Lipid Bilayer Properties**

We compared the effects of model fluorobenzene anesthetics and the volatile anesthetic isoflurane on sodium channel function with their ability to alter bulk lipid bilayer properties using patch-clamp electrophysiology and a gramicidin channel-based stopped-flow fluorescence assay for lipid bilayer perturbation. All anesthetics significantly inhibited sodium channel function but did not alter bulk lipid bilayer properties at 1 MAC. We also tested the bilayer-perturbing effects of a range of other anesthetics and observed that none of these anesthetics altered bilayer properties at the clinically relevant concentration of 1 MAC. Karl Herold, M.D., Ph.D., William Lee, B.S., R. Lea Sanford, B.S., Olaf S. Andersen, M.D., Hugh C. Hemmings, Jr., M.D., Ph.D.; Anesthesiology, Physiology, Biophysics and Systems Biology, Weill Cornell Medical College, New York, NY.

**NA A1184****The Influence of Astrocyte on Rats' Spontaneous Electrical Activity of S1 Neuron under Ketamin**

The experiment uses the patch-clamp system to observe the influence of ketamin on rats' spontaneous electrical activity of S1 conform neuron after inhibiting the activity of astrocytes. Zhang You, M.Med., Yang Hao, M.Med., Xu Mao Sheng, M.Med., Zhang Yu, M.D., Yu Tian, M.Med.; Zunyi Medical College, Zunyi, China.

**NA A1185****Sevoflurane Affects Thalamocortical Signal Propagation but Not Spatial Cortical Processing In Vitro**

Sevoflurane seems to reduce and delay thalamocortical signal propagation in vitro, but it does not seem to affect corticocortical signal processing. The finding that sevoflurane might preferably inhibit thalamocortical projections may argue for subcortical effects triggering sevoflurane induced unconsciousness. Matthias Kreuzer, M.Sc., Stephan Kratzer, M.D., Corinna Mattusch, Ph.D., Gerhard Rammes, Ph.D., Eberhard F. Kochs, M.D.; Anesthesiology, Klinikum Rechts der Isar, Technische Universität München, Munich, Germany.

**NA A1186****Propofol Modulates Spatial Cortical Signal Propagation in Acute Thalamocortical Brain Slices**

Voltage-sensitive dye imaging experiments in acute murine thalamocortical slices revealed that propofol seems to have no effect on cortical vertical signal processing of a thalamic stimulus. However, propofol seems to modulate horizontal signal processing within the cortex. This might be an in vitro correlate of impaired cortical integration of sensory information. Stephan Kratzer, M.D., Matthias Kreuzer, M.D., Corinna Mattusch, Ph.D., Eberhard F. Kochs, M.D., Gerhard Rammes, Ph.D.; Department of Anesthesiology, Klinikum Rechts der Isar der TU Muenchen, Munich, Germany.

**NA A1187****Transition in Power, Phase Synchronization, and Information Flow of Alpha Rhythm After Intravenous Bolus of Propofol**

Present study explores how electroencephalographic signatures behave after bolus administration of propofol. Temporal changes in power, phase synchronization, and information flow of alpha rhythm and relationship between them are investigated. Heonsoo Lee, Doctoral Candidate, Minkyung Kim, Doctoral Candidate, Byung-Moon Choi, M.D. Ph.D., Pangu Joo, Doctoral Candidate, Gyu-jeong Noh, M.D. Ph.D., Seunghwan Kim, Ph.D.; POSTECH, Pohang, Asan Medical Center, Seoul, Korea, Republic of.



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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## NA A1188

### Propofol Preferentially Enhances Fast-Spiking Interneuron Connections to Pyramidal Neurons in Rat Insular Cortex

Propofol facilitates  $\gamma$ -aminobutyric acid-mediated inhibitory synaptic transmission and reduces excitatory output from cortical circuits. In the present study, we demonstrated that propofol preferentially enhanced inhibitory synaptic transmission from fast-spiking  $\gamma$ -aminobutyric acidergic interneurons to pyramidal neurons in rat insular cortex. This mechanism may explain how propofol regulates cortical functions. **Yuko Koyanagi, D.D.S., Ph.D., Yoshiyuki Oi, M.D., Ph.D., Noriaki Koshikawa, D.D.S., Ph.D., Masayuki Kobayashi, D.D.S., Ph.D.;** Department of Anesthesiology, Department of Pharmacology, Nihon University School of Dentistry, Tokyo, Japan.

## NA A1190

### TRPM7 Like Currents in Human Glioblastoma T98 Cells

TRPM7 like currents present in T98 glioblastoma cells, which might represent a target for tumor cell proliferation. **Jun Lin, M.D., Ph.D., Wenbo Zhu, M.D., Ph.D.;** Anesthesiology, Stony Brook University, Stony Brook, NY, Pharmacology, Sun Yat-sen University, Guangzhou, China.

## NA A1191

### The $\alpha 2\delta$ Subunit Couples the Voltage Sensors to the Pore Domain of the Human CaV1.2 Channel Facilitating Its Activation

$\alpha 2\delta$ -1 subunits mediate their effect on Ca conductance by profoundly altering the biophysical properties of CaV1.2 channel voltage sensors. Optical tracking of human CaV1.2 VSD activation reveals that  $\alpha 2\delta$ -1 association causes VSDs I, II & III to activate faster, at more hyperpolarized potentials, and with higher sensitivity to changes in the membrane potential. We propose that  $\alpha 2\delta$ -1 mediates these effects by remodelling VSDs I-III and altering the electric field in their vicinity. In addition, we present evidence that  $\alpha 2\delta$ -1 association physically couples VSD activation to pore opening. **Nicoletta Savalli, Ph.D., Antonios Pantazis, Ph.D., Daniel Sigg, M.D., Ph.D., Alan Neely, Ph.D., Riccardo Olcese, Ph.D.;** Anesthesiology, Division of Molecular Medicine, UCLA, Los Angeles, CA, dPET, Spokane, WA, Centro Interdisciplinario de Neurociencia de Valparaíso, Valparaíso, Chile.

## NA A1192

### The Human BK Channel Encompasses a Cytochrome C-like Structure Within Its Intracellular Gating Ring Domain

Using computational and biochemical approaches, we provide evidence that the human BK channel encompasses a Cytochrome C-like structure at its C terminus, likely conferring novel non-conducting properties to these channels. **Taleh Yusifov, Ph.D., Nicoletta Savalli, Ph.D., Roshni V. Madhvani, Ph.D., Chris S. Gandhi, Ph.D., Riccardo Olcese, Ph.D.;** Anesthesiology, Division of Molecular Medicine, UCLA, Los Angeles, CA, Division of Chemistry, Caltech, Pasadena, CA.

## NA A1193

### BK Channels can Protect from Oxidative Stress Damage via a Cytochrome C-like Domain

We have demonstrated that BK channels, the universal suppressors of cellular excitability, exhibit peroxidase activity associated with a newly-identified CytC-like domain. This non-conductive property of the ubiquitously-expressed channel confers cellular resistance to H<sub>2</sub>O<sub>2</sub>-mediated oxidative damage. **Taleh Yusifov, Ph.D., Nicoletta Savalli, Ph.D., Antonios Pantazis, Ph.D., Riccardo Olcese, Ph.D.;** Anesthesiology, Division of Molecular Medicine, UCLA, Los Angeles, CA.

## NA A1194

### Two Distinct Types of Adrenoceptors in Synaptic Modulation of Network Activity in the Central Nucleus of Amygdala

To elucidate the role of NA in the aversive memory formation by nociception, we analyzed the effects of NA on spontaneous inhibitory postsynaptic currents (sIPSCs) in the medial division of the central amygdala (CeM). NA increased the sIPSC of the CeM in a manner sensitive to propranolol. Besides NA increased intracellular Ca<sup>+</sup> of the lateral and capsular divisions of the central amygdala (CeL/CeC), which was abolished by cyclopiazonic acid, suggesting an involvement of  $\alpha 1$  receptors. Phenylephrine and prazosin administration study support it. Altogether, NA synaptically attenuates CeM neuron excitability both  $\alpha 1$  in the CeL/CeC and  $\alpha 1$  receptors in unidentified cells. **Sumii Yamamoto, M.D., Yukari Takahashi, Ph.D., Ayako Watabe, Ph.D., Fusao Kato, Ph.D.;** Anesthesiology, University of Tsukuba, Tsukuba, Japan, Neuroscience, Jikei University School of Medicine, Tokyo.

## NA A1195

### Role of Cerebellum in Hypnosis Induced by General Anesthetics

To determine whether cerebellum contributes to hypnosis induced by general anesthetics, we examined the loss of righting reflex (LORR) induced by isoflurane, propofol and ethanol in Gabra6100Q allele Sprague-Dawley rats, a naturally occurring single nucleotide polymorphism in GABAA receptor  $\alpha 6$  subunit gene that expressed exclusively in cerebellum granule cells. We show that this mutant is more sensitive than wild type rat to the LORR induced by isoflurane and by ethanol, but not by propofol. These data suggest that cerebellum is involved in the hypnosis induced by some general anesthetics and thus may be a novel target of some general anesthetics. **Jiang H. Ye, M.D., M.S., Bo Xiong, M.D., M.S., Rao Fu, M.D., Ph.D., Qi-Qing Shi, M.D., Jing Li, M.D., Ph.D., Vasanti Tilak, M.D.;** Rutgers, New Jersey Medical School, Newark, NJ.

## PO13-3 OUTCOMES AND DATABASE RESEARCH

10 a.m.-12 p.m. | Hall B1-Area D

## FA A1196

### Creation and Implementation of an Integrated Outcomes Database for Pediatric Anesthesia

We describe the creation and implementation of an integrated outcomes database that allows evaluation of immediate and remote anesthesia outcomes for children. In addition, this relational database allows for evaluation of relationships between anesthesia technique and outcomes. **Joseph Cravero, M.D., Sean Sinnott, None, Elizabeth Carpino, None, Patcharee Sriswasdi, M.D., Rebecca Lekowski, None, Mark Breitbart, None, Deirdre Logan, Ph.D.;** Department of Anesthesiology and Perioperative Pain and Medicine, Boston Childrens Hospital, Boston, MA.

## FA A1197

### Opioid Administration to Patients With Acute Lymphoblastic Leukemia Is Not Associated With Decreased Survival

The administration of opioids to patients with Acute Lymphoblastic Leukemia within a month of diagnosis is not associated with a decrease in treatment response or a decrease in survival over 5 years. **Pascal Owusu-Agyemang, M.D., Elizabeth Rebello, M.D., Radha Arunkumar, M.B., B.S., Joseph R. Ruiz, M.D., Gautam Borthakur, M.B.B.S., Michael Rytting, MD, Sa Wang, MD, Mike Hernandez, Sr. Statistical Analyst, Juan P. Cata, M.D.;** Anesthesiology, Leukemia, Pediatrics, Hemopathology, Biostatistics, MD Anderson Cancer Center, Houston, TX.

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**FA A1198****Association Between a High-Inspired Oxygen Concentration and a Gravity Dependent Atelectasis in Trauma Patients**

We assumed that the delivery of the high concentration inspired oxygen might be one of the risk factors for the formation of the gravity dependent atelectasis in the trauma patients. Higher age and injury severity of the patients were risk factors shown to increase the incidence of the atelectasis formation. However, this was not the case with higher concentration of inspired oxygen. **Kenzo Ishii, M.D., Koji Miyasho, M.D., Kazumi Ono, M.D., Ph.D., Hiroshi Morimatsu, M.D.;** Department of Anesthesiology and Oncological Pain Medicine, Department of Critical Care and Emergency Medicine, Fukuyama City Hospital, Fukuyama, Hiroshima, Japan, Okayama University Medical School, Okayama, Japan.

**FA A1199****What Preoperative Hemoglobin Level Is Adequate Before Hip or Knee Surgery?**

The WHO definition of anemia does not offer functional prognostic value in surgical candidates with regarding risk of intraoperative transfusion. In a retrospective, cross-sectional analysis of patients undergoing orthopedic surgery at a tertiary care center, the authors reviewed preoperative hemoglobin, age, gender, procedure type, estimated blood loss, transfusion, and administration of tranexamic acid. The ability to identify which patients carry greater risk of perioperative morbidity and mortality for their scheduled procedure may allow for targeted intervention to improve patient safety and quality outcomes while reducing cost of healthcare delivery. **Dinesh J. Kurian, M.D., M.B.A., Thomas J. Hopkins, M.D., Jason R. Guercio, M.D., M.B.A., , Nicole R. Guinn, M.D., Maria Jimenez, B.A., Solomon Aronson, M.D., M.B.A.,** Anesthesiology, Duke University Medical Center, Durham, NC.

**FA A1200****Do Canadian and USA Research Ethics Board Consent Form Templates Meet Readability Standards?**

A quantitative readability analysis of research consent form templates from US and Canadian medical schools was done (12 Canadian medical schools, and a stratified random sample of 15 US). Endorsed wording was extracted from all templates, and readability statistics were calculated. The vast majority of consent form templates were written above the recommended grade 8 level based on 2 readability formulae. Institutions giving explicit readability standards mostly did not meet their own standards; exceeded them by an average of 2 grade levels. **Alexander Villafranca, Ph.D. Candidate, Chad Cook, B.A., Student, Stephanie Kereliuk, B.Sc. Honors Student, Andrea Johnson, B.Sc., D.C., Eric Jacobsohn, M.B.,Ch.B.;** Anesthesiology, Philosophy, University of Manitoba, Winnipeg, MB, Canada.

**FA A1201****Emergency Cricothyrotomy in Denmark From June 2008 to March 2014: A Cohort Study of 452,461 Patients**

A six year cohort study of emergency cricothyrotomy in Denmark among patients undergoing general anesthesia. **Charlotte V. Rosenstock, Consultant, Ph.D., Anders K. Nørskov, M.D., Lars H. Lundstrøm, Ph.D., Jørn Wetterslev, Ph.D.;** Department of Anesthesiology, Copenhagen University Hospital, Capital Region of Denmark, Nordsjællands Hospital-Hillerød, Hillerød, Denmark, Trial Unit, Centre for Clinical Intervention Research, Copenhagen University Hospital, Rigshospitalet, Copenhagen, Denmark.

**FA A1202****How Typical Is the 'Typical Rise and Fall' of Troponin in (Peri-Procedural) Myocardial Infarction**

This systemic review on the kinetics of troponin (Tn) release in (peri-procedural) myocardial infarction (MI) indicates that there is not one typical rise and fall of Tn with MI. The shape of the Tn curve varies considerably per type of MI. **Dianne van Beek, M.D., Bas van Zaane, M.D., Ph.D., Marjolijn Looije, M.D., Wilton Van Klei, M.D., Ph.D.;** Division of Anesthesiology, Intensive Care and Emergency Care Medicine, Division of Heart and Lungs, University Medical Center Utrecht, Utrecht, Netherlands.

**FA A1203****Acute Care Anesthesiology: A National Anesthesia Database Study of Emergency Cases**

We describe the characteristics of cases requiring the administration of anesthesia for emergency surgery. A retrospective cohort study of the National Anesthesia Clinical Outcomes Registry demonstrates of 12 million cases, 270,000 were for emergency procedures. Patients who had emergency surgery had a higher ASA physical status and cases lasted longer than non-emergency surgeries. The 3 most frequently performed cases were for intra-abdominal procedures; the most frequent trauma case was orthopedic fixation of the lower extremity. Emergency cases were most likely to occur after 1,800 hours. **Maureen McCunn, M.D., MIPP, Samuel M. Galvagno, Jr., D.O., Ph.D., M.S., Peter Rock, M.D., M.B.A., FCCM, Richard P. Dutton, M.D., M.B.A.,** University of Maryland School of Medicine, Baltimore, MD, Anesthesia Quality Institute, Park Ridge, IL.

**FA A1204****Hospital Specific Perioperative Outcomes: How Does Ranking of Hospitals Differ by Procedure Type?**

Using a large database we aimed to study the agreement in uniform measures of perioperative outcomes between three types of orthopedic surgery: hip, knee and spine surgery. Although a statistically significant correlation exists between ranking based on in-hospital mortality for hip versus knee arthroplasty, and knee arthroplasty versus spine surgery, the correlations can be classified as 'very weak'. These findings suggest that hospitals advertising a high ranking for quality measures in one orthopedic procedure might not perform as well for other orthopedic procedures. Thus, an advertised quality measure should be judged in the appropriate context. **Jashvant Poeran, M.D., M.Sc., Ph.D., Mathias Opperer, M.D., Rehana Rasul, M.A., M.PH., Madhu Mazumdar, Ph.D., Stavros G. Memtsoudis, M.D., Ph.D.;** Healthcare Policy and Research, Weill Cornell Medical College, Hospital for Special Surgery, New York, NY.

**FA A1205****Recovery of Renal Function After Orthotopic Liver Transplantation in Patients Who Were on Pre-transplant Renal Replacement Therapy**

Patients undergoing orthotopic liver transplantation have a high incidence of acute kidney injury requiring peri-operative renal replacement therapy which often results in end-stage renal disease. A retrospective medical record review was conducted at a single transplant center for all patients who received first time OLT and were on pre-transplant RRT, during a seven-year period. 53.6% of the patients on pre-transplant RRT recovered during the first year. Duration of RRT before and after the OLT are positively correlated. Patients on RRT before OLT have worse survival when compared to the national average. **Daniela Damian, M.D., John Kellum, M.D., Joseph Donaldson, M.S., Ibtisam A. Hilmi, M.B.;** Anesthesiology, Critical Care Medicine, Thomas E. Starzl Transplantation Institute, University of Pittsburgh, Pittsburgh, PA.

**FA A1206****Effect of Gender and Age on Perioperative Pulse Pressure**

Elevated pulse pressure (PP >80mmHg) has been shown to be an independent risk factor for stroke, kidney injury, cardiac complications and perioperative mortality. Hypertensive female patients developed an elevated PP at a younger age, and a larger percentage had an elevated PP in each decade as compared to males. **Alison J. Brainard, M.D., Erik J. Nelson, M.D., Kenneth J. Bullard, B.S., Rachel M. Kacmar, M.D., Benjamin K. Scott, M.D., Karsten Bartels, M.D., Ana Fernandez-Bustamante, M.D., Leslie C. Jameson, M.D.;** Anesthesiology, University of Colorado, University of Colorado Health Sciences Center, Aurora, CO.

**FA A1207****Assessment of Postoperative Outcomes in Relation to Pleth Variability Index (PVI) Based Goal-Directed Therapy**

Goal-directed therapy (GDT) using pleth variability index (PVI) as a measure of fluid responsiveness may serve to decrease postoperative morbidity and length of hospital stay in moderate-risk surgery patients. Postoperative morbidity survey (PVI) scores for postoperative days 3 and 5 were analyzed to assess postoperative complications in relation to GDT. **Jaqueline Yang, B.S., Christopher P. Foglesong, B.S., Cecilia Canales, B.S., M.PH., Joseph B. Rinehart, M.D., Maxime Cannesson, M.D., Ph.D.;** Anesthesiology & Perioperative Care, University of California, Irvine, CA.



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain



### FA A1208

#### Is Automatic Recording Superior to Hourly Nurse-Confirmation of Heart Rates? An ICU Database Analysis

Information regarding the benefit of Manual confirmation by medical is lacking. The present study reveals that data confirmation by a nurse is not superior to an automated recording. Sebastian Böttcher, M.Sc., Torsten Eck, M.D., Manuela Marron, Ph.D., Leif Saager, M.D., F.C.C.P., Thomas Kohlmann, Ph.D., Konrad Meissner, M.D.; Department of Anaesthesiology and Intensive Care, Universitätsmedizin Greifswald, Institute for Community Medicine, Department of Methods in Community Medicine, Universitätsmedizin Greifswald, Greifswald, Germany, Anesthesiology Institute, Department of Outcomes Research, Cleveland Clinic, Cleveland, OH.

### FA A1209

#### Systolic Hypertension in Preoperative Holding Predicts Increased Intraoperative Blood Pressure Variability

We hypothesized that SBP  $\geq$  160 mmHg obtained in the preoperative holding area would be associated with increased intraoperative blood pressure variability in a retrospective cohort of 14,581 surgical patients. The primary outcome variable, non-invasive mean arterial pressure variability (MAPvar), was defined as the maximum - minimum mean arterial blood pressure. A t-test was used to compare the MAPvar between patients with preop SBP  $<$  or  $\geq$  160 mmHg. MAPvar was significantly higher (mean difference 14.259 mmHg,  $p < 0.0001$ ) in the hypertensive group. This readily available measurement might allow clinicians to anticipate increased intraoperative blood pressure variability. Benjamin K. Scott, M.D., Ken Bullard, B.S., Rachel M. Kacmar, M.D., Alison J. Brainard, M.D., Ana Fernandez-Bustamante, M.D., Ph.D., Leslie C. Jameson, M.D., Karsten Bartels, M.D.; Anesthesiology, University of Colorado Health Sciences Center, Aurora, CO.

### FA A1210

#### Utility of the MACOCHA Score to Predict Difficult Intubation in Non-operating Room Setting: A Preliminary Report

The MACOCHA score is a newly-reported prediction tool for difficult intubation (DI) in the ICU. We performed a retrospective analysis of a large airway database to assess the generalizability of this score to a North American care model. In our patients, the MACOCHA score was a fair discriminator of non-DI and DI and retained its high sensitivity and negative predictive value. Sarah M. Khorsand, M.D., William C. Van Cleve, M.D., Aaron M. Joffe, D.O.; Anesthesiology and Pain Medicine, University of Washington, Anesthesiology and Pain Medicine, University of Washington-Harborview Medical Center, Seattle, WA.

### FA A1211

#### Peri-Anesthetic Dental Injury: A Review of Quality Assurance Database Entries at a Tertiary Academic Medical Center

Peri-anesthetic dental injury is among the most common cause of patient complaints and litigation against anesthesiologists. The purpose of this study was to determine the incidence, outcomes, and risk factors associated with peri-anesthetic dental injury. We performed a retrospective analysis of Quality Assurance (QA) database entries from January 2009 to March 2014 for all reported peri-anesthetic dental injuries. The overall incidence, patient demographics, and anesthetic features common to peri-anesthetic dental injury as well as type and location of injury are presented. Bryan J. Simmons, M.D., Vanessa Rao, B.S., Aalok Agarwala, M.D.; Anesthesia, Critical Care, and Pain Medicine, Massachusetts General Hospital, Boston, MA.

### PO16-1 REGIONAL ANESTHESIA AND ACUTE PAIN

10 a.m.-12 p.m. | Hall B1-Area E

### RA A1212

#### The Electrophysiological Effects of Lipid Emulsion on Bupivacaine-induced Cardiotoxicity in Guinea Pigs

In order to evaluate the electrophysiological effects of lipid emulsion on local anesthetic systemic toxicity, this time we analyzed the electrocardiogram in Langendorff apparatus, and then studied the effects on sodium channels of isolated cardiomyocytes. Lipid emulsion significantly recovered the bupivacaine-induced inhibition of sodium channels and consequently QRS duration. These results would be helpful to understand the mechanism of lipid resuscitation. Kotaro Hori, M.D., Tadashi Matsuura, M.D., Ph.D., Syogo Tsujikawa, M.D., Megumi Hasaka, M.D., Ph.D., Takashi Mori, M.D., Ph.D., Miyuki Kuno, M.D., Ph.D., Kiyonobu Nishikawa, M.D., Ph.D.; Department of Anesthesiology, Osaka City General Hospital, Osaka, Japan, Department of Anesthesiology, Department of Physiology, Osaka City University Graduate School of Medicine, Osaka, Japan.

### RA A1213

#### Efficacy of Ultrasound Guided Continuous Transversus Abdominis Plane Block on Postoperative Analgesia and Rehabilitation for Renal Transplantation: KTAP Study

In KTAP Study, continuous TAP block improves postoperative analgesia and first mobilization of kidney recipients. This locoregional technique could be incorporated in enhanced rehabilitation program of renal transplantation. Anne Payan, Resident, Laetitia Ottolenghi, M.D., Stéphanie Roulet, M.D., Alice Quinart, M.D., Francois Sztark, M.D., Ph.D.; SAR1 CHU Pellegrin, Bordeaux, France.

### RA A1214

#### Spinal and Caudal Administration of Morphine Provide Similar Post-Operative Analgesia in the Pediatric Patient Following Orthopedic and Urologic Procedures

There is no current evidence to guide the practitioner regarding dosing Morphine via the Spinal versus Caudal route-In this study we observed no difference in the Analgesic effects in Caudal Vs. Spinal Morphine for Orthopedic Vs. Urologic Procedure. Jennifer C. Brown, M.D., Ph.D., Beatriz Ornelas, M.A., Giovanni Cucchiari, M.D.; Anesthesiology, Weill Cornell Medical College, New York, NY, Anesthesiology, Children's Hospital of Los Angeles, University of Southern California, Los Angeles, CA.

### RA A1215

#### Analgesia After Anterior Approach Total Hip Arthroplasty: A Pilot Analysis of the Use Paravertebral Blockade

T12-L2 paravertebral blockade using 1% ropivacaine + dexamethasone 0.5mg/ml + epinephrine 5mcg/ml appears to provide effective analgesia after anterior approach total hip arthroplasty, with equivalent opioid consumption when compared to psoas catheter patients. Acetaminophen, postoperative corticosteroids, and preoperative opioid consumption may influence the effectiveness of either regional technique. Prospective studies are warranted. Alberto E. Ardon, M.D., M.P.H., Upasna Bhuria, M.B.B.S., Roy A. Greengrass, M.D.; Mayo Clinic, Jacksonville, FL.

### RA A1216

#### Regional Anesthesia: Patients Want Information But Most Will Leave Anesthetic Choice To Their Doctors

Most patients who might be offered regional anesthesia for their procedure or postoperative pain management agreed (86%) that it is important to discuss their choices during the pre-anesthesia clinic visit. While most also agreed that their anesthesiologist and surgeon should choose the anesthesia and postoperative pain management that is best for them, patients with active or collaborative control preferences were less likely (65%) than passive patients (86%) to cede choices to their physicians ( $p = 0.048$ ). Karen Posner, Ph.D., Gail A. Van Norman, M.D., Shawn L. Mincer, MSW, Anne E. Harvey, B.S., Karen B. Domino, M.D., M.P.H.; Anesthesiology & Pain Medicine, University of Washington, Seattle, WA.



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**RA A1217****Comparative-Effectiveness of Infraclavicular and Supraclavicular Perineural Catheters for Through-the-Catheter Bolus Anesthesia**

Using a through-the-needle local anesthetic bolus technique, ultrasound guided infraclavicular perineural catheters have been shown to provide greater analgesia compared to supraclavicular catheters. A through-the-catheter bolus technique, which arguably "tests" the anesthetic efficacy of the catheter prior to initiating an infusion, has been validated for infraclavicular catheters but not supraclavicular catheters. We have shown that both supraclavicular and infraclavicular perineural catheters using a through-the-catheter bolus technique provide effective brachial plexus anesthesia. **Thomas K. Harrison, M.D., Edward Mariano, M.D.; Anesthesiology and Perioperative Care Service, VA Palo Alto/Stanford University, Palo Alto, CA, VA Palo Alto Health Care System, Palo Alto, CA.**

**RA A1218****Risks and Complications of Epidural Analgesia in Acute Postoperative Pain Patients With Cancer: A Review of 18895 Cases Over 10 Years**

The risks of epidural analgesia differ depending on the population studied. For cancer patients utilizing postoperative epidural analgesia, neurological complaints followed by epidural insertion site abnormalities, epidural migration, epidural failure necessitating replacement, inadvertent dura puncture, and deep spinal infection were the most common complications documented. More data is needed to establish epidural analgesia risks for different populations such as cancer patients. **Jackson Su, M.D., Jose M. Soliz, M.D., Keyuri U. Popat, M.D., Rodolfo Gebhardt, M.D.; Department of Anesthesiology and Perioperative Medicine, MD Anderson Cancer Center, Houston, TX.**

**RA A1219****Liposomal Bupivacaine (Extended-Release Local Anesthetic) Improves Outcomes in Ileostomy Reversal Surgery**

This study evaluates the efficacy of liposomal bupivacaine, an extended-release formulation of the local anesthetic bupivacaine, in ileostomy reversal surgery. The primary outcome was total opioid consumption during the first 24 hours postoperatively as well as for the duration of the patient's hospitalization. Secondary outcomes included: length of hospital stay, maximum pain score, and whether the patient reported nausea and/or received anti-emetic medication. **Aaron Skolnik, B.S., Christopher Mantyh, M.D., Timothy Miller, M.B., Ch.B., Tong J. Gan, M.D.; Duke University Medical Center, Durham, NC.**

**RA A1220****The Use of the Fibromyalgia Survey Criteria to Predict Postoperative Opioid Consumption in Women Undergoing Hysterectomy**

We demonstrated that postoperative opioid consumption after hysterectomy was independently predicted by higher scores on the fibromyalgia survey criteria. For each 1-point increase on this 31-point validated self-report measure, patients consumed an adjusted 7 mg more oral morphine equivalents. **Allison M. Janda, B.A., Suzie As-sanie, M.D., Baskar Rajala, M.D., M.B., B.S., F.R.C.A., Alex Tsodikov, Ph.D., Stephanie Moser, Ph.D., Daniel J. Clauw, M.D., Chad M. Brummett, M.D.; Department of Anesthesiology, Department of Obstetrics and Gynecology, Biostatistics, School of Public Health, University of Michigan, Ann Arbor, MI, University of MI Health Systems, Ann Arbor, MI.**

**RA A1221****Paravertebral Blockade for Robotic Mitral Valve Repair: A Prospective Randomized Trial**

This is a prospective randomized trial of 60 patients comparing paravertebral blockade and general anesthesia versus general anesthesia alone for robotic mitral valve repair. The results of the study suggest that the addition of paravertebral blockade to a general anesthetic may reduce the amount of narcotic required intraoperatively and postoperatively as well as reduce postoperative pain. However, we found that tracheal extubation in the operating Room following surgery can be safely achieved in 90% of patients with or without paravertebral blockade, contrary to previous retrospective reviews. **Peter J. Neuburger, M.D., M. Megan Chacon, M.D., Ryan Potosky, M.D., Germaine Cuff, DrPH, Jennie Ngai, M.D.; Department of Anesthesiology, NYU Langone Medical Center, New York, NY.**

**RA A1222****Adductor Canal Block in Total Knee Arthroplasty: A Patient-Centered Approach and Opportunity for New Revenue**

Adductor canal blocks (ACBs) control postoperative pain and promote early mobilization. An ACB offers sensory blockade with less motor blockade than femoral nerve blocks (FNB)<sup>4</sup>. With less motor blockade, early ambulation may improve surgical outcome. However, the financial costs and benefits of implementing ACB have not been examined in the literature. We, generated a model, which under various practice models, demonstrated potential to generate \$71.14-\$442.9 million in revenue across the U.S. by 2030. **Joy P. Patel, M.D., David M. Dickerson, M.D.; Anesthesia and Critical Care, University of Chicago, Chicago, IL.**

**RA A1223****Liposomal Bupivacaine Versus Elastomeric Continuous Infusion Bupivacaine Pump**

Liposomal bupivacaine was compared to elastomeric continuous infusion bupivacaine pump at the Cleveland Clinic Main Campus. Liposomal bupivacaine utilization resulted in less opioid use, but multivariate analysis showed no difference in 24 and 72 hour opioid use between medications. **Michael T. Kenes, Pharm.D., Marcia J. Wyman, Pharm.D., Seth R. Bauer, Pharm.D., Mandy C. Leonard, Pharm.D.; Cleveland Clinic, Cleveland, OH.**

**RA A1224****Review of Case Reports of Spinal Hematomas**

Complete paralysis at presentation is the only factor associated with poor functional recovery following spinal hematoma. **Ariana M. Nelson, M.D., Arpan Patel, B.S., Honorio T. Benzon, M.D., Robert J. McCarthy, Ph.D.; Anesthesiology, Northwestern University Feinberg School of Medicine, Chicago, IL, Temple University School of Medicine, Philadelphia, PA.**

**RA A1225****A Phase 3 Integrated Analysis of Opioid Adverse Events with the Sufentanil Sublingual Microtablet System (Zalviso) Compared to IV Patient-Controlled Analgesia with Morphine**

Zalviso (sufentanil sublingual microtablet system) is a patient-activated analgesia system that is preprogrammed and non-invasive. Phase 3 studies demonstrate safety and efficacy following major orthopedic or abdominal surgery in all adult age groups. **Pamela P. Palmer, M.D., Ph.D., Harold S. Minkowitz, M.D., Tong-Joo Gan, M.D.; AcclRx Pharmaceuticals, Redwood City, CA, Memorial Hermann Memorial City Medical Center, Houston, TX, Duke University Medical Center, Durham, NC.**

**RA A1226****Excessive Motor Blockade in Pediatric Epidural Infusions: Comparing Ropivacaine and Bupivacaine using the PRAN**

Using a multicenter registry, the Pediatric Regional Anesthesia Network, we determined that the incidence of excessive motor blockade was higher in epidural infusions using Bupivacaine compared to those using Ropivacaine in pediatric population. **Kerry Zajicek, M.D., Inge Tamm-Daniels, M.D., Benjamin J. Walker, M.D.; Anesthesiology, University of Wisconsin, Madison, WI.**

**RA A1227****Patient Empowerment Reduces Acute Postoperative Pain After Major Onco-Surgery in Elderly Gynaecological Patients - A Prospective, Randomized Trial**

Patient empowerment in form of information and a perioperative diary reduced acute postoperative pain after major onco-surgery in elderly gynecological cancer patients. Results from a prospective, randomized trial. **Maren Schmidt, Sr., M.D., Rahel Eckardt, M.D., Claudia Spies, M.D.; Anesthesiology, Geriatric, Anesthesiology and Operative Intensive Care medicine, Charité University Medicine Berlin, Berlin, Germany.**



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**PO01-1 AMBULATORY ANESTHESIA: RISK FACTORS, OUTCOMES AND RECOVERY**

1-3 p.m. | Hall B1-Area A

**AM A1228**

**Dilution and Incremental Administration of Hypobaric Local Anesthetic Solution Reduces the Severity of Side Effects: Spinal Anesthesia for Lower Extremity Surgery in Geriatric Patients**

Spinal anesthesia produces hypotension more often in older patients. Previous work at ASA 2013 has shown that when 0.2% bupivacaine is given, a total of 4 mg or less is sufficient for lower extremity surgery in over 80% of geriatric patients. In this study, the minimum effective dose of intrathecal hypobaric 0.1% and 0.2% bupivacaine for lower extremity surgery was determined by administering incremental doses to elderly patients. A total of 4 mg or less was sufficient to produce satisfactory surgical anesthesia in 100% of Group 0.1% and in over 80% of Group 0.2% patients. The lower concentration and the lower total dose (and thus, limited local anesthetic spread) minimized the hemodynamic effects and may improve the speed of recovery. **Yoshimichi Namba, M.D., Ph.D., Michiaki Yamakage, M.D.;** Sapporo Medical University School of Medicine, Sapporo, Japan.

**AM A1229**

**Patient State Index (PSI) Scores Are Similar at Endoscope Insertion and Eye Opening in Patients Undergoing Advanced Gastrointestinal Endoscopy with Propofol**

Although context sensitive halftimes can predict 50 percent decrement times, letting the plasma concentrations to dip by half might risk awareness. **Basavana Goudra, M.D., F.R.C.A., F.C.A.R.C.S.I., Preet Mohinder, M.D., Samuel Augustus, Student;** Anesthesiology and Critical Care Medicine, University of Pennsylvania, Philadelphia, PA, Department of Anesthesiology and Critical Care medicine, Postgraduate Institute of Medical Education & Research, Chandigarh, India.

**AM A1230**

**Sedation Spectrum in Patients Undergoing Advanced Gastrointestinal (GI) Endoscopic Procedures With Propofol**

By using novel monitoring tools like SEDLine, sedation can be titrated to objective endpoints. Certainly, periods of deep sedation and under-sedation can be reduced, although cannot be eliminated. This might eventually improve procedural safety, acceptability and ease of endoscopy. **Basavana Goudra, M.D., F.R.C.A., F.C.A.R.C.S.I., Preet Mohinder Singh, M.D., Samuel Augustus, Student;** Anesthesiology, University of Pennsylvania, Philadelphia, PA, Department of Anesthesiology and Critical Care Medicine, Postgraduate Institute of Medical Education & Research, Chandigarh, India.

**AM A1231**

**Incidence, Risk Factors, and Effects on Outcome of Postoperative Delirium in Esophagectomy Patients**

In this study, we aimed to investigate the incidence and effects on outcome of postoperative delirium (POD) in esophagectomy patients, and identify risk factors for developing POD. Our data showed that the incidence of POD was 20%. The risk factors of POD are older age and preoperative electrolyte abnormalities. POD negatively impacts postoperative respiratory complications and hospital stay. **Hiroshi Yonekura, M.D., Hiroyuki Hirate, M.D., Kazuya Sobue, M.D., Ph.D.,** Department of Anesthesiology and Medical Crisis Management, Nagoya City University Graduate School of Medical Sciences, Nagoya, Japan.

**AM A1232**

**Cerebral Oximetry and Recovery in Thoracic Surgery**

In a prospective observational study of 130 patients requiring OLV, patients who experienced cerebral oxygen desaturations intraoperatively have slower cognitive recovery profiles and faster recovery profiles for activities of daily living. Exposed patients are also significantly more likely to be delirious during hospitalization and have significantly longer length of stays. **Monique L. Roberts, B.A., Elizabeth O. Tinuoye, B.A., Edmond Cohen, M.D., Hung-Mo Lin, Sc.D. Andrew Kaufman, M.D., Raja Flores, M.D., Gregory W. Fischer, M.D., Jeffrey H. Silverstein, M.D.;** Anesthesia, Thoracic Surgery, Icahn School of Medicine at Mount Sinai, New York, NY.

**AM A1233**

**Sedation, Analgesia and Anesthesia Variability in Laboratory Based Cardiac Procedures - An International Survey**

This study describes the use of anesthesia during non-surgical cardiac procedures. The use of sedation is more common in North America. Perception of the need for sedation varied by region and medical profession. There is a need for procedural sedation training. **Farah N. Manji, M.D., Shahar Lavi, M.D., Daniel Bainbridge, M.D., Sanjit Jolly, M.D., Varinder Randhawa, M.D., Ph.D., Ronit Lavi, M.D.;** Department of Anesthesia & Perioperative Medicine, Division of Cardiology, London Health Sciences Centre and Western University, London, ON, Canada, Hamilton Health Sciences and McMaster University, Hamilton, ON, Canada.

**AM A1234**

**Opinion on Management of New Onset Arrhythmias in Patients Receiving Surgery in Ambulatory Surgical Center: A Pilot Survey Study**

A pilot survey study was conducted to seek opinions on the management of new onset arrhythmias in patients receiving surgery in ambulatory surgical center among anesthesiologists and cardiologists. There is a wide variety of opinions on the management of new onset arrhythmias in ambulatory surgical patients. A need to develop a guideline and consensus on this matter seems warranted. **Fenghua Li, M.D., Marla L. Matal, M.D., Kan Liu, M.D., Reza Gorji, M.D., Zhong-Jin Yang, M.D., Muhammad F. Sarwar, M.B.,B.S.;** Department of Anesthesiology, Cardiology Division, SUNY Upstate Medical University, Syracuse, NY.

**AM A1235**

**Deeper Total Intravenous Anesthesia Reduced the Incidence of Early but Not Long-term Cognitive Dysfunction in the Elderly**

Deeper total intravenous anesthesia reduced the incidence of early but not long-term cognitive dysfunction in elderly. **Chang Liu, M.D., Qulian Guo, M.D.;** Anesthesiology, Xiangya Hospital of Central-South University, Changsha, China.

**AM A1236**

**Clopidogrel Is Not Associated with Increased Bleeding Complications After Full Mouth Extraction and Pre-prosthetic Surgery: A Retrospective Study**

Dual antiplatelet therapy can be safely continued peri-operatively in patients with high cardiac risk or recent coronary intervention for full mouth extraction and pre-prosthetic surgery. **Enrico M. Camporesi, M.D., Stephanie Socias, B.S., Collin Sprenger, B.S., Hesham R. Omar, M.D., Yiu-Hei Ching, M.D., Robert Andrew Powless, D.M.D., Ralph E. Robertson, M.D., Devanand Mangar, M.D., Rachel Karlinoski, Ph.D.,** Florida Gulf-to-Bay Anesthesiology Associates LLC, Tampa General Hospital, Florida Health Sciences, Tampa, FL, Mercy Medical Center, Clinton, IA.

**AM A1237**

**Audit of Unplanned Admissions Following Day Case Laparoscopic Cholecystectomy: A Three Year Review**

Day case Laparoscopic Cholecystectomy is a safe and cost effective treatment for gall stones. However there will be a few patients who are admitted following the procedure, for well-known and recognised complications and side effects. Careful selection of cases, increased use of local anaesthetic techniques, and more aggressive pain control and antiemetic prophylaxis may help reduce the unplanned admission rates. **Deepak Subramani, M.B.B.S., D.A.F.C.A.I., Thomas Fletcher, M.B.B.S., John Ward, F.R.C.A.;** Department of Anaesthetics, Nottingham University Hospitals NHS Trust, Nottingham, United Kingdom.

**AM A1238**

**The Use of Epidural Anesthesia in Very Old Patients Has No Advantage in Abdominal Oncologic Surgery**

This study retrospectively evaluated the effects of the use of epidural anesthesia on postoperative outcome in very old patients (80 years old and older) in abdominal oncologic surgery. The use of epidural anesthesia in very old patients did not affect the incidence of pneumonia, bowel obstruction or mortality. **Kaori Shimizu, M.D., Mamoru Takeuchi, M.D.;** Jichi Medical University, Shimotsuke, Japan.



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**AM A1239****Clinical Efficacy of Classic Laryngeal Mask Airway in Elderly Patients: Comparison With Young Adult Patients**

In elderly patients, insertion of laryngeal mask airway into proper position for adequate ventilation and the maintenance of the position may require more caution compared with the young adult patients. **Hye Jin Oh, M.D., Jae Hoon Lee, M.D., Eun Mi Kim, M.D., Min-Soo Kim, M.D.;** Yonsei University Health System, Yonsei University College of Medicine, Anesthesiology and Pain Medicine, Hallym University College of Medicine, Seoul, Korea, Republic of.

**AM A1240****Perioperative Risk Factors of Postoperative Complications in the Elderly Undergoing Noncardiac Surgery**

The aim of this study is to investigate the perioperative risk factors predicting postoperative outcome in the elderly undergoing noncardiac surgery. We retrospectively reviewed 334 patients older than 80 year-old who underwent noncardiac surgery in our hospital, and analyzed the perioperative factors associated with 30-day postoperative complications including death, cardiac adverse events, pneumonia, other infections, cerebrovascular disease and deep venous thrombosis/pulmonary embolism using multivariable logistic regression analysis. hypoalbuminemia, intraoperative blood transfusion, long operation and male were identified as predictors of postoperative complications in the elderly patients undergoing noncardiac surgery. **Yoshinori Muto, M.D., Ken Kuwajima, M.D., Yamada Yoshitsugu, M.D.;** Department of Anesthesiology, University of Tokyo Hospital, Tokyo, Japan.

**AM A1241****Evaluation of Haloperidol Dose Needed to Achieve Complete Control of Postoperative Nausea and Vomiting**

We evaluated the complete control for PONV in 256 patients undergoing ENT ambulatory surgery who received either haloperidol 0.5, 1, 2 mg or saline. Complete response and complete control of PONV were assessed at 2, 6, 24, 48 and 72 h postoperative period. The four groups were comparable with respect to their distribution of the Apfel's risk factors for PONV. Administration of haloperidol 0.5, 1 or 2 mg dose, in combination with dexamethasone 4 mg, was not superior to the administration of dexamethasone alone to increase complete response and complete control of emetic symptoms. **Eduardo Zarate, M.D., Jennifer Guevara, M.D., Jimena Botero, M.D., David Rincon, M.D., M.S.C., Ivan Alarcon, M.D., Ismael Moreno, M.D., Mario Marroquin, M.D.;** Anesthesiology, Clinicas Colsonitas, Bogota, Colombia.

**AM A1242****Defining Laryngoscopy and Intubation Times Using Video Laryngoscopy in Morbid Obese Patients: Visualization, Intubation, and Issues with Oxygenation**

Our findings describe the process of airway management, as it relates to time and patient outcomes beyond the simple confirmation of successful intubations. We found that despite variations in videolaryngoscopy times for visualization, intubation, and confirmation, the majority of patients did not experience desaturations. **Ryan Keenan, B.A., Rebecca L. Cooper, B.A., Mohsin S. Shafi, B.A., Naeem A. Bhatti, M.D., Deborah M. Whelan, M.D., Yvon F. Bryan, M.D.;** Anesthesiology, Wake Forest School of Medicine, Winston-Salem, NC.

**AM A1243****IV Induction Doses in the Elderly Undergoing GI Surgeries Are Not Being Corrected for Age**

The results of this study show that there is a significant age-related decrease in the induction dosing of fentanyl, propofol and midazolam, and this change remains significant for propofol after correcting for ASA class. However, the age-corrected doses for these induction anesthetics tend to be either higher or at the upper limit of recommended dosing for elderly patients, which may explain a larger drop in MAP following induction in elderly vs. younger patients. **Jia Liu, B.S., Joseph Heng, B.S., Shamsuddin Akhtar, M.D.;** Department of Anesthesia, Yale University School of Medicine, New Haven, CT.

**PO08-5 EQUIPMENT, MONITORING AND ENGINEERING TECHNOLOGY: VENTILATION AND SUPRAGLOTIC AIRWAYS****1-3 p.m. | HALL B1-AREA B****FA A1244****Do Activated Charcoal Filters With Pediatric Ventilator Settings Produce Clean Anesthesia Machines?**

When managing patients at risk for Malignant Hyperthermia, one goal is to prevent the exposure to volatile anesthetic. One of the options is to use commercially available activated charcoal filters to remove the residual amount of volatile agent from the anesthesia delivery systems and bring it down to safer levels. We designed this study to find out if these filters are effective at different pediatric ventilator settings and at different rates of fresh gas flows. **Radhamangalam J. Ramamurthi, M.D., F.R.C.A., John G. Brock-Utne, M.D., Ph.D., Christine G. Jette, M.D.;** Stanford University Medical Center, Stanford, CA, Alaska Native Medical Center, Anchorage, AK.

**FA A1245****Comparison of the Usefulness of Air-Qsp® and i-gel® for Airway Management Under General Anesthesia**

We compared the usefulness of Air-Qsp®, which is a non-inflatable cuffed device, with that of i-gel® for airway management under general anesthesia. After induction of general anesthesia, either Air-Qsp or i-gel was randomly inserted. We also observed the distributions of the tip of the bronchofiberscope (BF) through ILAs and plotted the center of the view using a clock face diagram. Our study showed that Air-Qsp® was equally useful as i-gel® in Japanese and that the distribution of the tip of the BF tended to advance toward the center of the glottis when Air-Qsp was used. **Asako Watanabe, M.D., Edanaga Mitsutaka, M.D., Ph.D., Hiromichi Ichinose, M.D., Ph.D., Michiaki Yamakage, M.D.;** Sapporo Medical University School of Medicine, Sapporo, Japan, Hokkaido P.W.F.A.C, Obihiro-Kosei Hospital, Obihiro, Japan.

**FA A1246****Laryngeal Mask Airway Use and Perceived Contraindications in Denmark From 2008 to 2012 - An Observational Cohort Study of 589,431 Patients**

Some contraindication to using a laryngeal mask airway (LMA) are not absolute. We describe LMA use in Denmark in 1) surgical procedures with a duration >3 hours 2) patients with a BMI ≥ 35 and 3) patients where a neuromuscular blocking agent was administered. **Jakob L. Thomsen, M.D., Anders K. Nørskov, M.D., Charlotte V. Rosenstock, M.D., Ph.D.;** Department of Anesthesiology, Copenhagen University Hospital, Nordsjællands Hospital, Hillerød, Denmark.

**FA A1247****A Novel Way to Secure the Laryngeal Mask Airway During Oral Surgery Procedures**

The purpose of the study was to evaluate the use of a new type of device called the LMA-Prop to facilitate third molar extractions using a flexible laryngeal mask airway (LMA) instead of nasal intubation in the hospital setting. The device has provided satisfactory surgical conditions and has not resulted in any airway or postoperative complications to date. **Ravinder K. Devgun, D.O., Christopher Heard, M.D., Timothy Votta, M.D., D.D.S., Ramiro Mireles, M.D., Blake Tucker, D.D.S., Prabhdeep Chahal, B.Sc., D.M.D.;** Department of Pediatric Anesthesiology, Women and Children's Hospital of Buffalo, Buffalo, NY, Department of Community and Pediatric Dentistry, Women and Children's Hospital of Buffalo, Buffalo, NY.



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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#### FA A1248

##### Crossover Assessment of the Ambu Aura Gain, LMA Supreme New Cuff and Intersurgical i-Gel in Fresh Cadavers

The anatomical fit and performance of the new supraglottic airway Ambu Aura Gain was assessed in seven fresh cadavers and compared to that of the Intersurgical i-gel and LMA Supreme. Preclinical results suggest that Aura Gain achieves similar airway seal pressures than the other two devices, and combines both the efficacy of gastric access of the LMA Supreme with the capability to act as an intubation conduit of the i-gel. This features need to be confirmed in clinical trials. Ana M. Lopez, M.D., Ph.D., Xavier Sala-Blanch, M.D., Ricard Valero, M.D., Ph.D., Alberto Prats, M.D., Ph.D.; Anesthesiology, Hospital Clinic de Barcelona, Barcelona, Spain, Hospital Clinic de Barcelona, Barcelona, Spain, Human Anatomy and Embriology, University of Barcelona, Barcelona, Spain.

#### FA A1249

##### Propofol in Exhaled Alveolar Gas and in Plasma Compared With the Bispectral Index During Recovery From Anesthesia

If you compare the propofol concentration in plasma and in expiratory gas with the BIS at the end of anesthesia and at the time of extubation, there is a small step in contrast to the change from unconsciousness to awakening. Astrid E. Berggreen, M.D., Dammon Ziaian, M.Sc., Andreas Hengstenberg, Ph.D., Sebastian Brandt, M.D., Stefan Zimmermann, Ph.D., Martin Grossherr, M.D., Hartmut Gehring, M.D.; Dept. of Anesthesiology and Intensive Care Unit, Institute of Electrical Engineering and Measurement Technology, Leibnitz University Hannover, Hannover, Germany, Research Unit, Draegerwerk AG & Co. KGaA, Luebeck, Germany, Leibnitz University Hannover, Hannover, Germany.

#### FA A1250

##### Propofol in Exhaled Alveolar Gas and in Plasma During Clinical Relevant Steady States in Comparison to the BIS

Measurement of propofol concentration in plasma or in breath gas as well as the BIS detects comparable steady states. The variability of the steady states is higher with the BIS than with other methods. Astrid E. Berggreen, M.D., Dammon Ziaian, M.Sc., Andreas Hengstenberg, Ph.D., Lutz Dümbgen, Ph.D., Stefan Zimmermann, Ph.D., Hartmut Gehring, M.D., Martin Grossherr, M.D.; Dept. of Anesthesiology and Intensive Care Unit, University of Luebeck, Luebeck, Germany, Institute of Electrical Engineering and Measurement Technology, Leibnitz University Hannover, Hannover, Germany, Draegerwerk AG & Co. KGaA, Luebeck, Germany, Institute of Mathematical Statistics and Actuarial Science, University of Bern, Bern, Switzerland.

#### FA A1251

##### The New Mask Is as Effective as the Classic Face Mask in Achieving Maximal Preoxygenation

The current study demonstrates that the NuMask is as effective as the classic Face Mask in achieving maximal preoxygenation with tidal volume breathing. Usharani Nimmagadda, M.D., M. R. Salem, M.D., Eric Hsu, M.D., Nebojsa N. Knezevic, M.D., Ph.D.; Anesthesiology, Advocate Illinois Masonic Medical Center, Chicago, IL.

#### FA A1252

##### Cannot Prevent Micro Aspiration Pneumonia With the Shape of Cuff in the Endtracheal Tube

The aim of this study was to investigate the reason for intubation related microaspiration. The 3D models of cuff at 30 cmH2O and 60 cmH2O was scanned using micro-computed tomography ( $\mu$ CT). Both models contained micro creases on the surface of the cuff. Cuff must have the micro creases between cuff and tracheal wall. Nobutada Morioka, M.D., Ph.D., Mirei Nagai, M.D., Rie Kanamori, M.D., Makoto Ozaki, M.D., Hiroyuki Ishii, Ph.D., Takanobu Yagi, Ph.D., Yasutaka Tobe, Ph.D.; Anesthesiology, Tokyo Women's Medical University, Tokyo, Japan, Center for Advanced Biomedical Science, Waseda University, Tokyo, Japan.

#### FA A1254

##### Evaluation of Single-Handed Mask Ventilation Using a Prototype Mask Ventilator Device

We evaluated a prototype emergency mask ventilator system using a bench simulation. We found that volunteers could ventilate the manikin more safely and consistently with one hand while distracted using the new system than they could when using two hands and concentrating using a conventional bag-valve-mask. Joseph Orr, Ph.D., Mike P. Fogarty, M.S.; Anesthesiology, Bioengineering, University of Utah, Salt Lake City, UT.

#### FA A1255

##### Evaluation of Tidal Volume Measurement Accuracy in During Controlled Ventilation Using a Prototype Mask Ventilator

This study evaluates the tidal volume accuracy of a prototype mask ventilator. The portable mask ventilation system that includes patient monitoring shows the delivered breath volume in response to controlled pressure levels. The system uses a battery powered blower to generate high gas flows under feedback control to maintain set inspiratory and expiratory pressures even when mask leak is high. Mike P. Fogarty, M.S., Joseph A. Orr, Ph.D.; Anesthesiology, Bioengineering, University of Utah, Salt Lake City, UT.

#### FA A1256

##### Raising the Bar for Disposable Supraglottic Airway Devices: "A Practitioner's Assessment"

Modernization of the basic design of the supraglottic airway device (SGAD) to incorporate recent innovations that advance device efficiency and patient safety are needed to establish a new standard for the entry-level SGAD that is capable of consistent and reliable performance regardless of manufacturer. Blas Catalani, M.D., M.P.H., Kevin K. Bradley, M.D., John A. Saus, M.D.; Anesthesiology, LSUHSC, Shreveport, LA.

#### FA A1257

##### Evaluation of Clinician Ability to Identify Individual Breaths in a Difficult Capnogram

Outside of the operating Room, where patients are not paralyzed, capnography waveforms are difficult to interpret. We observed that clinicians have a very difficult time with one of the most basic tasks of understanding the meaning of a CO2 waveform: identifying individual breaths. Lara Brewer, Ph.D., Preston Erickson, B.S., Joseph A. Orr, Ph.D.; Anesthesiology, University of Utah Health Sciences Center, Salt Lake City, UT.

#### FA A1258

##### Clinical Evaluation of BaskaMaskR. A New Generation Extraglottic Airway Device for Positive Pressure Ventilation During General Anesthesia

A new extraglottic airway device, with a non-inflatable self sealing cuff, and a sump cavity with dual aspiration channels, is available for anesthesiologists. An observational study was conducted to evaluate the performance of Baska Mask airway in 101 patients undergoing elective surgical procedures with general anesthesia and positive pressure ventilation (PPV). Baska mask is a safe and easy to insert single use airway device. The absence of an inflatable cuff, simplifies insertion, reduces side effects and provides greater airway sealing pressures than those obtained with other extraglottic devices currently available. Juan M. Zaballos, M.D., Ph.D., Unai Salinas, M.D.; Anesthesiology and Perioperative Medicine, Policlinica Guipuzcoa, San Sebastian (Guipuzcoa), Spain.



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**FA A1259****A Hypoxic Inspired Gas Mixture Is Readily Enabled by 2 L/min Room Air Fresh Gas Flow**

It is recommended to limit the FIO<sub>2</sub> during cases where an airway fire is possible. To conserve potent inhaled agent it is common to use a 2 L/min or less fresh gas flow (FGF). We tested if 2 L/min air is sufficient to prevent delivery of a hypoxic (<20%) gas mixture. An unintended consequence at lower FGFs is partial rebreathing of exhaled oxygen which necessarily becomes less than 21% when the inspired is 21% because of oxygen uptake. **Drew B. Gonsalves, M.E., Aj Tucker, B.S., Samsun Lampotang, Ph.D., Nikolaus Gravenstein, M.D.;** Anesthesiology, University of Florida College of Medicine, Gainesville, FL.

**PO11-1 HISTORY AND EDUCATION:CHALLENGES: PRESENT AND FUTURE**

1-3 p.m. | Hall B1-Area C

**PI A1260****Flipped Classroom Preferred to Traditional Classroom in Resident Education**

This multi-institutional study compared a flipped classroom with traditional lecture based didactics. Anesthesiology residents preparing for the ABA BASIC exam demonstrated improved knowledge acquisition for both the traditional and flipped classroom and both teachers and learners preferred the flipped classroom. **Susan M. Martinelli, M.D., Amy N. DiLorenzo, M.A., David C. Mayer, M.D., Edwin Bowe, M.D., Harendra Arora, M.B.,B.S., David A. Zvara, M.D., Randall M. Schell, M.D., M.Ed.;** Anesthesiology, University of North Carolina Hospital, Chapel Hill, NC, Anesthesiology, University of Kentucky, Lexington, KY.

**PI A1261****Cognitive and Emotional Disruptions in Anesthesiologists on the First Day After Call**

It is no secret that anesthesiologists battle sleep deprivation and fatigue while on call. However, there is evidence that this pattern continues into the immediate post-call period. We are also surprised at the prevalence of acute mood disturbance during this period. We speculate that these episodes of mood changes may eventually lead to career dissatisfaction, burnout, early retirement and mood disorders among anesthesiologists. **Jia Y. Huang, M.D., Kristina Natan, M.D., Anna Clebone, M.D.;** Department of Anesthesiology, New York University, New York, NY, Department of Anesthesiology, Case Western Reserve University, Cleveland, OH.

**PI A1262****The Effect of Politics of Lethal Injection on Availability of Anesthetic Drugs**

In an era of intermittent anesthetic drug shortages for production reasons, the politics of lethal injection have eliminated from our formularies one anesthetic drug, thiopental, and threaten to eliminate two others, propofol and pancuronium. **Raymond C. Roy, M.D., Ph.D.;** Anesthesiology, Wake Forest School of Medicine, Winston-Salem, NC.

**PI A1263****Anesthesiology in Palliative and End-of-Life Care**

Anesthesiologists are a rare breed in the subspecialty of palliative care, but that is an unfortunate reality given our training and skillsets. Patients with advanced illness are often in need of complicated pain management, and occasionally sedation. And their goals of care can include needing to be extubated compassionately, and desiring to donate viable organs. Who better to participate in these areas of palliative care than experts in pharmacology, airway management, and the perioperative environment? **Ryan Budwany, M.P.H., Kristin D. Forner, M.D.;** Mercer University School of Medicine, Macon, GA, University of California at San Diego, San Diego, CA.

**PI A1264****iTunes U® - Implementation of a New Learning Technology Into Resident Education**

We introduce a novel use of iTunes U®, for the dissemination of current and relevant resident education materials. We describe the development of a readings database composed of current journal articles relevant to the practice of anesthesia. Construction of such a course is straightforward; making this course management tool readily accessible and of great utility to medical educators. **Dean Connors, M.D., Ph.D., Ravi S. Tripathi, M.D., Cory Tressler, M.A., Kenneth R. Moran, M.D., Richard A. Bryant, M.D., Bryan P. Mahoney, M.D., Antolin S. Flores, M.D.;** Department of Anesthesiology, The Ohio State University Wexner Medical Center, The Ohio State University Office of Distance Learning, The Ohio State University, Columbus, OH.

**PI A1265****A National Survey of Academic Anesthesiology Chairs on Wellness**

Wellness and burnout are increasingly recognized as major issues in anesthesiology and many departments are opting to institute wellness initiatives to address these concerns. To our knowledge, no data currently exists regarding the nature of these initiatives. We have conducted an on-line survey of academic anesthesiology chairs in the US to assess the prevalence of wellness concerns and initiatives currently in place and attained a 53% response rate. This survey is the first step in the creation of a searchable database of anesthesiology department wellness initiatives. **Amy E. Vinson, M.D., Gail I. Randel, M.D., Kathy D. Schlecht, D.O.;** Department of Anesthesiology, Perioperative and Pain Medicine, Boston Children's Hospital, a Harvard Teaching Hospital, Boston, MA, Northwestern University, Chicago, IL, Anesthesiology, Oakland University William Beaumont School of Medicine, Bloomfield Hills, MI.

**PI A1266****Grit and Residency Success: A Pilot Study**

We investigated whether resident Grit scores are positively correlated with standardized test scores and faculty evaluations of resident clinical performance. Previously graduated anesthesiology residents were recruited, and Grit scores and academic data were collected. Higher Grit scores correlated with average final-year faculty evaluation of resident performance in the 6 ACGME Core Competencies but did not correlate with USMLE or Anesthesia Knowledge Test scores. **Ryan J. Fink, M.D., Catherine M. Kuhn, M.D., Jeffrey M. Taekman, M.D.;** Duke University Medical Center, Durham, NC.

**PI A1267****Context-Enhanced Technical Training: The Intended Benefits versus the Risks Incurred**

Under conditions of time-pressure, people may base decisions on perceptions of risks and benefits, rather than analytic processing. The chief finding of the study was the suppressive effect of this intervention to initiation of cricothyroidotomy. These results suggest that decision making in residents is highly affected by benefit/risk perception. Educators need to be aware of the strong risk perception judgments that can be induced during training for critical events. **Ljuba Stojiljkovic, M.D., Ph.D., Christine Park, M.D., Biljana Milicic, M.D., Ph.D.;** Department of Anesthesiology, Center for Education in Medicine, Northwestern University, Feinberg School of Medicine, Chicago, IL, Department of Statistics, School of Dentistry, University of Belgrade, Belgrade, Serbia.

**PI A1268****Multisource Feedback in Professionalism for Anesthesia Residents**

We developed and validated a self-assessment questionnaire as part of a multi-source evaluation for professionalism in anesthesia residents. Thereafter, we used our validated questionnaire to evaluate the extent to which weekly feedback from department chairs improves professionalism. While we did see evidence of improvement in anesthesiology resident's self-assessment. There was no benefit as assessed by patient families, faculty, or coworkers. **Nelson R. Riveros-Perez, M.D., Stephen Kimatian, M.D., Pilar Castro, M.D., Hooman Honar, M.D., Vipul J. Dhumak, M.D., Edward J. Mascha, Ph.D., Daniel Sessler, M.D.;** Pediatric Anesthesia, Outcomes Research, General Anesthesia, Cleveland Clinic, Cleveland, OH.

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### PI A1269

#### The State of Teaching Anesthesia in Medical Schools Today

Over 60% of US anesthesia departments participate in student teaching. This teaching is primarily in the clinical years and is OR based, though simulation of some sort is broadly used. Topics include pharmacology, physiology and procedures. Teachers are rarely trained and rarely remunerated. There is great opportunity for more involvement in the training of America's future doctors. **Saundra E. Curry, M.D.**; Anesthesiology, Columbia University, New York, NY.

### PI A1270

#### Gray Area in Grey's Anatomy: Interactions Portraying the Anesthesiologist and Realism of the Operating Room

The anesthesiologist in Grey's Anatomy was misrepresented as inessential in the OR scenes during the surgical procedures. The overall emphasis on the role of the surgeon results in an unrealistic depiction of the relationship between surgeons and anesthesiologists and overall realism of the OR. **Rebecca L. Cooper, B.S., Mohsin S. Shafi, B.A., Ryan A. Keenan, B.A., Yvon F. Bryan, M.D.**; Anesthesiology, Wake Forest School of Medicine, Winston-Salem, NC.

### PI A1271

#### The Portrayal of Anesthesiologists in Feature Films: Is It Real or a Raw Deal on Reel?

Anesthesiologists in feature films were overshadowed by surgeons and had little input during decisions in the OR. During crises, the focus was also placed on surgeons and the scenes lacked realism regarding the anesthesiologist's role. **Mohsin Shafi, B.A., Yvon F. Bryan, M.D.**; Department of Anesthesiology, Wake Forest School of Medicine, Winston-Salem, NC, Anesthesiology, Wake Forest School of Medicine, Winston-Salem, NC.

### PI A1272

#### Anesthesiologists Attitudes Towards Donation After Cardiac Death

As perioperative physicians, anesthesiologists may be asked to participate in organ donation after cardiac death. We designed a self-administered internet survey to ascertain knowledge, attitudes, and practices among anesthesiologists with regards to DCD, as well as demographic, training, and practice information. **Grant Lynde, M.D., Jason Lesandrini, B.A., Caitlin D. Sutton, M.D.**; Department of Anesthesiology, Emory University, Grady Memorial Hospital, Atlanta, GA.

### PI A1273

#### Mentorship in Anesthesia: What Medical Students Do and Don't Want

First year medical students enrolled in an anesthesiology interest group applied nominal group technique to determine preferences mentorship provided by an anesthesiologist. Ten items were identified. **Kathy D. Schlecht, D.O.**; Anesthesiology, Oakland University William Beaumont School of Medicine, Rochester, MI.

### PI A1274

#### Mobile Platform to Evaluate Individual Performance Skills

We developed metrics for non-technical and technical skills assessment of expert performance. We tested the metrics in 10 residents and evaluated a mobile skills assessment platform with use of a head camera. Results show the metrics discriminated residents from experts with good inter-rater reliability. **Colin F. MacKenzie, M.B.Ch.B., F.C.C.M., Evan Garofolo, Ph.D., Valerie Shalin, Ph.D., Kristy Pugh, M.S., Mark Fitzgerald, M.D., Joost Funke Kupper, M.S., George Hagegeorge, B.S., Peter FM Hu, Ph.D., Mary J. Njoku, M.D., Stacy Shackelford, M.D.**; STAR, University of Maryland School of Medicine, Baltimore, MD, Wright State, Cleveland, OH, The Alfred, Swinburne University, Melbourne, Australia.

### PI A1275

#### An Increase in CA-1 Intraoperative Confidence: An Observational Study on the Impact of a Medication Application

This is a single center observational study surveying CA-1 residents on their confidence before and after the introduction of a smart phone application that provides them point of care easily accessible information on commonly administered anesthesia medications. **Alexis E. Appelstein, D.O., Madelyn Kahana, M.D.**; Anesthesiology, Montefiore Medical Center, Bronx, NY.

### PO12-2 OBSTETRIC ANESTHESIA: LABOR ANALGESIA, PATIENT SAFETY AND MISCELLANEOUS

1-3 p.m. | Hall B1-Area D

### OB A1276

#### Use of Focused Cardiac Ultrasound to Assess Hemodynamic Changes Associated With CSE Labor Analgesia

The aim of this pilot study was to determine the feasibility of using POC, focused cardiac ultrasound in laboring patients to evaluate left ventricular and IVC volume status before and after CSE labor analgesia. We concluded that it is feasible to obtain PSSA, PSLA and IVC images with reproducible measurements in laboring patients. No significant changes were observed in LVEDD or IVCD over time despite decreases in BP post-CSE. This methodology may be used to assist clinical decision-making in laboring parturients. **Elizabeth A. Duncan, M.D., Laurie A. Chalifoux, M.D., Christopher R. Cambic, M.D., Robert J. McCarthy, Ph.D., John T. Sullivan, M.D., M.B.A.,** ; Anesthesiology, Northwestern Feinberg School of Medicine, Northwestern Memorial Hospital Anesthesiology, Chicago, IL.

### OB A1277

#### Does Ultrasound-Guided CSE Technique Improve Midline Placement of Epidural Needle With Positive CSF Flow Through the Spinal Needle, Thereby Facilitating Correct Placement of the Catheter Compared to Catheter Placement Using Palpation of Anatomical Landmark

This prospective randomized study has 3 objectives. Evaluate if the use of US allows easier placement of epidural needle, decreases number of attempts in identifying midline, epidural space, angle adjustments of the epidural needle. 48 patients randomized in 2 groups : US/no US. Same procedure in both groups. After 2 hours, patient's analgesia levels, adequacy of the block and need to replace the CSE are assessed. We've enrolled 50% of patients and no significant difference shown yet. **Barbara S. Orlando, M.D., Migdalia Saloum, M.D., Deborah J. Stein, M.D., Jonathan Epstein, M.D., Julio Marengo, M.D., Dimitri Kassapidis, D.O., Alan C. Santos, M.D., M.P.H.;** Anesthesiology, Mount-Sinai Roosevelt Hospital, St Luke's Roosevelt Hospital Center, New York, NY.

### OB A1278

#### The Role of Innate Immune Factor fB in the Pathogenesis of Preeclampsia

Minority patients, particular African American patients with preeclampsia, have increased levels of activated complement factor B which may contribute to the pathogenesis of pre-eclampsia. **Ivan A. Velickovic, M.D., Mudar Dalloul, M.D., Karen Wong, B.S., Olufunke Bakare, B.S., Franz Schweis, B.S., Maya Garala, M.D., Pharm.D, Amit Alam, M.D., Giorgio Medranda, B.S., Roulhac D. Toledano, M.D., Ph.D., Ming Zhang, M.D., Ph.D.;** Anesthesiology, Obstetrics & Gynecology, SUNY Downstate Medical Center, Anesthesiology, Lutheran Medical Center, Brooklyn, NY.

### OB A1279

#### Pharmacokinetics and Placental Transfer of Magnesium Sulfate Administered to Pregnant Women

This is a single-center prospective study to determine the pharmacokinetics and placental transfer of magnesium sulfate administered to pregnant women. The pharmacokinetics of magnesium sulfate was described by a two-compartment model with first-order elimination. Magnesium sulfate appears to readily cross the placenta on preliminary analysis. **Felice Su, M.D., Kathleen Brookfield, M.D., Ph.D., M.P.H., David R. Drover, M.D., Maria Adelus, B.A., Brendan Carvalho, M.D.;** Stanford University School of Medicine, Stanford, CA.



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**OB A1280****Validation of Patient Education Video on Labor Analgesia**

Patients on labor and delivery who required induction were shown an eight minute video that explains the risks, benefits, and procedure of epidural placement. After viewing the video, the patients were given a questionnaire to assess their satisfaction with the material. Patient responses to the questionnaire indicate that this video is valid and may reduce anxiety. The video should be used in the future for patient education and QI research. **Melissa G. Potisek, M.D., Kimberley Nichols, M.D.; Anesthesiology, UNC Chapel Hill, Chapel Hill, NC.**

**OB A1281****Determination of the ED50 of Hydromorphone In Laboring Patients**

Our primary objective is to determine the dose of intrathecal hydromorphone that will provide adequate pain relief to fifty percent of laboring women. A CSE was performed in 20 women. VAS scores were obtained during contraction peaks every 5 minutes for thirty minutes. If the patient stated they experienced "3/10" pain or better, the dose was considered to be successful. A total of 20 patients were enrolled. The average minimum dose administered in patients reporting adequate pain control was 12.7 mcg of hydromorphone. The average time of onset was 23.75 minutes. The average dose was 12.7 mcg is suggestive that the doses required to obtain sufficient analgesia are much lower than may be used in current clinical practice. Because of its prolonged onset hydromorphone is not likely to be a first-line choice as an adjunct in a laboring patient. **Grant Lynde, M.D.; Department of Anesthesiology, Emory University, Atlanta, GA.**

**OB A1282****The Use of Occlusive Balloons in the Management of Abnormal Placentation**

The clinical utility of occlusive intravascular balloons is discretionary in abnormal placentation. Despite the lack of significant differences in EBL and blood product utilization, the benefit of arterial balloon occlusion outweighs the risks. **Enrico M. Camporesi, M.D., Emily Alvey, B.S., Hesham R. Omar, M.D., Mary Cain, M.D., Yiu-Hei Ching, M.D., Mitch Hoffman, M.D., Devanand Mangar, M.D.; Florida Gulf-to-Bay Anesthesiology Associates LLC, University of South Florida, Tampa, FL, Mercy Medical Center, Clinton, IA.**

**OB A1283****Effect of Advanced Maternal Age on Epidural Consumption during Labor**

Advanced maternal age (AMA,  $\geq 35$  y.o.) has tripled to 14.3% of pregnancies in the United States. In the non-obstetric population, advanced age leads to lower epidural and narcotic requirements. We examined the effect of AMA on epidural consumption during labor. Our research is the first large study (N=571) of the subject, although no significant differences were found between the two groups. **Steven Ropers, M.D., Quy Tran, M.D., Andrew W. Geller, M.D., Mark I. Zakowski, M.D.; Anesthesiology, Section of Obstetric Anesthesiology, Cedars-Sinai Medical Center, Los Angeles, CA.**

**OB A1284****Resident Awareness of the Parturient with Obstructive Sleep Apnea (RAPOSA)**

We designed an anonymous online survey to ascertain anesthesiology resident awareness of OSA in the parturient population with a focus on pregnancy specific risk factors. Anesthesiology residents were able to transcribe the general population signs of OSA (i.e. obesity and a difficult airway examination) to the pregnant population. However the relationship of OSA with pre-eclampsia, gestational diabetes, gestational hypertension and fetal growth restriction was not well appreciated by residents in training. We must train our residents to question women suspected of having OSA in pregnancy and be aware of the high risk co-morbidities associated with this condition. **Evan M. Sutton, M.D., Amy M. Murray, M.D., Michael Levy, M.S., Alexandra Bullough, M.B.,Ch.B., M.D., F.R.C.A.; Anesthesiology, Loyola University Medical Center, Stritch School of Medicine, Loyola University Medical Center, Chicago, IL.**

**OB A1285****Effect of Obesity on Epidural Ropivacaine Consumption During Labor**

Obesity (BMI  $>30$ ) is becoming more and more prevalent in the United States. In the non-obstetric population, there is conflicting data on how obesity affects epidural consumption. We examined the effect of obesity on epidural consumption during labor. Our research is the first large study of the subject, although no significant differences were found between the two groups. **Quy Tran, M.D., Steven Ropers, M.D., Andrew W. Geller, M.D., Mark I. Zakowski, M.D.; Anesthesiology, Section of Obstetric Anesthesiology, Cedars-Sinai Medical Center, Los Angeles, CA.**

**OB A1286****Low Dose Epidural vs. Combined Spinal Epidural Analgesia in Labor: A Randomized Controlled Trial**

Combined spinal epidural analgesia, with the spinal component using only low dose heavy bupivacaine without opioid leads to significantly less drug consumption, faster onset of analgesia and sensory block than low-dose epidural analgesia in laboring parturients while having similar efficacy and safety profile. **Sukanya Mitra, M.D., Jaya Arora, M.D., Vanita Ahuja, M.D., Navneet Takkar, M.D.; Anaesthesia & Intensive Care, Obstetrics & Gynaecology, Government Medical College & Hospital, Chandigarh, India.**

**OB A1287****Effect of Sitting Position on an Equal-dose Spinalanaesthetic for Cesarean Section and Postpartum Tubal Ligation: A Prospective Study**

A prospective trial investigating the hypothesis that an equal spinal anaesthetic dose administered in the sitting position to patients undergoing postpartum tubal ligation (PPTL) and cesarean section (CS) would yield similar sensory block characteristics and analgesic efficacy. Our conclusions supported this hypothesis although the PPTL group exhibited faster block regression characteristics and less hypotension. **Sarah Kwok, MBBS, FRCA, Wendy H.I. Teoh, MBBS, FANZCA, Farida Ithnin, MBBCh, MMed; Department of Women's Anaesthesia, KK Women's and Children's Hospital, Singapore, Singapore.**

**OB A1288****Analgesic and Clinical Outcomes of a New Uniport Versus Multiport B. Braun Flexible Catheter for Labor Epidural Analgesia**

A prospective, randomized, controlled, partially double blind comparison of the analgesic and clinical outcomes of a relatively new uniport versus multiport flexible catheter when used to provide labor epidural analgesia. **John Philip, M.D., Shiv Sharma, M.D.; Anesthesiology, Baylor All Saints Medical Center, Fort Worth, TX, Anesthesiology, Baylor Regional Medical Center, Houston, TX.**

**OB A1289****Considerations for the Parturient of Short Stature a Retrospective Review**

Short stature in a female is defined as a height of 148cm or less. The term dwarfism and short stature are often used interchangeably, however dwarfism is a subset of short stature. Literature regarding dosing of neuraxial anesthesia is sparse in patients of short stature and limited to case reports with no well defined guidelines. A retrospective review was conducted to investigate neuraxial anesthesia in parturients of short stature undergoing cesarean delivery: specifically neuraxial technique, local anesthetic dosage, adequacy of sensory blockade, and associated complications. **Elizabeth M. Lange, M.D., Heather C. Nixon, M.D., Paloma Toledo, M.D., M.P.H., Jillian Stariha, B.S.; Anesthesia, University Illinois Chicago, Northwestern University Feinberg School of Medicine, Chicago, IL.**

**OB A1290****Building Quality Improvement Into Your Time-Out**

A multidisciplinary approach was used in the creation and implementation of a quality improvement driven time out board specific to cesarean delivery on our obstetric floor. This time out board incorporated unit specific quality improvement data. Time out compliance, surgical site infections and sentinel events (none) improved with the implementation of the time out board. Procedure specific time out boards are easy to design and can be used to target areas for unit specific performance improvement. **Lindsey K. Whalen, M.D., Heather C. Nixon, M.D.; Anesthesiology, University of Illinois at Chicago, Chicago, IL.**



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### OB A1291

#### The Effects of Large Volume Epidural Blood Patches on the Placement and Efficacy of Subsequent Epidural in the Parturient

The characteristics of labor epidural after large-volume epidural blood patch were studied in this study. Jie Zhou, M.D., M.S., M.B.A., Rodney A. Gabriel, M.D., Beverly P. Chang, M.D.; Brigham & Womens Hospital, Boston, MA.

### PO16-4 REGIONAL ANESTHESIA AND ACUTE PAIN

1-3 p.m. | Hall B1-Area E



### RA A1292

#### Subcutaneous Ketamine for Postoperative Pain Management in Africa

In the developed world, adequate pain control is a normal part of surgical care, however, this is not the case in sub-Saharan Africa. Ketamine's role in postoperative analgesia is documented, yet its use in developing nations has not been well studied. The purpose of our study is to determine a subcutaneous (SC) dose of ketamine for use in a future randomized control trial (RCT) that is both efficacious in reducing postoperative pain scores, and does not result in significant side effects. Jon Tuchscherer, M.D., William McKay, M.D., F.R.C.P.C., Theogene Twagirumugabe, M.D.; Anesthesiology, University of Saskatchewan, Saskatoon, SK, Canada, Anesthesiology, National University of Rwanda, Kigali, Rwanda.

### RA A1293

#### Epidural Dexamethasone Decreased Tissue Injury Induced Hyperalgesia and cPLA2 Expression in Laminae I-II of the Spinal Cord in a Rat Formalin Test

The aim of this study was to investigate the effect of epidural dexamethasone on analgesia and cytosolic phospholipase A2 (cPLA2) expression in the spinal cord in a rat formalin test. Jae Jin Lee, M.D., Jae Hwan Kim, Ph.D., Young Chul Park, Ph.D., Kim Woon Young, Ph.D., Yoon Suk Lee, Ph.D., Too Jae Min, Ph.D.; Anesthesia and Pain Medicine, Korea University Ansan Hospital, Ansan-si, Korea, Republic of.

### RA A1294

#### Is Effective Postoperative Pain Management Maintained After the Patient Leaves the Hospital?

The continued decrease in pain scores when the patient leaves the hospital after surgery suggests that the pain medication provided to the patient during the first 3 weeks after discharge is adequate to maintain effective pain management. Asokumar Buvanendran, M.D., Jacqueline Fiala, M.D., Karishma Patel, M.S., Alexandra D. Golden, M.S., Mario Moric, M.S., Jeffrey S. Kroin, Ph.D.; Anesthesiology, Rush University Medical Center, Chicago, IL.

### RA A1295

#### Remifentanyl With Either Abrupt or Gradual Cessation of Infusion Was Associated With Postoperative Hyperalgesia Whereas Fentanyl Was Not

An observational study in 47 spinal surgery patients assessed post operative static and dynamic hyperalgesia using von Frey filaments, comparing three analgesic protocols. Hyperalgesia was present when Remifentanyl was used, either when it was suspended abruptly before awakening or gradually over 60 minutes in the recovery Room. Fentanyl was never associated with hyperalgesia. Pedro P. Amorim, M.D., Susana T. Alves, M.D., Tiago B. Mendes, Student, Ana M. Duarte, Student, Ana S. Brás, Student, Ana B. Carvalho, Student, Constança P. Carvalho, Student, Mariana L. Carvalho, Student, Joana P. Dias, Student; Anestesiologia, Hospital Santo Antonio, Porto, Portugal, Instituto Ciências Biomédicas Abel Salazar, Porto, Portugal.

### RA A1296

#### Efficacy of Continuous Wound Infiltration With 0.2% Ropivacaine for Postoperative Pain Management After Microtia Reconstructive Surgery Compared With a Single Intercostal Nerve Block With 0.75% Ropivacaine

The purpose of this study was to determine the efficacy of continuous wound infiltration with 0.2% ropivacaine for the postoperative pain management in the region from which costal cartilage was taken after microtia reconstructive surgery compared with a single intercostalnerve block with 0.75% ropivacaine. Continuous wound infiltration of ropivacaine reduced postoperative pain at rest and consumption of a supplemental analgesic but did not enable early ambulation. Blood concentrations of ropivacaine were within the safety range throughout the postoperative period. Yukitoshi Niiyama, M.D., Ph.D., Michiaki Yamakage, M.D., Ph.D.; Department of Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan.

### RA A1297

#### Intra- and Postoperative Continuous Infusion of Small Dose Ketamine Decreases Morphine Requirement After Adolescent Idiopathic Scoliosis Surgery

We prospectively investigated whether intra-, and postoperative ketamine infusion would decrease postoperative morphine requirement after adolescent scoliosis surgery. Patients were randomly allocated to two groups either receiving intra- and postoperative ketamine infusion (Group K, n=17) or receiving an equal volume of saline (Group N, n=18). All patients were given propofol/remifentanyl general anesthesia during surgery and intravenous morphine using patient-controlled analgesia device after surgery. Cumulative morphine consumption for 48h after surgery was significantly higher in Group N than in Group K. Rie Minoshima, M.D., Shizuko Kosugi, M.D., Naho Ihara, M.D., Daisuke Nishimura, M.D., Shizuka Mnamishima, M.D., Hiroshi Morisaki, M.D., Ph.D.; Department of Anesthesiology, Keio University School of Medicine, Tokyo, Japan.

### RA A1298

#### Transversus Abdominus Plane Block Performed with EXPAREL for Post Cesarean Section Analgesia: A Case Report

A case report illustrating the use and efficacy of using EXPAREL for post-cesarean section TAP blocks. Angela S. Grab, M.D., Jaideep H. Mehta, M.D.; University of TX at Houston, Houston, TX, University of Texas Health and Science Center, Houston, TX.



### RA A1299

#### The Spread of Colored Dye Injected Inside the Paraneural Sheath of the Sciatic Nerve: A Cadaver Study

The existence of a paraneural sheath surrounding the sciatic nerve in the popliteal fossa has been recently identified, and administration of local anesthetic inside the sheath is known to produce a rapid onset of anesthetic effect. The present study compared the differences in spread of colored dye injected inside and outside the paraneural sheath. The mean±SD length of the nerve surrounded by dye was 242±30.3 mm in the inside-sheath legs and 191±29.2 mm in the outside-sheath legs, demonstrating significantly greater longitudinal spread of the colored dye in the inside-sheath legs (p<0.05). Keiya Takahashi, M.D., Tomoki Sasakawa, M.D., Makoto Sato, M.D., Yoshiko Onodera, M.D., Takayuki Kunisawa, M.D., Ph.D., Osamu Takahata, M.D., Ph.D., Hiroshi Iwasaki, M.D., Ph.D.; Asahikawa Medical College, Asahikawa, Japan.

### RA A1300

#### Sublingual Sufentanil Microtablets for Acute Pain Following Bunionectomy: Effect of Gender on Analgesic Response

A sublingual sufentanil microtablet 30 mcg, dosed no more than hourly, has been demonstrated to be effective in both men and women following outpatient orthopedic surgery. This novel drug formulation has promise as a noninvasive, rapid onset analgesic for moderate-to-severe acute pain conditions. Pamela P. Palmer, M.D., Ph.D., Neil K. Singla, M.D., Derek D. Muse, M.D., Mark A. Evashenk, B.S.; AcclRx Pharmaceuticals, Redwood City, CA, Lotus Clinical Research, Pasadena, CA, Jean Brown Research, Salt Lake City, UT.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain

**RA A1301****Perineural Tramadol Injection as an Adjunct in Regional Anesthesia for Upper Extremity Surgery: Meta-analysis**

This abstract describes a review and meta-analysis of randomized controlled trials assessing the use of tramadol as an adjunct in brachial plexus blockade. Only trials directly comparing the use of local anesthetic alone to local anesthetic plus tramadol were included. Significant prolongation of the duration of analgesia (defined as the time to first post-operative analgesic requirement) was noted with the addition of tramadol. **Christian G. Samelson, M.D., John A. Saus, M.D., Craig S. Hamilton, M.D.;** Anesthesiology, LSU Health, Shreveport, LA.

**RA A1302****Epidural Anesthesia Versus Continuous Peripheral Nerve Blocks for Pain Management Following Lower Extremity Long Bone Osteotomies in Pediatric Patients: A Cost Analysis**

This study demonstrates continual nerve catheters result in significant decrease in length of stay, and overall cost to the patient when compared to epidurals in long bone osteotomies. **Stephen P. Spanos, M.D., Jeremy M. Harnden, M.D., Jeremy Onnen, M.D., Jonathan Knott, B.S., M.S., Stephanie Holmes, M.D., Peter Stevens, M.D.;** Pediatric Anesthesiologists, Inc, Salt Lake City, UT, University of Utah, Salt Lake City, UT.

**RA A1303****Adverse Events Before and After the Implementation of a Multimodal Peri-Operative Pain Control Regimen for Total Knee Arthroplasty: A Retrospective Study**

Implementation of a peri-operative pain control protocol combining continuous adductor canal block with a multimodal analgesic regimen for total knee arthroplasty results in fewer parenteral opioid related side effects. **Mohamed Nour, M.D., Richard Applegate, II, M.D., Derek Herra, M.D., Gunjan Kumar, M.D., Jacob Uhler, M.D.;** Department of Anesthesiology, Loma Linda University School of Medicine, Loma Linda, CA.

**RA A1304****Perineural Dexamethasone to Improve Postoperative Analgesia with Peripheral Nerve Blocks: A Meta-Analysis of Randomized Controlled Trials**

Meta-analysis of randomized controlled trials of perineural dexamethasone to improve postoperative analgesia with peripheral nerve blocks. Perineural dexamethasone improves postoperative pain outcomes when given as an adjunct to brachial plexus blocks. There were no reports of persistent nerve injury attributed to use of perineural dexamethasone. **Meghan E. Rodes, M.D., Gildasio S. De Oliveira, M.D., M.Sc., Robert J. McCarthy, Ph.D.;** Northwestern University, Chicago, IL.

**RA A1305****Association Between Baseline and Intraoperative Factors and Sciatic Nerve Block After Total Knee Arthroplasty**

The primary aim of the study is to develop a prediction tool which measures the likelihood of requiring a postoperative sciatic nerve block among patients undergoing total knee arthroplasty. We found that a higher BMI was associated with decreased odds of receiving a postoperative sciatic nerve block. **Thilak Sreenivasalu, M.D., Pankaj Jain, M.B., B.S., Rovnat Babazade, M.D., Amanda Naylor, B.A., Matthew Hutcherson, B.S., Jing You, M.S., Hesham Elsharkawy, M.D., Alparslan Turan, M.D.;** Anesthesiology, Outcomes Research, Cleveland Clinic Foundation, Cleveland, OH.

**RA A1306****Identification of the Location of the Peripheral Nerve Catheters Using M-Mode - A Novel Technique**

Applying M-Mode ultrasonography can help verify the positioning of peripheral nerve block catheter. The changes in M-Mode ultrasound images distal to the location of the peripheral nerve catheter during the injection of local anesthetic can be an additional tool that helps to verify the location of the peripheral nerve catheter. **Vafi Salmasi, M.D., Hesham Elsharkawy, M.D., Alparslan Turan, M.D.;** Anesthesiology, Anesthesiology Institute, Outcomes Research Department, Cleveland Clinic, Cleveland, OH.

**RA A1307****Acute Changes in Pain Scores, Opioid Requirements, and Outcome Measurements in Surgical Patients after Perioperative Intravenous Acetaminophen**

A retrospective chart review study all abdominal and spine surgery patients who received IV acetaminophen perioperatively at Cedars-Sinai Medical Center. In patients who had at least 3 hours after surgery before receiving IVA there was a significant decrease in narcotic use from the 3-6 hours before compared to the 6 hours after administration. The mean difference was 19.9mg of oral morphine equivalents (P= 0.033, 95% CI 1.86 to 37.98). The mean pain score reduction in the abdominal surgery group from immediately before to immediately after administration of IVA was 0.50 (P=0.0285, CI=0.06 to 0.94). If the two surgical groups were combined the mean pain score reduction was 0.76 (P=0.0195, 95% CI=0.14 to 1.39). **Joseph Stuart, M.D., Charles Louy, M.D., Ph.D., Roya Yumul, M.D., Ph.D.;** Cedars Sinai Medical Center, Los Angeles, CA.



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## ORAL PRESENTATIONS

### OR03-1 CHRONIC AND CANCER PAIN

8-9:30 a.m. | Room 243

#### PN A2000

##### Prevention and Reversal of Morphine-Induced Tolerance by Novel Muscarinic Agonist in Rats with Neuropathic Pain

Morphine is an opioid that is very effective in the treatment of chronic pain; however, its prolonged use may be followed by tolerance and hyperalgesia. Molecular docking analysis showed that LASSBio-981 is a ligand of M2 muscarinic receptor. Co-administration of oral LASSBio-981 changed the course of morphine-induced tolerance and improved its analgesic activity reducing hyperalgesia and allodynia. **Roberto T. Sudo, M.D., Ph.D., Carlos E. Monteiro, Ph.D., Margarete M. Trachez, M.D., Ph.D., Nailton M. Nascimento-Junior, Ph.D., Roberta Tesch, Ph.D., Carlos A. Fraga, Ph.D., Eliezer J. Barreiro, Ph.D., Gisele Zapata-Sudo, M.D., Ph.D.,** Pharmacology, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil.

#### PN A2001

##### The Impact of Extended Perioperative Cyclooxygenase-2 Inhibition (COX-2i) on Central Sensitization after Breast Cancer Surgery

Chronic pain is common after surgery, where nociceptive input from inflammation and peripheral nerve injury induce central sensitization and maintain pain. We investigated whether perioperative COX-2i reduces sensitization after breast cancer surgery under paravertebral nerve block using quantitative sensory testing. Results suggested limited impact of COX-2i on sensitization and pain after breast cancer surgery under nerve block, which suggests that blocking nociceptive input from nerve damage may be key in preventing sensitization. We found that perioperative pain processing testing may be able to identify patients at risk of developing chronic pain after surgery. **Noud van Helmond, B.S., Gertruda Filippini-de Moor, M.D., Monique Steegers, M.D., Ph.D., Kris Vissers, M.D., Ph.D., Oliver Wilder-Smith, M.D., Ph.D.,** Anesthesiology Pain and Palliative Care Medicine, Radboud University Nijmegen Medical Centre, Nijmegen, Netherlands.

#### PN A2002

##### Effects of Mirror Therapy on the Primary Motor Cortex in the Patients with Phantom Limb Pain: Analysis Using fNIRS

We evaluated the effect of mirror therapy on function of primary motor cortex of patient with phantom limb pain. Three patients with single limb amputation were enrolled in this study. We used the fNIRS for analyzing the changes in oxygenated hemoglobin (oxyHb) of primary motor cortex during imaginary movement of the affected limb (Phantom limb) before and after mirror therapy. Imaginary movement of the affected limb increased oxyHb over a wide area, including in the primary motor cortex area before mirror therapy. However, an increase in oxyHb became confined to the primary motor cortex during imaginary movement after performing mirror therapy. Mirror therapy produces functional reorganization of the primary motor cortex in the patients with phantom limb pain. **Akiyuki Sakamoto, M.D., Daisuke Sugiyama, M.D., Satoshi Tanaka, M.D., Mikito Kawamata, M.D.;** Shinshu University School of Medicine, Nagano, Japan.

#### PN A2003

##### Pain-related Anxiety Is Associated with Heat Pain Perception in Adults with Chronic Pain

Greater pain anxiety symptom scale (PASS) scores were associated with more hyperalgesic values of heat pain (HP) perception in adults with chronic pain. This association retained statistical significance after adjusting for pain intensity, age, sex, and opioid use. In patients with elevated pain-related anxiety, the results of this study suggest that they may be at risk of hyperalgesia independent of pain scores and opioid use. **Marisa Terry, M.D., Susan Moeschler, M.D., W. Michael Hooten, M.D.;** Mayo Clinic, Rochester, MN.

#### PN A2004

##### Characterization of Psychotic Events in Patients on Intrathecal Ziconotide for Severe Chronic Pain

Spontaneously reported events coded to the term "psychosis" according to COSTART or with "psychosis" as part of the verbatim term were included in an analysis of 1351 patients who received intrathecal (IT) ziconotide during 15 clinical trials between 1995 and 2005. The overall incidence of a psychosis event was 1.6% of patients. Ten patients (0.7%) reported psychosis events considered related to ziconotide. Eight patients (0.6%) discontinued study participation due to psychosis. Although the incidence of a psychosis event with IT ziconotide is low, remaining aware of this event and alert to its symptoms is important. **Philip Kim, M.D., David L. Caraway, M.D., Michael Saulino, M.D., Ph.D., Sonja Hokett, Pharm.D., M.S., Sarah Alvarez-Horine, M.S.,** Center for Interventional Pain and Spine, Newark, DE, **St. Mary's Pain Relief Center, Huntington, WV, MossRehab, Elkins Park, PA, Jazz Pharmaceuticals, Palo Alto, CA.**

### OR14-2 PATIENT SAFETY AND PRACTICE MANAGEMENT

8-9:30 a.m. | Room 245

#### PI A2005

##### Conducting a Work System Analysis to Map System Vulnerabilities in the Perioperative Medication Delivery System: Comparing Self-filled Versus Prefilled Medication Syringes

A system vulnerability (SV) is defined as an activity or event that has the potential to reduce safety, efficiency of provider workflow, or increase drug costs and waste. Using Work System Analysis, system vulnerabilities can be identified and quantified in a medication delivery process. **James H. Abernathy, M.D., M.P.H., Yang Yushi, M.S., Christopher Fortier, PharmD, Joy Rivera, Ph.D.,** Medical University of South Carolina, Charleston, SC, **Clemson University, Clemson, SC, Massachusetts General Hospital, Boston, MA.**

#### PI A2006

##### Anesthesia Machine Workshop: What Did We Learn?

There have been no introductory training modules on complicated anesthesia machines with documented sustainable effectiveness. Our findings of substandard knowledge after a half year of traditional training reveal not only a concern for patient safety, but also an important potential focus for improved education. **Ling Qun Hu, M.D., Luminita Tureanu, M.D., Leonard Wade, M.S., Bruno DeCaria, M.D., Edward Yagmour, M.D., Georges Cehovic, M.D., Stojiljkovic Ljuba, M.D., Ph.D., Meltem Yilmaz, M.D., Natalie R. Kozlov, M.D., Andre DeWolf, M.D.;** Anesthesiology, Northwestern University Feinberg School of Medicine, Chicago, IL .

#### PI A2007

##### Noise Increases the Perceived Fatigue of Anesthesiology Residents in an Operating Room Simulator

We test the hypothesis that "a noisy operating Room environment increases perceived fatigue in anesthesia residents" using psychometric testing in a realistic audio reproduction-enabled operating Room simulator. Our results support the hypothesis and have implications for caregiver and patient safety. **Richard R. McNeer, M.D., Ph.D., Christopher Bennett, Ph.D., Nicholas B. Nedeff, M.D., Jorge Bohorquez, Ph.D., Roman Dudaryk, M.D.**  
<sup>1</sup>Anesthesiology, University of Miami Miller School of Medicine, Miami, Music Engineering Technology, Biomedical Engineering, University of Miami, Coral Gables, FL.



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**PI A2008**

**Evaluation of Perioperative Medication Errors and Adverse Drug Events** The impact of perioperative medication errors (PMEs) and adverse drug events (ADEs) can be catastrophic. The purpose of this study is to assess the rates of PME and ADEs in the perioperative setting. We found a 3.6% error rate. 40% of errors had little potential for harm, 35% led to an ADE and 26% had the potential for harm. This rate of PME and ADEs is much higher than existing self-reported rates. Further research is needed to fully understand the root causes of the errors to formulate targeted solutions. **Amit H. Patel, M.D., Alireza S. Jafari, M.D., David W. Bates, M.D., M.S.C., Karen C. Nanji, M.D., M.P.H., ; Department of Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital, Boston, MA, Department of Anesthesiology and Critical Care, Shahid Beheshti University of Medical Sciences, Tehran, Iran, Islamic Republic of, Division of General Internal Medicine, Brigham and Women's Hospital, Boston, MA .**

**PI A2009**

**The Five Moments: A Novel Hand Hygiene Device to Facilitate Perioperative Provider Compliance With World Health Organization Guidelines**

World Health Organization (WHO) defines five moments of hand hygiene (HH) to prevent bacterial transmission. Evidence suggests anesthesia providers practice a low rate of HH. This randomized controlled trial investigates the effect of intraoperative use of a novel, body worn, point of care HH device on 30-day postoperative HCAs and secondarily, HH compliance of providers through wireless tracking. Perioperative providers are under performing. A point of care HH device can increase compliance with WHO HH guidelines. **Bridget C. Huysman, M.P.H., B.A., C.S.T., Hetal M. Patel, B.S., M.L.T., Matthew D. Koff, M.D., Mark P. Yeager, M.D., Randy W. Loftus, M.D.; Anesthesiology, Dartmouth Hitchcock Medical Center, Lebanon, NH.**



**PI A2010**

**Implementing an Health System Wide Enhanced Recovery Program for Patients Undergoing Colorectal Surgery - The Anesthesiologists Perspective**

We describe an implementation of an enhanced recovery from surgery (ERAS) protocol in all patients undergoing colorectal surgery. Our protocol prioritises spinal opiates and multimodal pain control and intraoperative fluid therapy guided by Masimo's PVI technology. Patients managed by this protocol received less opiates, less fluid in the OR and had shorter hospital LOS and 30-day costs. **Douglas Colquhoun, M.BCh.BM.S.C., M.P.H., Florence E. Turrentine, R.NPh.D., Kathleen M. Rea, R.NCharles M. Friel, M.D., Traci L. Hedrick, M.D., Robert H. Thiele, M.D.; Department of Anesthesiology, Department of Surgery, University of Virginia, Charlottesville, VA.**

**OR13-2 OUTCOMES AND DATABASE RESEARCH - EVALUATION OF RISK**

10-11:30 a.m. | Room 244

**FA A2011**

**The Physiological Anesthetic Risk Score (PARS) as a Predictor of Postoperative Complications**

PARS is a scale that includes physiologic variables, extent of illness and type of surgery. We show that PARS is able to predict the severity of complications and mortality in the first 6 months following surgery. **Rafael P. Leal-Villalpando, M.D., Dolores Perez-Perez, M.D., Orquidea Sanchez-Carreón, M.D.; Anesthesiology, Instituto Nacional de la Nutrición Salvador Zubiran, Anesthesiology, INCMNSZ, Mexico City, Mexico.**

**FA A2012**

**Preoperative Evaluation Clinic Visit Decreases Risk of Readmission to the Hospital Within 30 days**

We compared the 30 day readmission rate of patients who were evaluated prior to surgery in our institution's Pre-Admission Testing (PAT) clinic to those patients who had surgery without being seen in the PATclinic. Patients who participated in our preoperative assessment clinic were less likely to be readmitted to our hospital within 30 days of discharge. **Jeanna D. Blitz, M.D., Ghislaine C. Echevarria, M.D., Sudheer K. Jain, M.D., Jung T. Kim, M.D., Germaine Cuff, Dr.PHAndrew D. Rosenberg, M.D., Eduardo Iturrate, M.D.; Anesthesiology, Department of Medicine, NYU Langone Medical Center, NYU School of Medicine, New York, NY.**

**FA A2013**

**Risk-adjusted Clinical Outcomes in Patients Enrolled in a Bloodless Program**

Risk-adjusted clinical outcomes were similar or better, and costs were reduced for patients who declined allogeneic blood transfusion (ABT) and were enrolled in our Bloodless Medicine and Surgery Program. **Steven M. Frank, M.D., Elizabeth C. Wick, M.D., Amy E. Dezern, M.D., Paul M. Ness, M.D., Jack O. Wasey, B.MB.ChAndrew C. Pippa, B.A., Elizabeth A. Dackiw, R.NLinda Ms Resar, M.D.; Anesthesiology/Critical Care Medicine, Bloodless Medicine and Surgery, Department of Hematology/Oncology, Pathology (Transfusion Medicine), Department of Medicine (Hematology), Oncology & Institute for Cellular Engineering, The Johns Hopkins Medical Institutions, Baltimore, MD.**

**FA A2014**

**Ultrasensitive Troponin Thresholds Associated With Mortality Risk After Cardiac Surgery**

The aim of this study was to determine the peak troponin concentration thresholds with 80, 85, 90, and 95% specificity associated with in-hospital mortality after adult cardiac surgery with a high-sensitive cardiac troponin I assay. **Sophie Provenchere, M.D., Aurélie Gouel-Chéron, M.D., Laetitia Desplanque, M.D., Benoit Cousin, M.D., Monique Dehoux, M.D., Jean Guglielminotti, M.D., Dan Longrois, M.D., . Ph.D., Philippe Montravers, M.D., . Ph.D., Department of Anesthesiology, Department of Biochemistry, Hôpital Bichat, Paris, France.**

**FA A2015**

**Validation of the All Patient Refined Diagnosis Related Group (APR-DRG) Risk of Mortality and Severity of Illness Modifiers as a Measure of Perioperative Risk**

This study validates the performance of the All Patient Refined Diagnosis Related Group (APR-DRG) Risk of Mortality and Severity of Illness modifiers to predict in-hospital mortality in perioperative patients. These indexes are compared to other risk scores (Charlson and RSI) using mortality and administrative data from 86,392 patient encounters over 8.5 years at a single large academic institution. **Patrick McCormick, M.D., M.Eng, Matthew A. Levin, M.D.; Department of Anesthesiology, Icahn School of Medicine at Mount Sinai, New York, NY.**

**FA A2016**

**Opioid and Sedative Use Increases the Risk of In-Hospital Cardiopulmonary Arrest**

Data from over twelve million in-patient discharges showed opioids and co-medications with sedative and respiratory depressant properties carry significant independent risk for in-hospital cardiopulmonary arrest. **Frank J. Overdyk, MSEE, M.D., Judith Aronsohn, M.D., JieJing Qiu, Ph.D., Hung-Lun Chien, Ph.D., Neil Morrison, B.S., cJohn Bloom, M.D., Tong J. Gan, M.D.; Anesthesiology, Hofstra North Shore LIJ, New Hyde Park, NY, Covidien Healthcare Economics and Outcome Research, Boulder, CO, Harrier Consultancy, Lancaster, United Kingdom, Podometrics Inc, Cambridge, MA, Duke University, Durham, NC.**

**OR01-2 AMBULATORY ANESTHESIA: AMBULATORY ANESTHESIA PRACTICE AND OUTCOMES**

3-4:30 p.m. | Room 245

**AM A2017**

**A Randomized Trial of Pre-Warming on Thermal Comfort and Patient Satisfaction in Outpatient Surgery**

This is an IRB approved randomized trail of 102 patents accessing the effect of pre-warming on satisfaction and thermal comfort in outpatient surgery. Patients were randomized to 1:1 with 51 in each group (pre warming/no prewarming). The Evaluation du Vécu de l'Anesthésie Générale (EVAN-G) assessed the satisfaction and Visual Assessment Scale (VAS) assessed the thermal comfort. Patient thermal comfort and overall satisfactions were consistently higher in prewarming warming group. **Zohaib Akhtar, M.D., Brian D. Hesler, M.D., Muhammad M. Buttar, M.D., Alexa Fiffick, M.B.S., Daniel Sessler, M.D., Andrea M. Kurz, M.D., Sabry Ayad, M.D., Leif Saager, M.D.; Department of Outcomes Research, Anesthesiology and Pain Management, Fairview Hospital, Cleveland Clinic, Cleveland, OH.**



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## AM A2018

### Effect of Gum Chewing on the Volume and pH of Gastric Contents-A Prospective Randomized Study

Chewing gum in the preoperative fasting period leads to significant increase in the residual gastric volumes, with no difference in pH. We recommend that patients who have inadvertently chewed gum in the fasting period should be treated as full stomach and management modified accordingly. **Basavana Goudra, M.D., FRCA, FCARCSI, Preet Mohinder Singh, M.D., Augustus Samuel, Student; Anesthesiology, University of Pennsylvania, Philadelphia, PA, Postgraduate Institute of Medical Education & Research, Chandigarh, India.**

## AM A2019

### Preoperative Administration of IV Ibuprofen Improves Quality of Recovery After Laparoscopic Cholecystectomy

In this study, we examined the effect of IV ibuprofen on the quality of recovery after laparoscopic cholecystectomy. Patients received a single preoperative IV dose of ibuprofen 800 mg or placebo-saline prior to surgery. Preoperative IV ibuprofen during laparoscopic cholecystectomy improved the overall quality of recovery including comfort, emotion and pain and reduced fatigue in the early postoperative period. **Vanny Le, M.D., Lakshmi N. Kurnutala, M.B.,B.S., Devasena Manchikalapati, M.D., Rajammal Jayakumar, M.D., Jing Li, Ph.D., Pratap Nadavaluru, M.B.,B.S., Susan Gould-Fogerite, Ph.D., Sean Ahrens, C.L.S, Alex Y. Bekker, M.D., Ph.D., Anesthesiology, School of Health Related Professions Rutgers - New Jersey Medical School, Newark, NJ, Methodist Hospital, New York, NY.**



## AM A2020

### Efficacy of Ultrasound Guided Femoral Nerve Block for Varicose Vein Ambulatory Surgery in Post-Operative Period

Better patient satisfaction with help of ultrasound guided femoral nerve block for endovenous laser ablation of varicose veins ambulatory surgery. **Nalin Talwar, M.D., Surabhi Gupta, D.A., Jayashree Sood, M.D., FFARCS, K K. Narani, M.D., Shikha Sharma, M.D., D.N.B.; Anesthesiology, Pain & Perioperative Medicine, Sir Ganga Ram Hospital, Delhi, India.**



## AM A2021

### Efficacy of Palonosetron and Ramosetron on Postoperative Nausea and Vomiting Related to Intravenous Patient-Controlled Analgesia With Opioids, After Gynaecological Laparoscopic Surgery (Double-Blinded Prospective Randomised Controlled Trial)

To assess the efficacy of palonosetron and ramosetron in preventing postoperative nausea and vomiting (PONV) related to intravenous (IV) patient-controlled analgesia (PCA) with opioids, after gynaecological laparoscopic surgery. A single dose of palonosetron 0.075 mg or ramosetron 0.3 mg was lacking in preventing PONV related to IV PCA with opioids in patients undergoing gynaecological laparoscopic surgery. The combination of a single dose of ramosetron 0.3 mg, followed by ramosetron 0.6 mg mixed with PCA, showed better efficacy compared with a single dose of palonosetron 0.075 mg or ramosetron 0.3 mg. **Jae Yun Kim, M.D., Chung-Sik Oh, M.D., Jae woo Yi, M.D., Nam-Sik Woo, M.D., Seong-Hyop Kim, M.D.; Department of Anaesthesiology and Pain Medicine, Konkuk University Medical Center; Department of Anaesthesiology and Pain Medicine, KyungHee University Hospital at Gangdong, Seoul, Korea, Republic of.**

## AM A2022

### Skilled Nursing Facility (SNF) Bypass Rate Following Total Knee Arthroplasty (TKA): The Evidence for Implementing the Practice of Perioperative Surgical Home (PSH)

Patient-centered, anesthesiologist-led TKR recovery can increase SNF bypass rate with increase the hospital readmission. **Chunyuan Qiu, M.D., M.S., Renato V. Etrata, M.D., Narendra S. Trivedi, M.D., Diana LaPlace, M.D., Andrew T-Y Ko, Student, Lauren M. Lee, Student, Jessica Y. Qiu, Student, Jamie M. Cabrera, P.A., Preeti P. Shah, M.D., Maria T. Enciso, B.S.N.; Anesthesiology, Kaiser Permanente Baldwin Park Medical Center, Baldwin Park, CA, Anesthesiology, Kaiser Permanente Riverside Medical Center, Anaheim Hills, CA .**

## OR07-2 DRUG DISPOSITION, METABOLISM AND ELIMINATION

3-4:30 p.m. | Room 243

## FA A2023

### Perioperative Use of Human Immunodeficiency Virus (HIV) Protease Inhibitors Is Associated with Increased Incidence of Post-operative Respiratory Depression Among HIV-Seropositive Patients Undergoing General Anesthesia

Patients chronically taking protease inhibitors for management of viral infections, including HIV, are at an increased risk for post operative respiratory complications. This observation is potentially due to inhibition of CYP4503A4 causing prolongation of the action of certain opioids and benzodiazepines. **Dermot P. Maher, M.S., M.S., Jacqueline Lee, B.S., Pauline Woo, B.S., Xiao Zhang, Ph.D., Roya Yumul, M.D., Ph.D., Antonio H. Conte, M.D., M.B.A., .; Anesthesia, Cedars-Sinai Medical Center, Los Angeles, CA .**



## FA A2024

### Pharmacodynamics of Remifentanyl for Fetus in the Pregnant Ewe

To examine the pharmacokinetics and pharmacodynamics in pregnant ewes, we examined the infusion rate of remifentanyl in pregnant ewes and effective concentration at which 50% of the fetus showed immobilization. To immobilize the fetus in pregnant ewe, the high infusion rate of remifentanyl of about 2.5µg/kg/min was required, and EC50 was 4.49ng/ml. **Masaki Sato, M.D., Kenichi Masui, M.D., Nanako Mizuta, M.D., Yasuhiro Kogure, M.D., Yoshikazu Nagao, Ph.D., Hiroyuki Sumikura, M.D., Ph.D., National Center for Child Health and Development, Juntendo University , Tokyo, Japan, National Defense Medical College, Tokorozawa, Japan, Utsunomiya University, Utsunomiya, Japan.**

## FA A2025

### Allometry of Methadone Pharmacokinetics in Animals and Man

There was a significant relationship between body weight and the disposition kinetics of methadone in 7 animal species; however this did not allow the useful prediction of methadone kinetics in various human age groups.

**John W. Sear, M.M., B.B.S., Ph.D., Polly M. Taylor, Ph.D., Louisa Slingsby, Ph.D., Anaesthetics, University of Oxford, Oxford, TaylorMonroe, Ely, Cambridgeshire, Clinical Veterinary School, University of Bristol, Bristol, United Kingdom.**

## FA A2026

### Administration of Lipid Emulsion Antagonized the Hypnotic Activity of Propofol in ddY mice - Comparison with Thiamylal

Pharmacodynamics of intravenous anesthetics would be modified by the co-administration and supplemental administration of intravenous solutions. Lipid emulsion diminished the hypnotic activities not of thiamylal but of propofol in ddY mice. The antagonizing effect could not be explained by the simple volume expansion effect, and other pharmacological mechanism, including "lipid sink", might play an important role in the results of current investigation. **Yushi Adachi, M.D., Ph.D., Kozaburo Nakahara, M.D., Toshiyuki Hatano, M.D., Tadashi Ejima, M.D., Atsushi Numaguchi, MDNaoyuki Matsuda, M.D., Ph.D., Emergency Medicine, Nagoya University Graduate School of Medicine, Nagoya University Hospital, Nagoya, Japan.**

## FA A2027

### Erythromycin for Accelerated Gastric Emptying in Patients Undergoing General Anesthesia for Emergency Procedures

In patients undergoing emergency procedures, IV erythromycin 3 mg/kg, 15 minutes prior to tracheal intubation, accelerates clearing of stomach, and decreases acidity without causing major adverse effects. **Christoph Czarnetzki, M.D., Nadia Elia, M.D., M.S.C., Jean-Louis Frossard, M.D., Emiliano Giostra, M.D., Laurent Spahr, M.D., Jean-Luc Waeber, M.D., Christopher Lysakowski, M.D., Martin Richard Tramèr, M.D.; Division of Anesthesiology, Division of Gastroenterology, Geneva University Hospitals, Geneva, Switzerland.**

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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**FA A2028****Specific Block of Alpha7 Acetylcholine, Receptors by ArlB Enhances the Effectiveness of Specific Block of Mature Receptors by Waglerin-1 during Immobilization**

This study demonstrates that ArlB, a highly selective alpha7 nicotinic acetylcholine receptors (AChRs) antagonist, enhanced the efficacy of Waglerin-1 (toxin which binds with high selectivity to mature AChRs) block on the 3 weeks immobilized muscle by blocking the expressed alpha7 AChRs in wild type but not in alpha7 AChRs knockout mice. We speculate that during immobilization of knockout mice, immature AChRs may be expressed in the junctional area, explaining the lack of twitch inhibition with waglerin-1. Hajime Iwasaki, M.D., Tomoki Sasakawa, M.D., Shingo Yasuhara, M.D., Ph.D., Hiroshi Iwasaki, M.D., Jeevendra Martyn, M.D.; Asahikawa Medical University, Asahikawa, Japan, Massachusetts General Hospital, Boston, MA

**OR17-2 RESPIRATION-RESPIRATION-RESPIRATION-BASIC MECHANISMS, ANIMAL MODELS AND CLINICAL SCIENCE 3-5 p.m. | Room 244****FA A2029****Pulmonary Hypertension Is Associated with Downregulation of miR-193 and Gain of miR-193 Function Decreases Proliferation of Pulmonary Smooth Muscle Cells from PAH Patients**

PH in experimental model and human subjects leads to downregulation of miR-193 expression. Gain of miR-193 function attenuates proliferation in smooth muscle cells isolated from idiopathic pulmonary hypertension patients whereas loss of miR-193 function increases proliferation of pulmonary smooth muscle cells in healthy controls suggesting a therapeutic role of miR-193 in PH. Salil Sharma, Ph.D., Francois Potus, B.Sc., Soban Umar, M.D., Ph.D., Steeve Provencher, M.D., Sébastien Bonnet, Ph.D., Mansoureh Eghbali, Ph.D., Anesthesiology, University of California, Los Angeles, CA, Pulmonary Hypertension Group CRIUCQP, Québec, QC, Canada.

**Resident Research Award 1st Place****Relax Airway Smooth Muscle and Potentiate  $\beta$ -agonist Relaxation: Potential New Tools to Treat Bronchospasm**

Perioperative bronchospasm refractory to  $\beta$ -agonists continues to challenge anesthesiologists. Our lab has shown that blockade of the recently discovered TMEM16 family of calcium-activated chloride channels modulates ASM contraction. We have shown that TMEM16A antagonism relaxes both an acetylcholine and leukotriene D4 contraction, relaxes synergistically with  $\beta$ -agonists, hyperpolarizes ASM cells, and attenuates increases in intracellular calcium from both the plasma membrane (PM) and sarcoplasmic reticulum (SR). As TMEM16A antagonists work with first line agents ( $\beta$ -agonists) and work through a novel pathway of interrupting ion flux both at the PM and SR, they are promising tools in the treatment of acute bronchospasm. Jennifer A. Danielsson, M.D., Matthew B. Barajas, B.S., Kyra Bernstein, B.A., Yi Zhang, M.D., George Gallos, M.D., Charles W. Emala, M.D.; Anesthesiology, Columbia University, New York, NY .

**FA A2031****Severe Pulmonary Hypertension in MCT-Rat Model Is Rescued by the Soy Phytoestrogen, Genestein via Downregulation of MicroRNA miR-206**

Genestein, a soy phytoestrogen rescues severe pulmonary hypertension by downregulation of miR-206 and induction of Vegfa in MCT rat model of PH. Salil Sharma, Ph.D., Alex Centala, Andrea Iorga, B.Sc., Mansoureh Eghbali, Ph.D., Anesthesiology, University of California, Los Angeles, Los Angeles, CA.

**FA A2032****High-frequency Ultrasound Imaging of Murine Lung In Cardiogenic Pulmonary Edema**

This is the first demonstration of the feasibility of murine lung imaging using high-frequency (30 to 50 MHz) ultrasound. We showed that transthoracic and subcostal sonograms could detect sonographic B-line development during heart failure induced by the acute exposure to high inspired isoflurane concentrations. B-lines are sonographic indicators of fluid accumulation in the lung interstitium and of impending pulmonary edema. Jacek A. Wojtczak, M.D., Ph.D., Deanne M. Mickelsen, B.S., Ronald W. Wood, Ph.D., Michael P. Eaton, M.D., Craig N. Morell, D.V.M., Ph.D., Department of Anesthesiology, Cardiovascular Research Institute, Department of Obstetrics/Gynecology, Urology, Neurobiology and Anatomy, University of Rochester Medical Center, Rochester, NY .

**FA A2033****Oxidized Lipid Treatment Induces Pulmonary Hypertension in Mice via Suppression of MicroRNA miR-193**

Feeding oxidized fatty acid 15-HETE inhibits miR-193 expression and is sufficient to cause pulmonary hypertension in mice. Salil Sharma, Ph.D., Soban Umar, M.D., Ph.D., Andrea Iorga, B.Sc., Ali Said, Jingyuan Li, Ph.D., Srinivasa Reddy, Ph.D., Mansoureh Eghbali, Ph.D., Anesthesiology, University of California, Los Angeles, CA.

**FA A2034****The Effect of Lung Ischemia Reperfusion Injury on the Expressions of TRPV1 and Neuropeptides Receptors in Lung and Brainstem in Rats**

Previous studies using transient receptor potential vanilloid 1 (TRPV1) agonists and antagonists have testified that TRPV1 plays an important role in lung ischemia reperfusion injury (LIRI), it's still unclear that the changes of TRPV1 and neuropeptides receptors induced by LIRI. The study was to investigate the effect of LIRI on the mRNA expressions of TRPV1 and neuropeptides receptors in lung and brainstem in rats. Our data showed that LIRI upregulated the mRNA expressions of TRPV1 in lung and neuropeptides receptors (CRLR and NK-1R) in brainstem, and evoked CGRP release in lung. Therefore, our results suggest that capsaicin sensitive afferent neuron pathway participates in the pathophysiology of LIRI through releasing neuropeptides and upregulating neuropeptides receptors. Rurong Wang, M.D., Wenjian Wang, M.D., Yan Chen, B.S., Anesthesiology, West China Hospital, Chengdu, China.

**FA A2035****Study of Pulmonary Inflammatory Response Secondary to Lung Resection Surgery Using Intravenous Anesthesia With Propofol Versus Inhalation Anesthesia With Halogenated Agents. Preliminary Results**

Clinical Trial to determine the effect of sevoflurane and propofol in alveolar inflammatory markers and to evaluate if there is a relationship between the elevation of these markers and the postoperative pulmonary complications. Francisco A. de la Gala, Sr., M.D., Ph.D., Almudena Reyes Fierro, M.D., Ignacio Garutti, M.D., Ph.D., Patricia Piñeiro, M.D., Elena Vara, M.D., Ph.D., Javier Casanova, M.D., Ph.D., Carlos Simón, M.D., Ph.D., Luis Olmedilla, M.D., Ph.D., Patricia Cruz Pardos, M.D., Ph.D., Patricia Duque, M.D., Ph.D., Anesthesia, Thoracic Surgery, Hospital General Universitario Gregorio Marañón, Molecular Biology and Biochemistry, Complutense University Madrid, Madrid, Spain.

**FA A2036****Risk Stratification, Prevalence and Risk Factors of Obstructive Sleep Apnea by Stop-Bang in an Adult Surgical Population Assessed in the Preoperative Anesthesia Clinic**

Undiagnosed moderate-to-severe OSA may be associated with an increased risk of perioperative complications, including an increased risk for difficult airway management. Preliminary QI investigation of OSA risk stratification in both known and unknown OSA surgical patients, correlates with national data, including using the STOP-BANG assessment to identify at risk patients. Davide Cattano, M.D., Ph.D., Adam Mullaly, B.S., R.T., R. R.T., Lisa Kainer, B.S., .R.TR.R.T Sharon Courtney, R.N. Carin A. Hagberg, M.D.; Anesthesiology, University of Texas Health Science Center, Memorial Hermann Hospital, Houston, TX .

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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## FA A2037

### Rapid Airway Assessment Reduce Unnecessary Awake Intubations for Potential Difficult Ventilation and Intubation Patients

Anesthesia induction in potential difficult ventilation patients, awake intubation may be the safest but the least comfortable way. Here we have proved that sevoflurane based protocol can be used to predict difficulty ventilation and intubation and reduce the need of awake induction. Yunxia Zuo, M.D., Ph.D., Jiming Wang, M.D., Qingping Wu, M.D., Ming Tian, M.D., Yanyan Sun, M.D., Jin Liu, M.D., Ph.D., Department of Anaesthesiology, West China Hospital, Sichuan University, Chengdu, China, Department of Anaesthesiology, Union Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China, Beijing Friendship Hospital, Capital Medical University, Beijing City, China, Xijing Hospital, The Fourth Military Medical University, Xian, China, West China Hospital, Sichuan University, Chengdu, China.

## POSTER DISCUSSIONS

### PD05-2 CLINICAL NEUROSCIENCES

8-9:30 a.m. | Room 244

## NA A2038

### Reduced Temporal Variance of Spontaneous Neural Activity in Anesthesia

Applying an intra-subject design, we compared resting state activity in fMRI between awake versus anesthetized states. We observed temporal variance as measured by amplitude of low frequency fluctuations (ALFF) and standard deviation (SD) was significantly reduced in various subcortical and cortical regions in the anesthetized state, including frequency-dependent effects. Our results show for the first time the reduction of temporal variance of resting state activity in anesthesia. Jun Zhang, M.D., Ph.D., Zirui Huang, Ph.D., Zhiyao Wang, M.D., Weimin Liang, M.D., Ph.D., Georg Northoff, M.D., Ph.D., Department of Anesthesiology, Huashan Hospital, Fudan University, Shanghai, China, Zhejiang Key Laboratory for Research in Assessment of Cognitive Impairments, Hang Zhou, China, Institute of Mental Health Research, University of Ottawa, Ottawa, ON, Canada.

## NA A2039

### Endocannabinoid Signaling Influences the Stress Response and Traumatic Memory in Cardiac Surgical Patients

A single missense polymorphism of the CB2 cannabinoid receptor which is associated with impaired endocannabinoid signaling during stress decreases the risk for acute postoperative stress disorder and long-term traumatic memories in patients after cardiac surgery. Gustav Schelling, M.D., Daniela Hauer, M.D., Maximilian Beimler, M.S., Thomas Ernst, M.S., Michela Savo, PharmD, Fabrizio Forti, PharmD, Marlene Eggert, Ph.D., Benno Roozendaal, Ph.D., Patrizia Campolongo, PharmD, Ph.D., Martina Pfob, M.D.; Anaesthesiology, Human Genetics, University of Munich, Munich, Germany, Physiology and Pharmacology, La Sapienza University of Rome, Rome, Italy, Donders Institute for Brain, Cognition and Behaviour, Radboud University Nijmegen, Nijmegen, Netherlands.

## NA A2040

### Pharmacodynamic Effect of (R,S)-Ketamine on D-Serine Plasma Concentration and Changes in Clinician Administered Dissociative States Scale (CADSS) Scores in Subjects with Major Depression

This study reports the effect of (R,S)-ketamine on D-Ser plasma levels and dissociative response following the administration of a subanesthetic dose of (R,S)-ketamine. The data also indicate that the rapid decline in D-Ser plasma levels is associated with increased CADSS scores. Michael Goldberg, M.D., Ruin Moaddel, Ph.D., David A. Luckenbaugh, M.D., Nancy E. Brutsche, M.S., Rodrigo Machado-Vieira, M.D., Ph.D., Michel Bernier, Ph.D., Marc C. Torjman, Ph.D., Carlos A. Zarate, Jr, M.D., Irving W. Wainer, Ph.D., Anesthesiology, Cooper University Hospital, Cooper Medical School of Rowan University, Camden, NJ, The Laboratory of Clinical Investigation, Experimental Therapeutics & Pathophysiology Branch Intramural Research Program, National Institute on Aging, NIA, NIH, Baltimore, MD.

## NA A2041

### Neurointerventional Emergencies: Does General Anesthesia Delay Care?

Time delay is often cited as a reason to avoid general anesthesia for neurointerventional procedures in the treatment of acute ischemic stroke. With adequate preparation, this time delay can be minimized or eliminated. Tiffany D. Maines, M.D., Robert Craft, M.D.; University of Tennessee Medical Center, Knoxville, TN .

## NA A2042

### Relationship Between Cardiopulmonary Bypass With Circulatory Arrest and Retrograde Cerebral Perfusion for Aortic Valve Replacement on the Occurrence of Postoperative Cognitive Dysfunction

The procedure of deep hypothermic circulatory arrest combined with short-duration retrograde cerebral perfusion does not markedly decrease rSO2 values, and is not an exacerbation factor for postoperative cognitive dysfunction occurrence. Kazuyoshi Ishida, M.D., Toshiyuki Nakanishi, M.D., Atsuo Yamashita, M.D., Masato Uchida, M.D., Satoshi Yamashita, M.D., Kiyotaka Shiramoto, M.D., Koji Utada, M.D., Shuichi Kaneko, M.D., Yasuhiko Iida, M.D., Mishiya Matsumoto, M.D.; Anesthesiology, Yamaguchi University Graduate School of Medicine, Ube, Japan.

## NA A2043

### Noninvasive Delineation of Ipsilateral Decline in Brain Temperature During Acute Ischemic Stroke

Noninvasive monitoring of brain temperature (via the "brain temperature tunnel") in acute ischemic stroke patients allows for early detection of decreased brain activity and blood flow along with improvement after successful intervention. Trevor M. Banack, M.D., Diana Nordquist, M.D., David G. Silverman, M.D.; Anesthesiology, Yale University School of Medicine, New Haven, CT.

## NA A2044

### Evaluation of Cognitive Function After Intraoperative Cardiac Arrest: A Case Series

This study describes a series of 6 patients that suffered intraoperative cardiac arrest and assess the evolution of their cognitive function over a 1 year period. Cognitive dysfunction was present in 84% of the patients, with little improvement in the attention and concentration over the period. Matheus F. Vane, M.D., Maria José Carmona, M.D., Ph.D., Gustavo Fabio Aranha, M.D., Maria Margarita Gonzales, M.D., Rolison Gustavo Bravo Lelis, M.D., Rafael Nuzzi, M.D., Letícia Maria de Araújo Souza, Psychology Student, Katia Osternack Pinto, Ph.D., Livia Stocco Valentin, Ph.D., University of Sao Paulo, Anhembi-Morumbi University, Sao Paulo, Brazil.

## NA A2045

### Effects of Dexamethasone and Depth of Anesthesia on the Incidence of Postoperative Cognitive Dysfunction in Elderly Patients Undergoing Non-cardiac Surgery - A Double-blinded Randomized Controlled Clinical Trial

POCD occur in elderly patients. Dexamethasone and anesthesia minimize it. Livia S. Valentin, Ph.D., Terri G. Monk, M.D., Ricardo S. Pietrobon, Ph.D., M.D., Karen C. Nielsen, M.D., João Ricardo N. Vissoci, M.S., Vinicius Fernando Da Luz, M.D., Katia Osternack-Pinto, Ph.D., Psy.D. Maria Jose C. Carmona, M.D.; Laboratory of Anesthesiology, Faculdade de Medicina da Universidade de São Paulo, São Paulo, Brazil, Anesthesiology, Department of Surgery, Duke University Health System, Durham, NC, Medicine Department Maringa, Faculdade Inga, Paraná, Brazil.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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**POSTER DISCUSSIONS**

**PD04-2 CLINICAL CIRCULATION: BLOOD, OTHER**  
 10-11:30 a.m. | ROOM 243

**CA A2046**

**Association of Aspirin Use and Major Outcomes in Patients With Chronic Kidney Disease (CKD) Undergoing Cardiac Surgery**

This cohort study shows that preoperative aspirin therapy was associated with protective effects in decreasing postoperative AKI and mortality in patients with CKD undergoing cardiac surgery, and the survival benefit of aspirin therapy was greater in patients with CKD than normal kidney function. **Jian-Zhong Sun, M.D., Ph.D., Linong Yao, M.D., Ph.D., Hong Liu, M.D., Will Sun, M.S., Jordan Goldhammer, M.D., James Diehl, M.D.;** Anesthesiology, Thomas Jefferson University, Philadelphia, PA, **Anesthesiology, The Fourth Military Medical University, Xian, China, Anesthesiology and Pain Medicine, UC Davis Medical Center, Sacramento, CA, Cardiac Surgery, Thomas Jefferson University, Philadelphia, PA .**



**CA A2047**

**The Effect of Protamine and Hemodilution on the Thrombus Formation Under Flow Condition**

Protamine is an antidote for heparin, but it also impairs coagulation when given in excess of optimal heparin:protamine ratio (~1:1). Excess protamine in the presence of hemodilution extensively inhibits thrombus formation under flow and static conditions. Elevated vWF/F8 can partially mitigate anticoagulant activity of protamine. **Daniela Damian, M.D., Tetsuro Sakai, M.D., Ph.D., Kenichi Tanaka, M.D., M.S.C., ;** Anesthesiology, UPMC, Pittsburgh, PA .

**CA A2048**

**The Impact of Dexmedetomidine on Short- and Long-Term Outcomes in Patients Undergoing Cardiac Surgery**

A retrospective review was conducted of 1477 consecutive patients undergoing cardiac surgery at our institution to reserch the impact of dexmedetomidine on short- and long-term outcomes .Compared with non-Dex,Dex is associated with small short-term gain as depressing atrial fibrillation ,butis not effective for long-term risks of mortality and cardiovascular complications. **Fei Xu, M.S., Hushan Ao, M.D.;** Department of Anesthesiology, Fuwai Hospital & Cardiovascular Institute,Chinese Academy of Medical Science, Beijing, China.

**CA A2049**

**What Is the Inflammatory Response to Robotic CABG? Implications for Hybrid Coronary Revascularization**

There is an inflammatory response after robotic CABG which appears to abate 48 hours after surgery. The implications of ongoing elevations in CRP remain unclear. Study of the inflammatory response following the completion stage of HCR awaits further results. **Galina Leyvi, M.D., M.S., Sankalp Sehgal, M.B.,B.S., Adrienne B. Warrick, M.D., Irene Kho, B.A., Joseph DeRose, M.D.;** Anesthesiology, Cardiovascular and Thoracic Surgery, Montefiore Medical Center/Albert Einstein College of Medicine, Bronx, NY, **Anesthesiology, University of Florida College of Medicine - Jacksonville, Jacksonville, FL.**

**CA A2050**

**Creating an Institution-Specific Maximum Surgical Blood Order Schedule Using an Anesthesia Information Management System, Based on the Algorithm by Frank et al**

The creation of an institution-specific maximum surgical blood order schedule (MSBOS) is a fundamental step towards optimizing preoperative blood ordering. A recent study by Frank et al in 2013 proposed a novel algorithm for establishing blood order recommendations using data acquired from an Anesthesia Information Management System (AIMS). We aimed to validate their proposed methodology by utilizing the algorithm to successfully generate an updated MSBOS at our institution. **Tiffany Lee, B.A., Kayleigh Kaneshiro, B.A., Coral Sun, M.D., Joseph B. Rinehart, M.D.;** UC Irvine Medical Center, Orange, CA .

**CA A2051**

**Dexmedetomidine for Sedation May Not Affect Incidence of New Onset Atrial Fibrillation After Cardiac Surgery**

Using dexmedetomidine as a sedative after cardiac surgery does not decrease the incidence of new onset postoperative atrial fibrillation. **Mary E. Arthur, M.D., Tiffany M. Richburg, M.D., Nadine Odo, B.A., Matthew G. Bean, D.OVijay S. Patel, M.D.;** Anesthesiology and Perioperative Medicine, Surgery, Georgia Regents University, Augusta, GA.

**CA A2052**

**Red Blood Cell Transfusion After Coronary Artery Bypass Grafting: A Double-Edged Sword?**

We studied the effect of post-operative RBC transfusions in patients after cardiac surgery, and whether the effects were dose-dependent. 2,351 charts of patients undergoing CABG and/or valve surgery were analyzed. Patient demographics, comorbidities and quantity of blood transfused were adjusted for with propensity score matching. Overall, those receiving transfusions had worse outcomes compared to non-transfused patients, but many of the risks were attenuated when the cohort receiving > 5 U blood were excluded. Hence, our study provides evidence that smaller RBC transfusions have few negative impacts on patient outcomes, and larger transfusions may be a marker of a sicker population. **Alice Li, B.S., Shamsuddin Akhtar, M.D., Feng Dai, Ph.D., Hossam E. Tantawy, M.B.,Ch.B.;** Anesthesiology, Yale University, New Haven, CT.

**CA A2053**

**National Trends in Discretionary Intraoperative Red Blood Cells Transfusion: A Report from the Multicenter Perioperative Outcomes Group**

We have demonstrated a significant reduction in intraoperative PRBC transfusions across the US. Our data shows that for both CAD and non-CAD patients, lower intraoperative and postoperative hemoglobin nadirs were observed. **Amy Shanks, M.S., Ph.D., Fiona Linton, M.B.B.ChJonathan Linton, B.MD.C.HFR.C.APaul Picton, M.D., Sachin Kheterpal, M.D., M.B.A.,** Anesthesiology, University of Michigan, Ann Arbor, MI .

**PD08-2 EQUIPMENT, MONITORING AND ENGINEERING TECHNOLOGY: ENHANCING PATIENT SAFETY AND ENVIRONMENTALLY SOUND PRACTICES**

1-2:30 p.m. | Room 243

**FA A2054**

**Development and Validation of a System to Capture Scheduled Drug Transactions From Automated Drug Dispensing Carts in Near Real-Time**

We developed and validated a highly accurate and efficient software process that allows capture of transactions executed on automated drug delivery carts in rear real time to assist anesthesia providers in reconciling their controlled substances transactions. **Richard H. Epstein, M.D., CPHIMS, David M. Gratch, D.O.;** Anesthesiology, Jefferson Medical College, Philadelphia, PA .

**FA A2055**

**A Comparison of Attitudes Toward Operating Room Recycling Among Anesthesiologists From the United States, England, Australia and New Zealand**

In 2013 we surveyed the American Society of Anesthesiologists about attitudes toward operating Room recycling. We compared the responses to these survey questions among anesthesiologists from the United States, England, Australia and New Zealand.The responses to the six questions were similar among anesthesiologists from different countries, but operating recycling is more prevalent in the United States. **John L. Ard, Jr, M.D., Tessa K. Huncke, M.D., Kate P. Tobin, M.D., Charlotte Bell, M.D.;** Department of Anesthesiology, New York University Langone Medical Center, New York, NY, **Department of Anesthesiology, University of California at Irvine, Irvine, CA, Milford Anesthesia Associates, Milford, CT .**

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### FA A2056

#### Mechanical Testing of the Stiffness and Ultimate Strength of Disposable Laryngoscope Blades in Comparison to the ISO Standard

The strength and stiffness of metal and plastic disposable laryngoscope blades were tested on an engineering materials testing machine and compared to the ISO standard for laryngoscopes. Ravi P. Pallela, M.D., B.Sc., Paul Brousseau, B.Ed, R.R.T., Esther Valliant, B.Sc., Eng, Ph.D., Andrew Milne, M.D., M.S.C., B.Eng.; Department of Anesthesia, Pain Management and Perioperative Medicine, School of Biomedical Engineering, Dalhousie University, Halifax, NS, Canada.



### FA A2057

#### Use of the Electrosurgical Unit in a Carbon Dioxide Atmosphere

Our study evaluated the difference in breakdown voltage of an electrosurgical unit (ESU) in a pure CO2 environment compared with Room air. We found that there is not a clinically significant, consistent increase in the breakdown voltage in CO2 versus Room air for either the coagulation or cut setting, and therefore ESUs can be effectively used during laparoscopy. David V. Paolino, M.D., William C. Culp, Jr., M.D., Sarah Luna, Aris J. Maggudayao, Bradley A. Kimbrough, Jack L. Eidson, M.D.; Department of Anesthesiology, Department of Vascular Surgery, Scott & White Memorial Hospital, Texas A&M University College of Medicine, Temple, TX .

### FA A2058

#### Beware: GI Endoscopy Insufflating Gas Under Extreme Pressure

We present technical data for three Olympus endoscopes. When the gas flush button is depressed with 2 L/min inflow, gas is emitted from the tip of the scope capable of exceeding a pressure of 300 mmHg. If presented near tissue where blood vessels are dilated or arterIALIZED, it would take one minute or less to produce a gas embolus capable of causing complete circulatory compromise. We endorse carbon dioxide instead of air as an insufflating gas, given the far higher blood solubility of carbon dioxide. We encourage the future design of endoscopes that allow precise regulation of the maximum gas pressure emitted at the endoscope tip. Jeffrey D. White, M.D., Nikolaus Gravenstein, M.D., Peter V. Draganov, M.D.; Anesthesiology, Medicine, University of Florida, Gainesville, FL.

### FA A2059

#### Reusable Versus Disposable Blood Pressure Cuffs: Environmental and Public Health Costs and Benefits

A life cycle assessment was performed to compare the environmental and economic costs of reusable and disposable blood pressure cuffs and identify opportunities for improving device design and cleaning. Jodi D. Sherman, M.D., Sarah Sanchez, B.Eng, Matthew Eckelman, Ph.D., Anesthesia, Yale University School of Medicine, New Haven, CT, Northeastern University, Boston, MA.



### FA A2060

#### Novel Patient Monitoring System Enables Implementation of Dynamic Turning Protocols in an Effort to Prevent Pressure Ulcers

Development of a novel wireless patient monitoring system to improve pressure ulcer prevention efforts in the perioperative setting. This continuous position monitoring technology opens the door for the development of dynamic turning protocols that are based on individual patient-care needs. Barrett Larson, M.D., Daniel Shen, M.S., Mark Weckwerth, Ph.D., Leaf Healthcare, Pleasanton, CA .

### FA A2061

#### Comparative Efficacy Assessment of Different Surgical Caps in the Operating

Prevention of intraoperative infection is an important topic and has been addressed from many vantage points. Some professional groups have suggested that the type of headwear utilized by intraoperative personnel has an effect of infection risk. We conducted a study to determine compare the efficacy of different operating Room headwear in the retention of potentially infectious material. George Williams, M.D., Rabail Chaudhry, M.D., Denys Goloshchapov, M.D., Luis Z. Ostrosky, M.D., Carin A. Hagberg, M.D. Anesthesiology, Internal Medicine- Infectious Disease, University of Texas Health Science Center at Houston, Anesthesiology, University of TX Medical School - Houston, Tx.

### PD09-1 EXPERIMENTAL CIRCULATION

1-2:30 p.m. | Room 245

### CA A2062

#### High-Dose HBOC Exacerbates Cardiac Ischemia/Reperfusion Injury by Induction of Endothelial Dysfunction

Recent clinical studies suggest that cell-free hemoglobin-based oxygen carrier (HBOC) significantly increases the risks of death and myocardial infarction, but the exact mechanism as well as effective therapeutic targets is still elusive. This study provides evidence that the vasoactivity and myocardial toxicity of HBOC are mainly mediated by endothelial dysfunction. Synergistic increase of NAD(P)H oxidase-induced ROS overproduction and reduction of NO bioavailability are responsible for all these adverse cardiovascular effects. Tao Li, Ph.D., Yusheng Yao, M.D., Cheng Zhou, Ph.D., Jin Liu, M.D.; Department of Anesthesiology, West China Hospital, Sichuan University, Chengdu, China.

### CA A2063

#### Caffeine Mitigates Acute Lung Inflammation Induced by Lower Limbs Ischemia-Reperfusion: A Preliminary Study

Acute lung inflammation induced by lower limbs ischemia- reperfusion could be mitigated by caffeine. Wei Chih Chou, M.D., Shih Ching Wang, M.D., Pei-Shan Tsai, Ph.D., Chun Jen Huang, M.D., Ph.D., Department of Anesthesiology, Buddhist Taipei Tzu Chi Hospital, Graduate Institute of Nursing, Taipei Medical University, Taipei, Taiwan.

### CA A2064

#### Direct Cardioprotective Effect of Dexmedetomidine Against Global Ischemia/Reperfusion Injury in the Rat Heart

We investigated the cardioprotective effects of preconditioning with dexmedetomidine against ischemia-reperfusion injury in isolated rat hearts. Dexmedetomidine significantly improved heart rate and rate pressure product after reperfusion. Dexmedetomidine significantly reduced infarct size and improved atrial mitochondrial respiration after reperfusion. These results suggest that preconditioning with DEX produces a direct cardioprotective effect against IRI in both the left ventricle and atria without autonomic nervous system modulation. Yusuke Yoshikawa, M.D., Naoyuki Hirata, M.D., Ph.D., Ryoichi Kawaguchi, M.D., Ryo Miyashita, M.D., Daisuke Maruyama, M.D., Michiaki Yamakage, M.D., Ph.D., Sapporo Medical University School of Medicine, Sapporo, Japan.

### CA A2065

#### Identification of Specific MicroRNAs Involved in the Protection of Morphine Preconditioning Against Hypoxia-Reoxygenation Injury in Rat Cardiomyocytes

This study was design to screen and identify the specific miRNAs involved in the protective effect of morphine preconditioning against hypoxia-reoxygenation injury in rat cardiomyocytes. In the present study, we found, for the first time, the expression profile of miRNAs in cardiomyocytes was affected by MPC treatment by using microRNA microarray analysis. We also identified miR-133b-5p and the predicted target gene Fas as the critical miRNA and target gene, which may contribute to the cardioprotection of MPC. Shu-fang He, Ph.D., Hai-juan Zhu, M.D., Ye Zhang, Ph.D., Department of Anesthesiology, Hospital of Anhui Medical University, Hefei, China.

### CA A2066

#### Epigenomic Prediction of Cardiovascular Disease Susceptibility: Development of Pre-clinical Diagnostic Markers for Heart Failure

We report the epigenomic features of heart failure in mice using two distinct models (isoproterenol and pressure overload). The results provide a fundamental understanding of how the genome is remodeled in disease and identify novel diagnostic markers for susceptibility to environmental stress. Thomas Vondriska, Ph.D., Emma Monte, B.S., Manuel Rosa-Garrido, Ph.D., Yibin Wang, Ph.D., Haodong Chen, Ph.D., Anesthesiology, UCLA, David Geffen School Med UCLA, Los Angeles, CA .



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**CA A2067****Biophysical Properties of mitoBK<sub>ca</sub> Channel and its Role in Ca<sup>2+</sup>+ Homeostasis**

MitoBKCa channel is expressed and targeted to the inner mitochondria membrane in adult cardiomyocytes. Here, we demonstrate that different populations of mitoBKCa exist in cardiac mitochondria with particular biophysical properties such as voltage sensitivity suggesting the association with regulatory subunits. A single population of mitoBKCa was identified in liver mitochondria. In addition, we demonstrate that mitoBKCa Ca<sup>2+</sup> sensor faces the mitochondrial matrix in both heart and liver with an important contribution to the maintenance of calcium homeostasis in both tissues. Enrico Stefani, M.D., Ph.D., Enrique Balderas, Ph.D., Ligia Toro, Ph.D., Anesthesiology, Division of Molecular Medicine, UCLA, Los Angeles, CA .

**CA A2068****4F Rescues Pulmonary Hypertension by Inducing miR-193 via Suppression of Transcription Factor RXR-alpha**

Elevated levels of oxidized fatty acids including HETEs and HODEs in pulmonary hypertension lead to downregulation of miR193 via induction of transcription factor RXR-alpha. 4F therapy rescues pre-existing PH by reducing HETEs and HODEs thereby suppressing RXR-alpha expression and induction of miR-193. Salil Sharma, Ph.D., Mohamad Navab, Ph.D., Srinivasa Reddy, Ph.D., Mansoureh Eghbali, Ph.D., Anesthesiology, University of California, Los Angeles, CA.

**CA A2069****MicroRNA Is Released from the Lower Extremity During Ischemia**

Lower extremity (LE) ischemia-reperfusion (I/R) often occurs in vascular and orthopedic surgeries and is reportedly associated with increased cardiovascular (CV) complications such as cardiac arrest and myocardial dysfunction. The exact mechanisms underlying the CV complications in these patients are complex and poorly understood. This study demonstrates that several miRNAs in the local tissue are markedly increased during LE ischemia-reperfusion, while at the same time, no significant change in these miRNA levels is detected in the serum. Jiayan Cai, B.S., Yan Feng, M.D., Ph.D., Lin Zou, M.D., Ph.D., Wei Chao, M.D., Ph.D., Jingping Wang, M.D., Ph.D., Massachusetts General Hospital, Harvard Medical School, Boston, MA.

**PD11-1 HISTORY AND EDUCATION: PIONEERS OF ANESTHESIA  
1-2:30 p.m. | Room 244****PI A2070****Rock-a-Bye Baby**

Founded in 1910 by the American anaesthetist Elmer Isaac McKesson (1881-1935), the Toledo Technical Appliance Company (later the McKesson Appliance Company) manufactured a diverse range of anaesthetic apparatus and ancillary medical equipment during its first five decades in business. Historians of anaesthesia have neglected many of these unique items and this paper concerns one such device which proved effective in weaning patients with Poliomyelitis from negative pressure ventilation during the 1940s and 1950s - the McKesson Respir-aid Rocking Bed. Peter J. Featherstone, M.B.B. Ch., C. Neil Adams, M.B.B.S., Douglas R. Bacon, M.D., M.A.; Department of Intensive Care Medicine, The Alfred Hospital, Melbourne, Australia, Department of Anaesthetics, West Suffolk Hospital, Bury St Edmunds, United Kingdom, Department of Anesthesiology, Wayne State University, Pontiac, MI.

**PI A2071****Women of the ASA**

We have been able to identify trends in the enrollment of women in the ASA over the last 15 years. By examining these trends, it is our goal to eventually identify the barriers to the promotion of women into leadership positions as well as identify paths to increasing overall gender diversity in anesthesiology. Kimberly A. Pollock, CA- Anesthesiology Resident, Elizabeth Rebello, M.D., Cynthia A. Wong, M.D., Rekha Chandrabose, M.D., Selma H. Calmes, M.D.; Anesthesiology, University of California San Diego, San Diego, CA, Anesthesiology and Perioperative Medicine, University of Texas MD Anderson Cancer Center, Houston, TX, Anesthesiology, Northwestern University Feinberg School of Medicine, Chicago, IL, Anesthesiology, UCSD Medical Center, San Diego, CA, Anesthesiology, University of California Los Angeles, Culver City, CA.

**PI A2072****Dr. Geoffrey Kaye's Center of Excellence for the Australian Society of Anaesthetists, 1939-1955**

This paper discusses Dr. Geoffrey Kaye's research and teaching goals at the Australian Society of Anaesthetists' center based on letters from Kaye to Paul M. Wood, M.D., from 1939 to 1955. The facility, opened for use in 1951, housed a library, museum, laboratory, workshop, and meeting spaces. Kaye's research included topics ranging from anesthetic deaths in Australia to anesthesia for snakes and other reptiles. Matthew L. Edwards, A.B., David B. Waisel, M.D.; School of Medicine, University of Texas Medical Branch, Galveston, TX, Department of Anesthesiology, Perioperative, and Pain Medicine, Harvard Medical School, Boston Children's Hospital, Boston, MA

**PI A2073****Anesthesia at the Royal Victoria Infirmary, Newcastle Upon Tyne, England From 1751-1987: An American's Retrospective**

A history of the practice of anesthesia at the Royal Victoria Infirmary, Newcastle upon Tyne, England, from 1751-1987, is presented from the perspective of an American academic anesthesiologist who served a one-year sabbatical there from 1986-1987. Raymond C. Roy, M.D., Ph.D., Anesthesiology, Wake Forest School of Medicine, Winston Salem, NC .

**PI A2074****Establishment of the Department of Anaesthesia at Harvard Medical School**

Although it was the site of the first public demonstration of anesthesia, Harvard Medical School did not establish an independent Department of Anesthesia until 1969. We examined correspondence and reports of department and medical school committees to identify the arguments for and against autonomy at Harvard. Although there was strong opposition from surgeons, the majority of the Harvard faculty recognized that anesthesia had become a distinct specialty meriting its own department. Ilan Mizrahi, M.D., Sukumar P. Desai, M.D.; Brigham & Women's Hospital, Boston, MA .

**PI A2075****A Surgeon Passionate About Pediatric Regional Anesthesia**

We describe the life and work of surgeon Robert Emmett Farr (1875-1932), a pioneer and strong advocate of regional anesthesia, especially in children. Hyun Kee Chung, M.D., Manisha S. Desai, M.D.; Anesthesia, UMass Memorial Medical Center, Worcester, MA, University of Massachusetts Medical School, Worcester, MA .

**PI A2076****Changing Times: The World Wars and Women Physician Anesthetists\***

From 1900-1940, anesthesia was thought to be a suitable specialty for women MDs. They were even leaders--chairs of departments and presidents of national organizations. This was unique among the medical specialties. WW II, along with other factors, led to a marked decrease: only a few women, both in medicine in general and anesthesiology in particular. The number of women in medicine increased after legal changes in the 1970s. By "mass effect," the number of women in anesthesiology has increased in the last 15 years. Selma H. Calmes, M.D.; Anesthesiology, UCLA School of Medicine, Los Angeles, CA .

**PI A2077****Sought and New-Found: Carl Koller's Handwritten Records Concerning the Anaesthetic Properties of Cocaine**

Carl Koller's handwritten records concerning the anaesthetic properties of cocaine were located and will be presented to the public for the first time. Michael Goerig, M.D.; Anaesthesiology and Intensive Care, University Hospital Hamburg, Hamburg, Germany.



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## POSTER PRESENTATIONS

### PO02-1 ANESTHETIC ACTION AND BIOCHEMISTRY: EFFICACY AND SAFETY OF CURRENT AND EMERGING ANESTHETICS AND ANALGESICS

8-10 a.m. | Hall B1-Area C



#### FA A2078

##### Expression of Postoperative Ecstasy in Anesthetized Patients

Although many anesthesiologists have been claimed for postoperative ecstasy (POE) from the anesthetized patients, there are no study investigated the frequency and the cause of this phenomenon. In this study, we revealed that the appearance ratio of POE was highest in propofol group than in non-sedated or midazolam group. We also revealed that the propofol and midazolam decrease the cortisol and increase the prolactin. The decrease of cortisol have a possibility to induce ecstasy in postoperative period. **Kayo Hirose, M.D., Ph.D., Ken Kuwajima, M.D., Takashi Kawano, M.D.;** Tokushima University Hospital, Tokushima, Japan, The University of Tokyo Hospital, Tokyo, Japan, Kochi Medical School, Kochi, Japan.

#### FA A2079

##### Effect of Intraoperative Glucose Infusion on Catabolism of Fat Tissue and Muscle Protein During Remifentanyl Anesthesia: A Randomized Controlled Multicenter Trial

We investigated the effect of intraoperative glucose infusion on the catabolism of fat tissue and muscle protein during remifentanyl anesthesia. Remifentanyl improved intraoperative blood glucose control by suppressing stress hormone secretion. The intraoperative glucose infusion suppressed the increase of the acetoacetic acid, 3-hydroxybutyric acid and 3-methylhistidine: creatinine ratio. The intraoperative glucose supply inhibited the catabolism of fat tissue and muscle protein. **Atsushi Sawada, M.D., Ph.D., Yasuhiro Kamada, M.D., Ph.D., Haruko Hayashi, M.D., Hiromichi ichinose, M.D., Ph.D., Shinzo Sumita, M.D., Ph.D., Michiaki Yamakage, M.D., Ph.D.,** Anesthesiology, Sapporo Medical University, Sapporo, Japan, Anesthesiology, Nikko Memorial Hospital, Muroran, Japan, Anesthesiology, Asahikawa Redcross Hospital, Asahikawa, Japan, Anesthesiology, Obihiro-Kosei General Hospital, Obihiro, Japan.

#### FA A2080

##### Depth of Propofol Anesthesia on the Stress Response in Patients Undergoing Lung Surgery

The present study showed depth of total intravenous anesthesia using propofol-remifentanyl may impact on the neuroendocrine stress response to surgery i.e. a deep level of propofol anesthesia attenuated catecholamine response rather than ACTH-cortisol or inflammatory response during and after lung surgery. **Sung Mee Jung, M.D., Choon Kyu Cho, M.D., Hyo Eun Kang, M.D., Hyuck Goo Kim, M.D.;** Yeungnam University Hospital, Konyang University Hospital, Daejeon, Korea, Republic of.

#### FA A2081

##### The Effect of Flumazenil on Sevoflurane Requirements for Minimum Alveolar Anesthetic Concentration-Awake and Recovery Status

We found that an IV flumazenil (0.006mg/Kg) has no effect on sevoflurane MAC-Awake in humans. A single intravenous injection of flumazenil (0.006 mg/Kg) can partially reverse the hypnotic effect of sevoflurane/sulfentanil but do not contribute to reduction in the time to recovery and extubation. **Peng Liang, M.D., Cheng Zhou, Ph.D., Yu Kai Li, M.D., Juan li Guo, B.DBin Liu, M.D., Jin Liu, M.D.;** Department of Anesthesiology, West China Hospital, Sichuan University, Chengdu, China, Department of Anesthesiology, Inzhong First People Hospital, Jin Zhong, China.

#### FA A2082

##### The Effects of Different Target-Controlled Concentrations of Remifentanyl on MAC-BAR of Sevoflurane in Gynecological Patients Undergoing Laparoscopic Surgery

Remifentanyl can effectively depress the sympathetic response by CO2 pneumoperitoneum stimulus. The MAC-BAR of sevoflurane gradually decreased with the increase of plasma target remifentanyl concentration, but the epinephrine-BAR or norepinephrine-BAR of sevoflurane was maintained unchanging. In addition, monitoring AEPi cannot effectively predict the response of hemodynamics caused by noxious stimulation. **Xiao-lin Yang, M.D., Zhen-yu Zou, MMed, Yan-li Zhao, B.S.;** Affiliated Hospital of North Sichuan Medical College, Nanchong, China, Department of Anaesthesiology, The Second People's Hospital of Pan Zhi Hua City, Pan Zhi Hua, China.

#### FA A2083

##### The Analysis of the Role of Tramadol Therapy for Cancer Pain Treatment

Tramadol was effective in either moderate cancer pain and opioid naive cases or early stage of neuropathic cancer pain cases. The role of tramadol is the bridging between NSAIDs and strong opioid, initial treatment of neuropathic pain and the SNRI-like agent that can be administered intravenously. **Toshiya Koitabashi, M.D., Ph.D., Rie Ishimaru, M.D., Syoichiro Sazuka, D.D.SPh.D., Takashi Ouchi, M.D., Ph.D.,** Anesthesiology, Tokyo Dental College Ichikawa General Hospital, Ichikawa-city, Chiba, Japan.

#### FA A2084

##### The Estimation of Successful Pregabalin Therapy in Neuropathic Cancer Pain

The treatment with pregabalin resulted in a significant improvement in 9 out of 10 patients who had been suffering from neuropathic cancer pain. In 4 patients that VAS decreased more than 4 cm, the duration from the onset of pain to pregabalin prescription was 2, 7, 13 and 16 days, indicating early treatment is necessary. In conclusion, present study clearly provided a new insight into the beneficial effect of pregabalin on neuropathic cancer pain. **Shoichiro Sazuka, D.D.SPh.D., Rie Ishimaru, M.D., Azusa Katou, M.D., Takashi Ouchi, M.D., Ph.D., Toshiya Koitabashi, M.D., Ph.D.,** Tokyo Dental College Ichikawa General Hospital, Chibashi, Japan.

#### FA A2085

##### Acetaminophen Reduces Persistent Surgical Pain After Hysterectomy

Acetaminophen decreases acute postoperative pain, postoperative analgesics consumption and persistent surgical pain. **Onur Koyuncu, M.D., Selim Turhanoglu, M.D., Sedat Hakimoglu, M.D., Cagla Akkurt, M.D., Kenan Dolapcioglu, M.D., Atilla Karateke, M.D., Daniel Sessler, M.D., Alparslan Turan, M.D.;** Anesthesiology, Mustafa Kemal University, Hatay, Turkey, Outcomes Research, Cleveland Clinic, Cleveland, OH .

#### FA A2086

##### The Effect of Preoperative Administration of IV Ibuprofen on Stress Response in Patients Undergoing Laparoscopic Cholecystectomy

In this study, we examined the effect of IV ibuprofen, a potent NSAID, on the release of stress hormones and pro-inflammatory cytokines in patients undergoing laparoscopic cholecystectomy. Subjects received a single preoperative IV dose of ibuprofen 800 mg or placebo-saline prior to surgery. Preoperative administration of IV Ibuprofen decreases catecholamines and cortisol levels, but did not affect C-reactive protein concentration postoperatively after laparoscopic cholecystectomy. **Vanny Le, M.D., Lakshmi N. Kurnutala, M.B.,B.S., Joel M. Yarmush, M.D., Joseph Schianodocola, M.D., Michael M. Haile, M.D., Lisa V. Doan, M.D., Catherine Schoenberg, B.S., .NC.R.C.CSergey Pisklakov, M.D., Alex Y. Bekker, M.D., Ph.D.,** Anesthesiology, Rutgers - New Jersey Medical School, Newark, NJ, Methodist Hospital, Brooklyn, NY, New York University, New York, NY .

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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**FA A2087**

**Efficacy of Shakuyaku-kanzo-to [Shao-Yao-Gan-Cao-Tang] for Painful Muscle Cramps in Patients With Lumbar Spinal Stenosis**

In this study, we elucidated that Shakuyaku-kanzo-to, Japanese herbal Kampo medicine, was effective for the painful muscle cramps, and its minimum effective dosage was 2.5g as needed. Yumiko Takao, M.D., Ph.D., Takaoka Yutaka, L.AcPh.D., Hitoaki Sato, M.D., Ph.D., Yasushi Motoyama, M.D., Takashi Nishimoto, M.D., Ph.D., Satoshi Mizobuchi, M.D., Ph.D., Anesthesiology, Kobe University Graduate School of Medicine, Medical Informatics and Bioinformatics, Kobe University Graduate School of Medicine, Kampo Medicine, Kobe University Graduate School of Medicine, Kobe city, Japan.

**FA A2088**

**Droperidol and Haloperidol Decreases the Bispectral Index During General Anesthesia With Both Desflurane and Sevoflurane**

Supplemental administration of droperidol and haloperidol during both desflurane and sevoflurane anesthesia might enhance the anesthetic potency determined by Bispectral index. The circulatory parameters, including heart rate and blood pressure, during anesthesia and the recovery time from general anesthesia after the end of operation were not changed. Thus, the results demonstrate a possible advantage of dopamine antagonists to reduce the required dose of volatile agents for maintenance of anesthesia without delay of emergence. Yushi Adachi, M.D., Ph.D., Katsuhiro Tanaka, M.D., Kazuhiko Kobayashi, M.D., Michiko Kawaguchi, M.D., Kimitoshi Nishiwaki, M.D., Ph.D., Naoyuki Matsuda, M.D., Ph.D., Department of Anesthesia, Nishio Municipal Hospital, Nishio, Japan, Department of Anesthesia and Resuscitation, Nagoya University Graduate School of Medicine, Nagoya, Japan.

**FA A2089**

**Intravenous Bolus of Oxynorm Reduces Postoperative Additional Analgesic Requirements in Patients Undergoing Laparoscopic Cholecystectomy**

Intravenous oxynorm bolus is simple to use and results in a long-lasting reduction of shoulder and abdominal postoperative pain for 24 h after laparoscopic cholecystectomy and opioid consumption in the PACU. Yoonji Choi, M.D., Ph.D., Sang Wook Park, M.D., Young Jin Moon, M.D., Yu Mi Lee, M.D., Ph.D., Anesthesiology and Pain Medicine, Inje University Seoul Paik Hospital, Anesthesiology and Pain Medicine, Asan Medical Center, Seoul, Korea, Republic of.

**FA A2090**

**Digital Substitution Test Reveals Preservation of Cognitive Reserve After Phaxan™ But Not After Propofol Anaesthesia**

Digital substitution tests (DSST) are used commonly to assess recovery from anaesthetic drugs by noting the time after drug administration at which DSST performance returns to pre-anaesthetic levels. However DSST normally shows progressively increasing scores with repeat testing; this is attributed to cognitive reserve of the test subject. This study has shown preservation of this cognitive reserve after Phaxan anaesthesia but not after propofol anaesthesia up to 80 minutes after drug injection. Colin S. Goodchild, M.A., M.B.B.ChirPh.D., FRCA, FANZCA, FFPANZCA, John Monagle, M.B.B.S., FANZCA, Lyndon Siu, M.B.B.S., FANZCA, Jodie Worrell, R.N., Juliet M. Serrao, M.B.B.S., Ph.D., F.R.C.A.; Monash Institute of Medical Research, Anaesthesia and Pain Medicine, Monash Health, Melbourne, Victoria, Australia, Drawbridge Pharmaceuticals Pty Ltd, Malvern, Victoria, Australia.

**FA A2091**

**Does Intraoperatively Administered Methylprednisolone Impact the Neuromuscular Blockade Reversal Effect of Sugammadex?**

Recovery times of rocuronium-induced muscle relaxation after reversal with sugammadex were delayed in patients who received methylprednisolone intraoperatively when compared to those who did not receive methylprednisolone. Merve H. Aral, M.D., Basak Ceyda Meco, M.D., Menekse Ozcelik, M.D., Yesim Batislam, M.D.; Anesthesiology and ICM Department, Ankara University Faculty of Medicine, Ankara, Turkey.

**FA A2092**

**A Case of Rocuronium-induced Anaphylaxis Successfully Mitigated with Late Administration of Sugammadex**

We describe the marked improvement of a patient's clinical condition after the late administration of sugammadex in a confirmed case of rocuronium-induced anaphylaxis. Tom Schepens, M.D., Anja De Meyer, M.D., Rowan Dankerlui, M.D., Marcel Vercauteren, M.D., Ph.D., Anesthesia, Antwerp University Hospital, Edegem, Belgium.

**FA A2093**

**The PRIZM (Patient Registry of Intrathecal Ziconotide Management) Study for Patients With Severe Chronic Pain**

PRIZM is an open-label, long-term, multicenter, observational study evaluating effectiveness, safety, and patient-reported outcomes associated with clinical intrathecal ziconotide use. We present an interim analysis of 23 enrolled patients. Philip Kim, M.D., Michael Saulino, M.D., Ph.D., David L. Caraway, M.D., Eric J. Grigsby, M.D., Michael S. Leong, M.D., Richard L. Rauck, M.D., Timothy R. Deer, M.D., Mark S. Wallace, M.D., Gladstone C. McDowell, M.D., Sarah Alvarez-Horine, M.S., .10; Center for Interventional Pain & Spine, Newark, DE, MossRehab, Elkins Park, PA, St. Mary's Pain Relief Center, Huntington, WV, Neurovations Clinical Research, Napa, CA, Stanford University, Jazz Pharmaceuticals, Palo Alto, CA, Center for Clinical Research, Winston-Salem, NC, The Center for Pain Relief, Charleston, WV, University of California, San Diego, CA, Integrated Pain Solutions, Columbus, OH. .

**PO04-1 CLINICAL CIRCULATION: ECHO/MONITORING**

8-10 a.m. | Hall B1-Area E

**CA A2094**

**Evaluating Left Ventricular Diastolic Function During General Anesthesia in Dialysis Patients**

The present study compared left ventricular diastolic function during general anesthesia in dialysis and non-dialysis patients in order to identify suitable evaluation parameters. Effective evaluation can be conducted using Vp and Em values, which are less susceptible to the effects of load fluctuation. Yuta Kashiwagi, M.D., Yuki Toyama, M.D., Kentarou Kanaki, M.D., Hirotsugu Kanda, M.D., Iida Takafumi, M.D., Kunihiko Yamamoto, M.D., Tomoki Sasakawa, M.D., Takayuki Kunisawa, M.D., Osamu Takahata, M.D., Hiroshi Iwasaki, M.D.; Anesthesiology and Critical Care, Asahikawa Medical University, Hokkaido, Japan, Department of Anesthesiology, Perioperative Medicine and Pain Management, University of Miami Miller School of Medicine, Miami, FL .

**CA A2095**

**Perioperative Cardiac Events in a Patient With Each Type of Electrocardiographic Pattern of J Wave Syndromes**

The preoperative prevalence of each type of "J wave syndromes" and perioperative cardiac events in a patient with them were investigated. Total electrocardiographic (ECG) patterns of "J wave syndromes" out of 789 patients amounted to 16 (2.0%): The type 1, which is commonly seen in healthy people, amounted to 7 (0.9%), the type 2, which is associated with a higher level of risk for ventricular fibrillation (VF), to 5 (0.6%), the type 3, which is associated with the highest level of risk for VF, to 2 (0.3%), and Brugada syndrome type 2 (0.3%). VF during surgery or postoperative lethal supraventricular tachycardia occurred in two patients whose ECG showed Brugada syndrome type with more than 0.2 mV J point elevations. Msaki Fuyuta, M.D.; Anesthesiology, Kinki University Faculty of Medicine, Osakasayama, Japan.



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### CA A2096

#### Three Different Methods Assisted Insertion of Transesophageal Echocardiography Probe on Incidence of Oropharyngeal Mucosal Injury After Adult Cardiac Surgery

Laryngoscope-assisted insertion of TEE probe takes longer than blindly intubated. Rigid laryngoscope-assisted insertion is not significantly increase visibility of esophageal entrance. Video laryngoscope-assisted insertion significantly reduces the incidence of oropharyngeal muclsal injury, such as odynophagia, hoarseness and bleeding, after adult cardiac surgery. Yanzi Zhang, M.D., Xiao Wang, M.D., Wen Zhang, M.D., Xiang He, M.D.; Anesthesiology, West China Hospital, Sichuan University, Chengdu, China.

### CA A2097

#### Aortic Valve Replacement Reduces Valvuloarterial Impedance in Patients With Aortic Stenosis

Valvuloarterial impedance contributes to elevated left ventricular afterload in patients with aortic stenosis. We demonstrate that aortic valve replacement reduces valvuloarterial impedance to values within the normal range but does not affect systemic arterial compliance in elderly men with senile calcific aortic stenosis. Paul S. Pagel, M.D., Ph.D., Andrew R. Schroeder, M.D., Judith A. Hudetz, Ph.D., Clement J. Zablocki Veterans Affairs Medical Center, Milwaukee, WI .



### CA A2098

#### Prediction of Circulatory Changes After Pneumoperitoneum in Laparoscopic Surgery by Pulse Contour Analysis

Patients who underwent elective laparoscopic gastrointestinal surgery were divided into two groups according to 10 percent increase from baseline (before pneumoperitoneum) in systolic blood pressure at 3 minutes after peritoneal insufflation. The high group comprised 16 patients and the stable group comprised 24 patients. The baseline cardiac index (CI) measured by pulse contour analysis was significantly higher in the high group than the stable group (2.5±0.3vs2.2±0.4L/min/m). In the high group, pneumoperitoneum significantly increased the infusion rate of remifentanyl relative to that at the baseline. Motoi Inoue, M.D., Masato Nakasuji, M.D., Aki Kawasaki, M.D., Miwako Ngai, M.D., Taeko Miyata, M.D., Norie Imanaka, M.D., Masuji Tanaka, M.D., Kae Nakasuji, M.D.; Department of Anesthesiology, Kansai Electric Power Hospital, Osaka, Japan.



### CA A2099

#### Peripheral Venous Pressure Is Correlated with Central Venous Pressure on Positive-End-Expiratory Pressure Change

Peripheral venous pressure (PVP) measurements can be conducted easily, and rarely cause serious complications. Previous studies have suggested that PVP is correlated with central venous pressure (CVP) in different clinical settings. In this study, we investigated the correlation between PVP and CVP in a dynamic situation: change of positive-end-expiratory pressure (PEEP) under mechanical ventilation. The overall correlation between CVP and PVP was found to be significant (correlation coefficient = 0.859, P < 0.0001). The results of the present study reveal that PVP displays a significant correlation with CVP in a dynamic situation: change of PEEP. Sayako Gotoh, M.D., Yuki Yoshiyama, M.D., Susumu Ide, M.D., Tomoyuki Kawamata, M.D., Mikito Kawamata, M.D.; Shinshu University School of Medicine, Matsumoto, Japan.



### CA A2100

#### Continuous Cardiac Output Monitoring During Off Pump Coronary Artery Bypass Surgery: Third Generation FloTrac Versus Thermodilution by Pulmonary Artery Catheter

The third generation Flo Trac has been developed with the accurate software algorithm and provided improvement over the previous versions. We compared the accuracy of continuous cardiac output measured by Flo Trac (CCO-FT) with it measured by continuous PAC (CCO-PAC) during off pump coronary artery bypass surgery. CCO-FT was well correlated with cardiac output measured by 3Dtransesophageal echocardiography (CO-3DTEE). On the contrary, CCO-PAC was not well correlated with COO-FT and CO-3DTEE. We think that third generation Flo Trac measurement of cardiac output (CO) is more useful than continuous PAC measurement of CO during off pump coronary artery bypass surgery. Kosaka Iwayama, M.D., Yoshihiko Ohnishi, M.D.; Anesthesiology, National Cerebral and Cardiovascular Center, Suita, Japan.

### CA A2101

#### The Time to Peak Pressure Derived from Radial Pressure Waveform Is a Good Indicator of the Aortic Stenosis

Severe aortic stenosis (AS) is an independently risk factor of perioperative myocardial infarction and 30 days mortality in non-cardiac surgery. The aim of this study was to determine if systolic upstroke time and rate of pressure rise derived from radial arterial pressure waveform are useful to detect the patients with AS. The value given by the time from the beginning of an upstroke of a radial arterial pressure to peak radial arterial pressure (TTPP) divided by the square root of the RR interval to calculate the heart rate-corrected TTPP is a good indicator for detecting the patient's with AS. Katsura Nakagawa, M.D., Yuzuru Inatomi, M.D., Kenji Yoshitani, M.D., Yoshihiko Ohnishi, M.D.; Anesthesiology, National Cerebral and Cardiovascular Center, Suita, Osaka, Japan.

### CA A2102

#### Distinguishing Arterial And Venous Components of Plethysmographic Signals

We herein show how, by expressing photoplethysmographic readings in terms of multiples of AC at baseline, we can distinguish and quantify arterial and venous changes during a local vasodilatory as well as a systemic hypovolemic challenge. I-Hsun Liang, M.D., Siqin Nie, M.D., Samrawit A. Goshu, M.D., Saeeda Qadri, M.D., Nina Stachenfeld, Ph.D., Aymen A. Alian, M.B.,B. Ch, M.D., Kirk H. Shelley, M.D., Ph.D., David G. Silverman, M.D.; Anesthesiology, John B. Pierce Laboratory -- Physiology, Yale University School of Medicine, New Haven, CT, Department of Anesthesiology, First Affiliated Hospital of Guangzhou University, Guangzhou, China.

### CA A2103

#### Does Administration Of Mannitol Induce Changes In Stroke Volume Variation?

In a population of neurosurgical patients undergoing craniotomy, we examined whether mannitol affected stroke volume variation (SVV) estimated with a Vigileo monitor. We were unable to find any statistically significant difference in SVV between patients who received or did not receive mannitol. We could not find any difference in SVV at various time points before and after mannitol. We conclude that mannitol may not reliably affect SVV but that a further study is necessary to control for potential confounding variables. Ludmil V. Mitrev, M.D., Marc C. Torjman, Ph.D., Jasjit Sehdev, M.D., Keyur Trivedi, M.D., Michael Misbin, M.D., Muhammad Muntazar, M.D., Sandeep Gourkanti, M.S.C.; Anesthesiology, Cooper University Hospital, Camden, NJ .

### CA A2104

#### Changes in Pulse Transit Time According to Target Controlled Infusion of Propofol versus Sevoflurane Inhalation Induction

Increased arterial stiffness, a manifestation of arteriosclerosis, is a strong risk factor for cardiovascular disease. Recent studies have shown that pulse transit time (PTT) is capable of representing changes in blood pressure over a short period of time, offering beat-to-beat cardiovascular information without being invasive. The aim of this study was to explore which anesthetic technique would bring greater statistically significant changes in PTT values. Ann M. Youn, Masters, Sangil Park, Master of Medicine, Yong Sup Shin, Ph.D., Anesthesiology and Pain, Chungnam National University Hospital, Joong-Goo, Korea, Republic of, Chungnam National University Hospital, Daejeon, Korea, Republic of.

### CA A2105

#### Numerous Arterial Gas Emboli Occur during Closed-Circuit Extracorporeal Membrane Oxygenation

Multiorgan dysfunction frequently complicates the use of venous-to-arterial extracorporeal membrane oxygenation (ECMO) in patients with cardiopulmonary failure. Gaseous microemboli (GME), a potential etiology, has not been characterized in ECMO circuits. We used Doppler to characterize GME delivery to adult ECMO patients during routine clinical care. GME were observed at low rates at rest and much higher rates during clinical interventions. These data suggest a role for arterial filtration or other GME removal methodology to reduce end-organ complications during ECMO. York Jiao, M.D., Robert B. Schonberger, M.D., Jeffrey B. Gross, M.D., Keith E. Gipson, M.D., Ph.D., Department of Anesthesiology, University of Connecticut School of Medicine, Farmington, CT, Department of Anesthesiology, Yale University School of Medicine, New Haven, CT .



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain

**CA A2106****Left Internal Thoracic Artery Spasm Intraoperatively Diagnosed by Transesophageal Echocardiography**

Perioperative spasm of the left internal thoracic artery (LITA) is a life-threatening complication after coronary revascularization that can lead to circulatory collapse. However, intraoperative diagnosis of LITA spasm after coronary revascularization has not been reported. Here, we describe three patients in whom transesophageal echocardiography (TEE) confirmed spasm of the LITA during cardiac surgery and milrinone, a novel phosphodiesterase-3 inhibitor (PDE-3 inhibitor), alleviated the spasm and improved hemodynamics. Atsushi Yoshikawa, M.D., Takeshi Omae, M.D., Kumiko Yoshikawa, M.D., Yuichi Kanmura, M.D., Ph.D., Anesthesia, National Cerebral and Cardiovascular Center, Suita, Japan, Anesthesia, Kagoshima University Medical and Dental Hospital, Kagoshima, Japan.

**CA A2107****Incidence of Non-Critical Hypoxemia During One-lung Ventilation. Is it Avoidable?**

A prospective study to assess the incidence of non-critical hypoxemia during one lung ventilation and to know if there are predictive factors that can alert us. Almudena Reyes Fierro, M.D., Francisco De La Gala, M.D., Ph.D., Ignacio Garutti, M.D., Ph.D., Patricia Piñeiro, M.D., Javier Casanova, M.D., Ph.D., Ana Mesa, M.D., Pilar Benito, M.D., Patricia Cruz Pardos, M.D., Ph.D., Luis Olmedilla, M.D., Ph.D., Maria Teresa López Gil, M.D., Ph.D., Anesthesia, Hospital General Universitario Gregorio Marañón, Madrid, Spain.

**CA A2108****Intrarenal Resistive Index and Aortic Surgery**

Intrarenal resistive index seems to be an interesting tool in perioperative aortic surgery. Arnaud Elicagaray, M.D., Laurent Stecken, M.D., Alice Quinart, M.D., François Sztark, Ph.D., CHU Pellegrin, Bordeaux, France.

**CA A2109****Unanticipated Cardiac Tamponade from Endocarditis during Routine Aortic Valve Replacement**

We present the case of a 69-year-old male who presented for an elective aortic valve replacement for suspected severe aortic stenosis who on a routine perioperative transthoracic echocardiogram (TTE) was found to have undiagnosed subacute bacterial endocarditis complicated by a perivalvular abscess and an inflammatory pericardial effusion causing cardiac tamponade. Anesthetic management of cardiac tamponade and utility of TTE in preoperative assessment are discussed. Patrick L. Nguyen, M.D., Nathalie I. Hernandez, M.D., Byron Ferguson, M.D.; Anesthesiology, University of California, San Diego, CA .

**PO10-1 EXPERIMENTAL NEUROSCIENCES: NEUROTOXICITY  
8-10 a.m. | Hall B1-Area D****NA A2110****Menin Promotes Epigenetic Inhibition of mGluR4 Gene by Methyltransferase Ash2L After Nerve Injury**

Peripheral nerve injury induces upregulation of spinal menin and Ash2L, as well as increase in GRM4 methylation. Inhibition of both menin and Ash2L produced same effects, i.e. decrease in GRM4 methylation, upregulation of mGluR4, and reduction of pain threshold suggesting that spinal menin promotes inhibition of mGluR4 gene methylation by Ash2L after peripheral nerve injury. Xian Wang, M.D., Shiqin Xu, M.D., Shanwu Feng, M.D., Ph.D., Xiaofeng Shen, M.D., Yusheng Liu, M.D., Fuzhou Wang, M.D., Ph.D.; Department of Anesthesiology, Nanjing Maternity and Child Health Care Hospital, Nanjing Medical University, Nanjing, China.

**NA A2111****Intubation Mechanics-1: Intubation Force and Cervical Spine Motion Decrease With Repeated Intubations in Cadavers**

In cadavers, intubation force and cervical spine motion change with repeated intubations. Bradley J. Hindman, M.D., Brandon G. Santoni, Ph.D., Robert P. From, D.O., Ricardo B. Fontes, M.D., Vincent C. Traynelis, M.D., Michael M. Todd, M.D., Christian M. Puttlitz, Ph.D.; Anesthesia, University of Iowa Roy J. and Lucille A. Carver College of Medicine, Iowa City, IA, Foundation for Orthopaedic Research and Education, Tampa, FL, Neurosurgery, Rush University Medical Center, Chicago, IL, Mechanical Engineering, Colorado State University, Fort Collins, CO.

**NA A2112****Effects of Intrathecal Kappa Opioid Receptor Agonist on Morphine-Induced Itch and Antinociceptive Effect in Mice**

Our results suggest that intrathecal (i.t.)  $\kappa$  opioid receptor (KOR) agonist inhibits morphine-induced itch, and i.t. administration of KOR agonist combined with morphine thermal antinociceptive effects more than 2 times longer than morphine alone. Manabu Sakakihara, M.D., Noritaka Imamachi, M.D., Naoki Kakuta, M.D., Yoji Saito, M.D.; Anesthesiology, Shimane University Faculty of Medicine, Izumo, Japan.

**NA A2113****Neonatal Isoflurane Exposure Disturbs Granule Cell Migration in the Rat Dentate Gyrus**

Neonatal isoflurane anesthesia causes long-lasting granule cell ectopia in the rat hippocampal DG, which may be one possible mechanism underlying the neurotoxicity following neonatal isoflurane anesthesia. Yosuke Uchida, M.D., Ph.D., Toshikazu Hashimoto, M.D., Ph.D., Rui Kato, M.D., Ph.D., Hitoshi Saito, M.D., Tetsutaro Hase, M.D., Kenkichi Tsuruga, M.D., Koichi Takita, M.D., Ph.D., Yuji Morimoto, M.D., Ph.D.; Department of Anesthesiology and Critical Care, Hokkaido University Graduate School of Medicine, Sapporo, Japan.

**NA A2114****Early Exposure to General Anesthesia Impairs Excitatory Synaptic Plasticity in the Developing Rat Brain**

Exposure to a clinically relevant cocktail of general anesthetics during the peak of brain development causes chronic overstimulation of excitatory synapses, i.e., a significant increase in the frequency of miniature evoked postsynaptic currents and in the firing of spontaneous action potentials in CA1-subiculum brain slices of rats exposed at 7 days of age. In the exposed animals the alterations in synaptic transmission are associated with a disruption in the strategic topographical organization and trafficking of synaptic vesicles at presynaptic terminals of developing excitatory synapses. Nadia Lunardi, M.D., Ph.D., Michael R. DiGrucchio, Ph.D. Candidate, Slobodan M. Todorovic, M.D., Ph.D., Vesna Jevtovic-Todorovic, M.D., Ph.D.; Anesthesiology, University of Virginia Health System, Charlottesville, VA, Neuroscience Graduate Program, University of Virginia, Charlottesville, VA.

**NA A2115****Dexmedetomidine Attenuates Gestational Propofol Anesthesia-Induced Spatial Memory Impairment in Offspring Rats**

Maternal exposure to commonly used anesthetic drugs caused neuronal injury in the fetal brains, which is associated with long-term neurobehavioral disturbances in the offspring. Recent evidence suggests that dexmedetomidine (Dex) is neuroprotective in isoflurane-induced brain injury. In the current study, we found that offspring rats exposed to propofol in utero show learning and memory deficits in 8-arm radial maze. When Dex was coadministered with propofol, it can mitigate the learning and memory impairment induced by maternal propofol anesthesia. Jing Li, Ph.D., Pratap Nadavaluru, M.D., Ming Xiong, M.D., Ph.D., Jiang H. Ye, M.D., Shawn K. Puri, M.D., Anuradha P. Patel, M.D., Alex Y. Bekker, M.D., Ph.D.; Anesthesiology, NJMS-Rutgers, Newark, NJ.

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## NA A2116

### Rats Exposed to Intalipid Emulsion in Utero during Gestation are Behaviorally Normal as Juvenile

Increasing evidence suggests that propofol can have adverse effects on the developing brain by triggering apoptotic neurodegeneration. Intralipid emulsion is the vehicle to carry propofol in propofol formulation. No study has investigated the effect of intralipid per se on the developing brain. In this study, we found that intralipid emulsion administered to pregnant rats is unlikely to cause apoptosis in the fetus and persistent learning impairment in the juvenile offspring rats. **Jing Li, Ph.D., Pratap Nadavaluru, M.D., Ming Xiong, M.D., Ph.D., Jiang H. Ye, M.D., Vasanti A. Tilak, M.D., Jean D. Eloy, M.D., Alex Y. Bekker, M.D., Ph.D.;** Anesthesiology, NJMS-Rutgers, Newark, NJ.

## NA A2117

### TNF-Alpha as a Biomarker for Neurological Severity in Acute Carbon Monoxide (CO) Poisoning

Inflammatory mediators, IL-10 and TNF-alpha, were significantly elevated upon admission to HBOT in patients who suffered from LOC after CO intoxication. Both biological markers were significantly reduced after HBOT and recovery. We propose to use these markers as indicators of recovery from neurological symptoms. **Enrico M. Camporesi, M.D., Giuliano Vezzani, M.D., Angela Pizzola, M.D., Yiu-Hei Ching, M.D., Emily Alvey, B.S., Devanand Mangar, M.D.;** Florida Gulf-to-Bay Anesthesiology Associates LLC, Tampa, FL, Hospital of Vaio, Vaio, Italy.

## NA A2118

### Effects of Isoflurane on Survival, Proliferation, and Differentiation of Neuronal Progenitor Cells

The authors tested the hypothesis that isoflurane alters neurodevelopment of human embryonic stem cell-derived neuronal progenitor cells. The exposure of isoflurane hampered the neuronal survival, proliferation, and differentiation on day 3 and day 5. And the mechanism of ISO neurotoxicity may be partly mediated by p75NTR activation. **He min Son, M.D., Jinhee Kim, M.D., Ph.D., JungWon Hwang, M.D., Ph.D., Sang Hwan Do, M.D., Ph.D.;** Anesthesiology, Seoul Natl Univ Bundang Hospital, Seongnam-si, Korea, Republic of.

## NA A2119

### Inhibition of Isoflurane-Induced Neurotoxicity

The metabolic state of an organism plays a role in anesthetic-induced neurotoxicity. Induction of a stress might be a method of preventing anesthetic-induced apoptosis and behavioral neurotoxicity. **Philip G. Morgan, M.D., Katherine R. Gentry, M.D., Hyo-Seok Na, M.D., Ph.D., Nicole L. Brockman, B.A., Margaret M. Sedensky, M.D.;** Anesthesiology and Pain Medicine, University of Washington, Seattle Childrens Research Institute, Seattle, WA, Anesthesia and Pain Medicine, Seoul National University, Seoul, Korea, Republic of.

## NA A2120

### Cyn-1 Regulates Anesthesia Toxicity but Not Anesthesia Action in Caenorhabditis Elegans

Anesthetic isoflurane induces general toxicity, increases mortality and causes mitochondrial dysfunction in *C. elegans* with a dose-dependent manner. Cyclophilin D (encoded by gene *cyn-1*), which regulates the opening of mitochondrial permeability transition pore, regulates these effects. However, Cyclophilin D does not affect the anesthesia action of isoflurane in *C. elegans*. These data suggest that isoflurane can induce general toxicity and increase mortality, which may not simply be the overdose of anesthesia action. **Cheng Ni, M.D., Ph.D., Yiyang Zhang, M.D., M.S., Yuanlin Dong, M.D., M.S., Zhongcong Xie, M.D., Ph.D.;** Department of Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital and Harvard Medical School, Boston, MA.

## NA A2121

### The Change of Glia Cells in Hippocampus in Orthopedic Surgery and Sevoflurane Related Cognitive Defect in Aged Rats

Many recent studies have suggested that old people with exposure to anesthesia and surgery can increase the risk of cognitive impairment and glia cells are involved in cognitive processes and neuropsychiatric disorders. Therefore, we established a rat model of surgery and sevoflurane anesthesia, aiming to probe the role of glia cell in sevoflurane related cognitive impairment. These results suggest that 1.5 MAC sevoflurane aggravated the cognitive impairment effect of orthopedic surgery via altering IL-6 and TNF- $\alpha$  released by glia cells. **Meihua Yang, Master, Guolin Wang, M.D.;** Tianjin Medical University General Hospital, Tianjin, China.

## NA A2122

### The Effect of Sevoflurane on Dentritic Spine and Spacial Memory is Meditated by $\alpha 7nAChR-NMDAR$ in Neonatal Rats

$\alpha 7nAChR-NMDAR$  is involved in the dentritic spine loss and spacial memory deficits induced by sevoflurane.  $\alpha 7nAChR$  agonist reversed the spacial working memory deficits, dentritic spine loss and shortening, and NR2B trafficking to the cytoplasm induced by sevoflurane. These indicate that the expression of surface NR2B-containing NMDA receptors are regulated by  $\alpha 7nAChR$  in neonatal rat hippocampus, which may be involved in sevoflurane-induced changes of dentritic spine morphology and spacial memory deficits. **Xiaohong Tang, Bachelor, Yize Li, Master, Chunyan Wang, Master, Meihua Yang, Bachelor, Miaomiao Wang, Bachelor, Guolin Wang, M.D.;** Department of Anesthesiology, General Hospital of Tianjin Medical University, lanjin Research Institute of Anesthesiology, Tianjin, China.

## NA A2123

### Neonatal Sevoflurane Exposure Induces Ectopic Granule Cell via Excessive GABAergic Signals in the Rat Dentate Gyrus

Neonatal sevoflurane anesthesia introduces the significantly higher rate of hilar granule cell ectopia in the rat hippocampus via GABAergic signals. **Rui Kato, M.D., Ph.D., Hitoshi Saito, M.D., Toshikazu Hashimoto, M.D., Ph.D., Yosuke Uchida, M.D., Tetsutaro Hase, M.D., Koichi Takita, M.D., Ph.D., Yuji Morimoto, M.D., Ph.D.;** Department of Anesthesiology, Hokkaido University Hospital, Sapporo, Japan.

## NA A2124

### In-Utero Exposure to Isoflurane Decreases Levels of Key Regulatory Proteins in Cerebral Cortical Development

To examine anesthetics neurotoxicity we studied the effects of anesthetics on key regulatory proteins in the process of neuronal migration / positioning within the developing embryonic cerebral cortex. We found that the amount of the 175 kDa-reelin isoform were consistently and significantly lower in the brains of animals prenatally exposed to isoflurane compared with controls ( $p < 0.05$ ). Similar density differences that were significantly lower in the brains of animals prenatally exposed to isoflurane were obtained for 67 kDa-GAD67 ( $p < 0.05$ ). **Mario Moric, M.S., Vicko Gluncic, M.D., Jeffrey S. Kroin, Ph.D., Seby Edassery, M.S., Yaping Chu, Ph.D., Kenneth J. Tuman, M.D.;** Anesthesiology, Neurological Sciences, Rush University Medical Center, Chicago, IL.

## NA A2125

### Neonatal Exposure to Nitrous Oxide Disturbs Granule Cell Migration in the Rat Dentate Gyrus in Time Dependent Manner

More than 120min of 50% N<sub>2</sub>O exposure causes the derangement of the GC migration in the neonatal rat DG. Furthermore, bumetanide could be one of the agents to prevent the adverse effect of N<sub>2</sub>O. **Hitoshi Saito, M.D., Rui Kato, Ph.D., Toshikazu Hashimoto, Ph.D., Yosuke Uchida, M.D., Tetsutaro Hase, M.D., Kenkichi Tsuruga, M.D., Koichi Takita, Ph.D., Yuji Morimoto, Ph.D.;** Department of Anesthesiology, Hokkaido University Hospital, Sapporo, Hokkaido, Japan.



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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**PO13-1 OUTCOMES AND DATABASE RESEARCH**  
**8-10 a.m. | HALL B1-AREA A**

**FA A2126**

**Acute Pain Biomarker Discovery With the Aid of Large Databases**

By leveraging existing clinical data, this study aims to identify a serologic biomarker of acute pain. Electronic medical records reflecting 778,550 clinical encounters (179,232 adult patients) were analyzed. Of the ten (10) candidate biomarkers of acute pain identified through this study, five are involved in inflammatory pathways. **Jorge A. Caballero, M.D., Atul J. Butte, M.D., Ph.D.;** Department of Anesthesia, Pediatrics/Systems Medicine, Stanford University School of Medicine, Stanford, CA.

**FA A2127**

**Changes in Coagulation Profile for the Adult Donor After Living Donor Liver Transplantation (LDLT)**

In liver surgery, coagulation dysfunction due to surgical stress is an important factor in perioperative management. In this retrospective cohort study, we examined the change over time of the coagulation profile of the donor in the adult to adult living donor liver transplantation (LDLT). PT-INR increased significantly on postoperative day 1 (1.43±0.13). Even in the healthy LDLT donor, one third of them showed PT-INR ≥ 1.5. Influence of hepatectomy on coagulation status depends on the ratio of the graft volume to standard liver volume (SLV). There was a transient increase of the PT-INR with less effects on platelets and APTT. **Yuh Tamai, M.D., Ryo Orii, M.D., Masaaki Asamoto, M.D., Kanji Uchida, M.D., Ph.D., Kyungho Chang, M.D., Ph.D., Takami Komatsu, M.D., Ph.D., Yoshitsugu Yamada, M.D., Ph.D.;** Department of Anesthesiology and Pain Relief Center, The University of Tokyo Hospital, Tokyo, Japan.

**FA A2128**

**Supervising Anesthesiologists Cannot Be Reliably Evaluated According to their Patients' PACU Admission Pain Scores**

Supervising anesthesiologists cannot be reliably compared by admission PACU NRS pain scores. The confounding impact of the PACU nurse eliciting the admission pain score greatly exceeded the contribution by the anesthesiologist. This finding suggests that NRS pain scores at PACU admission should not be used as a quality metric for supervising anesthesiologists. **Jonathan P. Wanderer, M.D., M.Phil., Yaping Shi, M.S., Jonathan S. Schildcrout, Ph.D., Jesse M. Ehrenfeld, M.D., Richard H. Epstein, M.D.;** Department of Anesthesiology, Department of Biostatistics, Vanderbilt University, Nashville, TN, Thomas Jefferson Hospital, Philadelphia, PA.

**FA A2129**

**The Comparison of Antiemetic Effect of Palonosetron Monotherapy Versus Palonosetron With Midazolam Combination Therapy for Prevention of Postoperative Nausea and Vomiting in Patients Undergoing Breast Surgery and Intravenous Patient Controlled Analgesia**

There was no difference between palonosetron monotherapy and combination therapy of palonosetron with midazolam in patients undergoing breast surgery and PCA using fentanyl. **Jeongmin Hong, M.D., Yun hee Han, M.D., Dong Hun Lee, M.D.;** Pusan National University Hospital, Pusan, Korea, Republic of.

**FA A2130**

**Do Multiple Measurements of Field Vital Signs Enhance Prediction of Emergency Transfusion and Interventions?**

Serial pre-hospital VS features measured every 5 minutes significantly improved prediction of immediate and massive transfusion, emergency intubation and mortality versus single initial field VS measures. With the addition of admission single point VS, the AUROC of all predictions further increased. Transmitted ahead, this information can speed definitive hemorrhage control and blood bank preparation of blood products. **Peter F. Hu, Ph.D., Rukmini Ramakrishnan, M.S., Shiming Yang, Ph.D., Amechi Anazodo, M.D., M.P.H., Cristina Imle, M.S., Lauren Hartsy, M.S., Catriona Miller, Ph.D., Stacy Shackelford, M.D., Samuel M. Galvagno, Jr., D.O., Ph.D., M.S., Colin F. MacKenzie, M.B., Ch.B.;** Anesthesiology, University of Maryland School of Medicine, Baltimore, MD, C-STAR Baltimore, United States Air Force, Baltimore, MD.

**FA A2131**

**Predictors for Postoperative Nausea and Vomiting and Efficacy of Antiemetic Prophylaxis After Xenon Anesthesia**

Prospective observational study including 488 patients undergoing xenon-based anaesthesia. Risk factors for PONV were female gender, duration of anesthesia and younger patient age. Routine prophylaxis with dexamethasone or 5-HT-3 antagonists may not be as effective as after classic inhalational anesthesia. **Maximilian S. Schäfer, M.D., Martin Neukirchen, M.D., Matthias Reyle-Hahn, M.D., Peter Kienbaum, M.D.;** Klinik für Anaesthesiologie, Universitätsklinikum Düsseldorf, University Hospital of Duesseldorf, Duesseldorf, Germany, Ev. Waldkrankenhaus Spandau, Berlin, Germany.



**FA A2132**

**Association of Intraoperative Administration of Hydroxyethyl Starch Solution and Postoperative Wound Infection in Patients Undergoing Colorectal Surgery**

We did not find the association between intraoperative Hextend administration and surgical site infections in patients having colorectal surgery. The results are preliminary and might change when we consider extensive list of potential Our confounders. The results may not apply to newer generation, lower-molecular weight starches. Though the results were preliminary we aim to include atleast 8000 patients and infection risk will be evaluated using the SENIC and NNISS scale. **Rakhi Pal, MBBS, M.D., Andrea M. Kurz, M.D., Jacek B. Cywinski, M.D., Natalya Makarova, Ph.D.;** Anesthesia, Outcome Research, Anesthesia and Liver Transplant, PACE, Quantative Health Science and Outcome Research, Cleveland Clinic, Cleveland, OH.



**FA A2133**

**Perioperative Intravenous Lidocaine Infusion Reduces Postoperative Pain and Opioid Consumption after Cardiac Surgery**

Perioperative lidocaine infusion has been previously shown to reduce opioid requirements and pain scores in patients undergoing abdominal surgery, but this benefit has not been demonstrated in patients undergoing cardiac surgery. We show, via a prospective, randomized, placebo-controlled trial, that patients undergoing cardiac surgery who received perioperative intravenous lidocaine had a reduced postoperative opioid requirement of 29% in 48 h with lower pain scores. **Rebecca Y. Klinger, M.D., M.S., Ashraf S. Habib, M.B., B.Ch., M.Sc., FRCA, William D. White, M.P.H., Mark Stafford-Smith, M.D., Mark F. Newman, M.D., Joseph P. Mathew, M.D.;** Department of Anesthesiology, Duke University Medical Center, Durham, NC.



**FA A2134**

**Recorded Heart Rates in the ICU Database - Do We Miss Important Data?**

Using an algorithm-based automatic analysis of minute-by-minute data, the present study unveiled significant differences from the hourly nurse-confirmed values, which remain undetected with the common practice, necessitating smaller intervals in automated vital signs recording. **Manuela Marron, Ph.D., Torsten Eck, M.D., Sebastian Boettcher, M.Sc., Leif Saager, M.D., F.C.C.P., Thomas Kohlmann, Ph.D., Konrad Meissner, M.D.;** Institute for Community Medicine, Department of Methods in Community Medicine, Universitätsmedizin of Anaesthesiology and Intensive Care, Universitätsmedizin Greifswald, Greifswald, Germany, Anesthesiology Institute, Department of Outcomes Research, Cleveland Clinic, Cleveland, OH.

**FA A2135**

**Does Postoperative Nausea and Vomiting Prophylaxis With Dexamethasone Increase the Risk of Recurrence of Endometrial Cancer?**

Dexamethasone is widely used for postoperative nausea and vomiting (PONV) prophylaxis. In our study, women who underwent surgery for endometrial cancer between 2003-2007 were identified from a prospectively collected database. We concluded that dexamethasone administration for PONV prophylaxis was not associated with an increased risk of recurrence in women having surgery for endometrial cancer. **Brittany A. Reed, M.D., Laura J. Havrilesky, M.D., Jessie A. Ehrisman, B.A., Gloria Broadwater, M.S., Ashraf S. Habib, M.B., B.Ch., M.Sc., FRCA;** Anesthesiology, Obstetrics & Gynecology, Gynecologic Oncology, Duke University Medical Center, Durham, NC.



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### FA A2136

#### Perioperative Injectable Medication Errors: Frequency, Severity and Types of Errors by Therapeutic Class

In this cross-sectional analysis of perioperative injectable medication errors (IMEs) reported to the MEDMARX database from 2006-2011, we found that perioperative IMEs are most likely to occur as the result of the wrong dose or wrong drug being administered, or due to errors of omission. The therapeutic classes of drugs most frequently cited were antimicrobial agents and opioid analgesics, while IMEs reported for cardiovascular agents had the biggest impact on patient harm. **Sonia Pulgar, M.PH., Monika Parisi, M.PH., Randall K. Jones, M.D., Mark J. Rice, M.D., Steven Jarrett, PharmD; Health Economics and Outcomes Research, Becton, Dickinson and Company, Franklin Lakes, NJ, University of Florida, Gainesville, FL, Carolinas Healthcare System, Charlotte, NC.**

### FA A2137

#### Effect of Post-operative Epidural Analgesia on the Rate of Inpatient Falls after Major Upper Abdominal and Thoracic Surgery in the United States: Evaluation on the Nationwide Inpatient Sample 2007-2011

Post-operative epidural analgesia provides good pain relief after thoracic and upper abdominal surgery. Many surgeons believe that post-operative epidural affects the patient ability to ambulate and increases the incidence of post-operative inpatient accidents and falls. Inpatient falls are associated with significant morbidities. They are potentially preventable, therefore, have been designated as “never events” by CMS. Our study investigated the association between post-operative epidural and inpatient accidents and falls using a large national sample. We concluded that post-operative epidural is not a risk factor for inpatient falls. This is a preliminary finding and retrospective controlled studies needed to confirm this conclusion. **Ahmad Elsharydah, M.D., M.B.A., , Tiffany M. Williams, M.D., Ph.D., Eric B. Rosero, M.D., M.S.; Anesthesiology and Pain Management, UT Southwestern Medical Center, Dallas, TX.**

### FA A2138

#### Admission Source and Postoperative Complications: A Retrospective Cohort Study

Little data is available regarding whether admission source (home versus non-home environments) could be predictive of adverse perioperative events. Our results suggest that admission source is indeed a significant predictor of adverse events after surgery. Such findings could be used to help inform both patients and providers when attempting to determine risk for postoperative complications. **Misty Radosevich, M.D., Joseph A. Hyder, M.D., Ph.D, Arun Subramanian, M.D., Daryl J. Kor, M.D.; Anesthesiology-Critical Care, Mayo Clinic College of Medicine, Rochester, MN.**

### FA A2139

#### An Overview of Adverse Events in the National Anesthesia Clinical Outcomes Registry (NACOR)

The research objective is to determine factors associated with anesthetic complications using a national registry on various patient populations and surgical procedures. The overall mortality rate during this time period was unchanged (0.03%) while the percentage of overall adverse events decreased from 11.8% in 2010 to 4.8% in 2013. Patients age 50 and over or classified as ASA PS 4 exhibit the highest serious adverse event whereas minor complications are more common in healthier patients (ASA PS 1-2) undergoing elective daytime procedures. **Adrian Liau, Ph.D., Jeana E. Havidich, M.D., Richard P. Dutton, M.D., M.B.A.; Anesthesia Quality Institute, Park Ridge, IL, Dartmouth-Hitchcock Medical Center, Lebanon, NH.**

### FA A2140

#### The Association between Sjogren's Syndrome with Postoperative Cardiovascular Complications

Sjögren's syndrome is an autoimmune disease that affects millions of people in the United States. Using data from censuses of inpatient discharge records from 2009-2010, we tested our hypothesis that Sjögren's syndrome is independently associated with an increased risk of cardiovascular complications. **Arjun Sharma, M.D., Rovnat Babazade, M.D., Brian D. Hesler, M.D., Zhuo Sun, M.D., Natalya Makarova, M.S., Jarrod E. Dalton, Ph.D., Alparslan Turan, M.D.; Anesthesiology, The Cleveland Clinic, Cleveland, OH.**

### FA A2141

#### Meta-Analysis of Pain Catastrophizing and Persistent Post-Operative Pain After Total Knee Arthroplasty (TKA)

To evaluate the relationship between catastrophizing and persistent post-operative pain we conducted a systematic literature research on a common procedure, Total Knee Arthroplasty, which has a moderate incidence of persistent post-operative pain. The relationship of pain catastrophizing with long term postoperative pain had an overall mean effect size of Cohen's d = .69. The overall effect size and confidence interval is moderately strong and does not cover zero, indicating a significantly effect for higher preoperative catastrophizing leading to higher amounts long term pain. **Mario Moric, M.S., Asokumar Buvanendran, M.D.; Anesthesiology, Rush University Medical Center, Chicago, IL.**

### PO06-1 CRITICAL CARE

10 a.m.-12 p.m. | Hall B1-Area D

### CC A2142

#### A Prospective Study of Bacterial Colonization of Central Venous Catheters Introduced Through Two Different Routes

In a prospective, randomized study the incidence and aetiological causes of bacterial colonization were compared between internal jugular vein (IJV) (n=30) or subclavian vein (SCV) (n=30) catheterization. Catheter tip colonization was more frequently observed in IJV group compared with SCV group (15/30 Vs 7/30; p=0.03). Overall 22/60 (37%) cultures were positive; 15/22 (68.2 %) in IJV group and 7/22 (31.8%) in SCV group. There was no statistically significant difference in the growth on blood culture between the groups (3/30 Vs 4/30; p=0.671). Most common organisms colonizing central venous catheters were Gram negative bacteria (n= 14/60; 23.3%). More than one attempt at catheterization was significantly associated with higher occurrence of catheter tip colonization (p=0.014). **Mangu H. Rao, SrM.D.; Anesthesiology, Critical Care & Pain, SVIMS Hospital, Tirupati, India.**

### CC A2143

#### Propofol Infusion Syndrome (PRIS): Incidence and Risk Factors in a Level One Trauma Center

In conclusion, future large prospective, randomized controlled trials comparing outcomes of several sedation protocols in ICU patients will be needed to determine the true incidence of PRIS, to identify genetically susceptible patients, and to develop clinical guidelines for propofol sedation without increasing risks of PRIS. **Alan D. Kaye, M.D., Ph.D., James H. Diaz, Dr.PH., M.D., M.PH., Aaron J. Kaye, B.S. (expected), Amit Prabhakar, M.D., Mary E. Fox, B.S., Oliver M. Hall, B.S. (expected), Andrew J. Garcia, B.S., . Jonathan Lissauer, M.D., Richard Urman, M.D.; Anesthesiology, Louisiana State University School of Medicine, New Orleans, LA, Pharmacy, University of Arizona, Tucson, AZ, Anesthesiology, Brigham and Women's Hospital (Harvard Medical School), Boston, MA .**

### CC A2144

#### Evaluation of Postoperative Pulmonary Function of Cystic Fibrosis in the Intensive Care following Lung Transplantation

Our study focuses on the postoperative recovery of cystic fibrosis after bilateral lung transplant during their ICU stay. **Sana Nini, M.D., Jayanta Mukherji, M.B.B.S., ; Loyola University Medical Center, Maywood, IL .**

### CC A2145

#### Continuous Magnesium Administration Minimally Affects Coagulability in Rats With Normal Coagulability

The purpose of this study was to evaluate the effect of ionized magnesium on coagulability. Twenty-six male Sprague-Dawley rats were allocated to receive magnesium ions (group M) at a rate of 1.5 mEq/15 ml/hr or normal saline (group N) at a rate of 15 ml/hr. Arterial blood samples were obtained to evaluate Rotation Thromboelastometry (ROTEM®) at baseline and 1 hour. At baseline, there was no significant difference in any of the ROTEM measurements. In INTEM measurements, clotting time significantly increased in group M compared with group N (P =0.04). EXTEM, FIBTEM and HEPTM measurements were not significantly different. This study indicates that administration of magnesium ions minimally affects coagulability. **Satoru Fujii, M.D., Yuka Fujii, M.D., Tsunehisa Tsubokawa, M.D.; Kanazawa University Hospital, Kanazawa City, Japan.**



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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**CC A2146****Modified Communication Boards in Cardiac Intensive Care Unit Could Reduce Patient's Frustrations and Satisfy Patient's Culture**

Critically ill patients receiving mechanical ventilation have compromised communication due to the presence of endotracheal tube. We evaluated the use of modified communication boards which exhibited the basic patients' needs and information which satisfy patients' culture and applied to patients after extubation in Cardiac Intensive Care Unit. The board could reduce frustration and improve communication. It is easy, efficient and satisfies patients' culture. **Hamed Elgendy, M.D., Ph.D., Ghaida Alsulami, B.S., .NTariq Jilani, M.D., Ammar Attar, M.D., Belal Kadous, DAT; Anesthesia, King Abdullah Medical City, Critical Care Nursing Division, Nursing College, Laboratory Medicine Department, Faculty of Applied Medical Sciences, Umm Al-Qura University, Makkah, Saudi Arabia.**

**CC A2147****The Usefulness of CART Algorithm for Diagnosis of Transfusion-related Acute Lung Injury**

A classification and regression tree (CART) algorithm is introduced by Clifford et al. by analyzing patient data in hospital computerized network to screen transfusion-related acute lung injury. Regrettably this algorithm is not suitable for the health care situation in the Republic of Korea due to high frequency of chest radiography. **Kyunam Kim, M.D., Dong Won Kim, M.D., Ph.D., Jong Hun Jun, M.D., Ph.D., Department of Anesthesiology and Pain Medicine, Hanyang University Hospital, Seoul, Korea, Republic of.**

**CC A2148****Use of Tracheal Detecting-Bulb Within Endotracheal Intubation in 10 Seconds of Cardiac Arrest Patients**

Sixty emergency cases were divided into two groups randomly, the TDB group or pulmonary auscultation group (each n=30), the TDB was preinstalled at the external end of an endotracheal tube with 7.5mm inner diameter, successful tube insertion was indicated by the expansion of the latex bulb of TDB when the chest was compressed, the TDB technique can detect the placement of tube instantly and properly while chest compressions are ongoing. During cardiac arrest and CPR, using the TDB technique, a success rate of 40% of endotracheal intubation within 10 seconds can be achieved when performed by experienced anesthetists. **Ning Yin, M.D., Ph.D., You-liang Tong, M.D., Zhen Wang, M.D.; Anesthesiology, Zhongda Hospital, Southeast University, Nanjing, China, Zhongda Hospital, Southeast University, Nanjing, China.**

**CC A2149****Effect of Thoracic Epidural Block on Progression of Sepsis**

The present study evaluated the role of thoracic epidural block (TEB) on postoperative progression of sepsis, when added to the standard general anesthetic technique in patients of small intestinal perforation peritonitis undergoing abdominal laparotomy. The progression of sepsis was measured by postoperative aggregate SOFA scores and systemic levels of Interleukin 6. We found that the use of TEB was not associated with any significant improvement in the postoperative severity of sepsis, despite a trend towards clinically better organ function, and significantly earlier return of bowel motility. **Anuradha Bansal, M.B.B.S., Asha Tyagi, M.D., D.N.BMNAME, Shukla Das, M.D., Ak Sethi, D.AM.D.; Anesthesiology and Critical Care, Microbiology, University College of Medical Sciences & GTB Hospital, Delhi, India.**

**CC A2150****Type-B Lactic Acidosis and Insulin Resistance Postoperatively in Heart Transplant Recipients**

We evaluated the incidence, associated factors and outcomes related to Type-B Lactic Acidosis and Insulin Resistance after heart transplantation. Both were common, but no factors were significantly associated. Patient outcome was not affected by these disorders. **Sundar Krishnan, M.B.B.S., Kenichi Ueda, M.D., Taften L. Kuhl, M.D.; Anesthesia, University of Iowa Anesthesia, Iowa City, IA.**

**CC A2151****Interest of New Fibrin-Related Markers for the ISTH Overt Disseminated Intravascular Coagulation Score**

Disseminated intravascular coagulation (DIC) is a frequent condition in the ICU. Several markers can be used to calculate the ISTH overt DIC score. Measurements for fibrin monomers (FM) and D-Dimers (DDi) are automated while fibrin degradation products (FDP) are not. We evaluated the score performances using DDi and FM, and compared them with FDP. 25 patients with SIRS were included. Correlation between each marker (FM/FDP, DDi/FDP, FM/DDi) was strong ( $r = 0,70; 0,78$  and  $0,83$  respectively,  $p < 0,0001$ ). The use of DDi or FM could allow systematic calculation of ISTH score without the need of laboratory manipulation. **François Malavieille, JrM.D., Guillaume Boulay, Intern, Florent Baudin, Intern, Bernard Floccard, M.D., Thomas Rimmele, M.D., Ph.D., Anesthesiology and Intensive Care Unit, Hôpital Edouard Herriot - Hospices Civils de Lyon, Lyon, France.**

**CC A2152****ISS to Predict Hypofibrinogenemia in Severe Trauma Patients in the Resuscitation Room**

Early diagnosis of hypofibrinogenemia is needed to decide the right method of treatment for trauma patients. This study evaluated the diagnostic performance of ISS to predict hypofibrinogenemia. It showed that ISS could be used to predict hypofibrinogenemia but, because of its lack of sensitivity, it should not be used alone. **Guillaume Marcotte, M.D., Maeva Durand, Resident, Mathieu Page, M.D., Jean Stephane David, M.D., Ph.D., Bernard Floccard, M.D., Thomas Rimmele, M.D., Ph.D., Hopital Edouard Herriot, Hospices Civils de Lyon, Lyon, France.**

**CC A2153****Risk Factors for Intra Abdominal Candidiasis in a Surgical Digestive Unit**

Risk factors analysis of intra-abdominal candidiasis in a surgical unit. **Marion Scotto, M.D., Laurent Stecken, M.D., Alice Quinart, M.D., Francois Sztark, Ph.D., SAR, CHU Pellegrin, IECB & INSERF E. Universite Bordeaux, SAR, Hopital Pellegrin Bordeaux, Bordeaux, France.**

**CC A2154****The Effect of Volatile Anesthetics on the Incidence of Postreperfusion Syndrome During Liver Transplantation: Comparison Between Sevoflurane and Desflurane**

In the liver transplantation, it is known that PRS is related with graft outcome. We compared the incidence of PRS between sevoflurane and desflurane anesthesia in living donor liver transplantation. The incidence of PRS was significantly lower in the sevoflurane group than in the desflurane group (38.7% vs. 77.4%;  $p = 0.004$ ). Compared to desflurane, sevoflurane is considered to be better in terms of preventing PRS. **Jiwon Lee, M.D., Yongjae Yoo, M.D., Ho-Geol Ryu, M.D.; Department of Anesthesiology and Pain Medicine, Seoul National University Hospital, Seoul, Korea, Republic of.**

**CC A2155****Considerations in Intra-operative Use of Volume Diffusive Respirator (VDR®) for Inhalational Injury Patients**

The Volume Diffusive Respirator (VDR®) has been utilized in critical care settings for mechanical ventilation of burn patients. VDR® has been shown to improve gas exchange at low tidal volumes with decreased peak pressures and work of breathing. VDR® can be implemented successfully in OR settings for the frequently returning burn patients with inhalational injuries. In this poster, the authors will discuss several practical aspects of intraoperative management associated with VDR® usage, including ease of transport, power supply, drug administration, pressure/volume concerns, and possible conversion to IMV. It will require proactive effort and familiarization with VDR® along with collaboration with trained respiratory therapists to use VDR® more frequently in the OR. **Hiral R. Patel, M.D., George W. Williams, II, M.D., Bilal A. Rana, M.D.; University of Texas Health Science Center at Houston, Houston, TX.**



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## CC A2156

### Characteristics of Sepsis-Induced Cardiac Dysfunction Using Speckle Tracking Echocardiography

The heart in sepsis has been appraised as a pump rather than as a tissue. Accordingly, cardiac function in sepsis has been assessed based on global indices that are not informative on the architecture of the heart. This study provides an attempt at appraising the heart as a tissue in sepsis. By looking at the effects of Longitudinal strain on outcomes, this study appraises the mechanical properties of the cardiac 'tissue' in sepsis. **Ahmed F. Zaky, M.D., M.P.H.; Anesthesiology, University of Alabama at Birmingham, Birmingham, AL .**

## CC A2157

### Earlier M2 Microglia Activation Promotes the Recovery in Developing Brain After Traumatic Brain Injury

Earlier M2 microglia activation promotes the recovery in developing brain after traumatic brain injury. **Shiyu Shu, Ph.D., Anesthesiology Department, Children's Hospital of Chongqing Medical University, Chongqing, China.**

## PO08-1 EQUIPMENT, MONITORING AND ENGINEERING TECHNOLOGY: SECURING THE AIRWAY 10 a.m.-12 p.m. | Hall B1-Area C

## FA A2158

### Validity of Trachway in Assistance of a Preformed Double-Curve Nasotracheal Intubation for Patients Undergoing Oral Maxillofacial Surgery

Using Trachway for preformed double curve nasotracheal intubation not only saves intubation time but makes the intubation procedure easier as compared with using a laryngoscope. **Kuang I. Cheng, M.D., Ph.D., Hung-Te Hsu, M.D., Kuang-Yi Tseng, M.D., Chia-Heng Lin, M.D., Mao-Kai Chen, M.D.; Anesthesiology, Koahsiung Medical University Hospital, Kaohsiung, Taiwan.**

## FA A2159

### Fiberoptic, Wire-Guided King Laryngeal Tube Exchange Using the Arndt Airway Exchange Catheter Set

Laryngeal tubes are an increasingly common alternative to endotracheal intubation for pre-hospital airway rescue, but their exchange for an endotracheal tube to provide definitive airway management can be challenging and risky. We present a fiberoptic guided technique using the Arndt Airway Exchange Catheter in 13 patients. The technique was successful in 92% of the cases. The majority of cases (77%) were managed without hypoxia. In the unsuccessful case, the patient coughed in the middle of the exchange and dislodged the catheter. The technique allows for relative control of the airway after removal of the laryngeal tube and provides a guide for endotracheal tube placement. This technique may be limited by hemorrhage or soiled airway due to impaired visualization. **Mark Robitaille, B.S., Richard E. Galgon, M.D., M.S.; Department of Anesthesia, University of Wisconsin School of Medicine and Public Health, Madison, WI.**

## FA A2160

### Expected Difficult Intubation Under Sedation With Fiberoptic Versus Airtraq or Bonfils Technique

150 expected difficult oral intubations were performed under local anesthesia and sedation. In randomized order a fiberoptic (FOI), Airtraq or Bonfils technique was used. FOI was always successful, Airtraq and Bonfils in more than 85%. Intubations with the Airtraq laryngoscope were significantly faster. The anesthesiologists were satisfied with all three techniques. **Harold T. Groeben, M.D., Wiebke Köhne, M.D., Alexandra Elfers-Wassenhofen, M.D., Hardy Kewitz, M.D., Michael T. Nosch, M.D.; Klinik für Anästhesiologie, Kliniken Essen-Mitte, Dusseldorf, Germany, Marien-Hospital Bottrop, Bottrop, Germany.**

## FA A2161

### Comparison of SUZY Forceps/McGRATH MAC Videolaryngoscope and Magill Forceps/Macintosh Laryngoscope for Foreign Body Removal - A Mannequin Study

The SUZY curved forceps in combination with McGRATH MAC videolaryngoscope provides faster time for removing obstacle, and faster intubation time under better laryngeal exposure when compared to conventional Magill straight forceps in combination with Macintosh laryngoscope. **Akihiro Suzuki, M.D., Ph.D., Akihito Tampo, M.D., Ph.D., Yasuyoshi Inagaki, M.D., Daisuke Kawata, M.D., Takayuki Kunisawa, M.D., Ph.D., Hiroshi Iwasaki, M.D., Satoshi Fujita, M.D.; Anesthesiology and Emergency Department, Asahikawa Medical University, Asahikawa, Japan.**

## FA A2162

### A Not-So-Sticky Tape: A Comparison of Endotracheal Tube Tapes in the Prone Position

During a procedure in which the patient is prone and the airway not immediately accessible, the task of effectively securing an endotracheal tube becomes critical. Our hospital administration, without departmental input, recently introduced a new tape (3M Kind Removal Silicone Tape) to replace our existing tape (Hy-Tape®) in the operating room. Anecdotal reports soon surfaced suggesting that the tape was less effective in maintaining the ETT in the desired position. We designed a small IRB-approved volunteer study to compare this new tape to our traditional tape and found a significant difference (nearly two pounds) between the two tapes. **Ryan J. Mountjoy, M.D., Natacha Telusca, M.D., Richard A. Jaffe, M.D., Ph.D., John G. Brock-Utne, M.D., Ph.D.; Anesthesiology, Stanford University, Palo Alto, CA.**

## FA A2163

### Truflex™ Articulating Stylet Reduces Tracheal Intubation Attempts and Time During Truview PCD™ Videolaryngoscopy

Truflex™ articulating stylet is a better intubating aid as compared to Truview PCD™ dedicated stylet when using Truview PCD™ videolaryngoscope for tracheal intubation as shown by the fewer number of attempts required to intubate the trachea although the difference just failed to reach statistical significance. **Naresh Kaul, M.B.B.S., M.D., Adel Al Sulimi, Jr, M.B.B.S., M.D., Azharuddin Malik, Jr, M.B.B.S., M.D., Rashid M. Khan, Senior, M.B.B.S., M.D.; Anaesthesia & ICU, National Trauma Center, Khoula Hospital, Al-Harthy Complex, Oman, Muscat, Oman, Medicine, JN Medical College, Aligarh, India.**

## FA A2164

### Interest of the Rapid Positioning Intubation Stylet® in Combination With the GlideScope®: Preliminary Study

Endotracheal intubation with GlideScope® (Verathon, Bothell, WA, USA) requires the GlideRite® stylet. This stylet is rigid and can cause pharynx injury. The RPIS (Rapid Positioning Intubation Stylet) (AME, LLC, USA) has a soft and directional distal-tip. There are no statistical and no clinical differences between the mean times of intubation with GlideRite® or RPIS. The satisfaction score is good. An endotracheal intubation assisted by GlideScope® with RPIS is no more time consuming than with the GlideRite®. Moreover the non-traumatic distal-tip could limit the pharynx injuries and the directional end-part could be useful in the critical intubation situations. **Pierre-Olivier Ludes, Resident, Jean-Pierre Rameau, Resident, Eric Noll, M.D., Antoine Charton, M.D., Gilles Mahoudeau, M.D., Julien Pottecher, M.D., Pierre A. Diemunsch, M.D., Ph.D.; Anesthesiology-Intensive Care, Hautepierre, University Hospital of Strasbourg, Strasbourg, France.**



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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**FA A2165****Reliable Tracheal Intubation Using New-type of Airway Scope by Medical Interns -Comparison with McGrath MAC and Macintosh Laryngoscopes**

The new-AWS provided significantly better laryngeal views with shorter times for intubation compared with the McGrath and Macintosh laryngoscopes by medical interns. Especially in the confirmation of tracheal intubation, with the new-AWS, it is possible to confirm that the tube is in the trachea with an attached fiberoptic scope, which is more reliable and significantly reduces the time to confirmation of intubation. In conclusion, the new-AWS is a valuable system for tracheal intubation because of the ease of tracheal tube placement and rapid confirmation of tracheal intubation. Yuka Eto, M.D., Akihito Tampo, M.D., Ph.D., Akihiro Suzuki, M.D., Ph.D., Hiroshi Iwasaki, M.D., Ph.D.; Department of Anesthesiology & Critical Care Medicine, Department of Emergency Medicine, Asahikawa Medical University, Asahikawa, Japan.

**FA A2166****Fiberoptic Intubation Using JEDTM (Jaw Elevation Device): A Randomized Controlled Trial**

The aim of this prospective randomized controlled study was to compare the usefulness of JED with that of the jaw-thrust maneuver performed by skilled assistants in fiberoptic endotracheal intubation in anesthetized patients. Forty-nine patients were randomly assigned to a JED and control group. The time required for intubation and POGO scores were not significantly different in the two groups. The use of JEDTM is a potential alternative to the manual jaw-thrust maneuver by skilled assistants during fiberoptic intubation. Seiko Yoshimura, M.D., Katsutoshi Nakahata, M.D., Hiromichi Kurosaki, M.D., Tomoyuki Kawamata, M.D., Ph.D.; Anesthesiology, Wakayama Medical University, Wakayama City, Japan.

**FA A2167****Thermosoftening of Double-Lumen Tubes Before Endotracheal Intubation Reduces Postoperative Vocal Cord Injuries and Sore Throat**

Thermosoftening of the DLT with warm saline before endotracheal intubation reduces postoperative vocal cord injuries and sore throat. Jae Woo Ju, M.D., Youn Joung Cho, M.D., Jeong-Hwa Seo, M.D., Ph.D., Jun-Yeol Bae, M.D., Jeong Jin Min, M.D., Tae Kyong Kim, M.D., Deok Man Hong, M.D., Ph.D., Tae Kyong Kim, M.D., Yunseok Jeon, M.D., Ph.D., Jae-Hyon Bahk, M.D., Ph.D.; Department of Anesthesiology and Pain Medicine, Seoul National University Hospital, Seoul, Korea, Republic of, Department of Anesthesiology and Pain Medicine, Samsung Medical Center, Seoul, Korea, Republic of.

**FA A2168****An Analysis of Laryngoscope Bulb Heat: Should There Be Concern?**

Higher intensity light from a laryngoscope blade is commonly considered to provide better viewing conditions and is often used as a marketing tool. Newer laryngoscope bulbs with increased brightness have the potential to generate higher temperatures and may thereby increase risk of tissue injury. The LED light sources in laryngoscopes that generate less heat and potentially better viewing conditions may reduce risk. Douglas G. Ririe, M.D., Ph.D., Michael H. Harris, M.D., Randy W. Calicott, M.D.; Wake Forest School of Medicine, Winston-Salem, NC.

**FA A2169****Efficacy of New Type of Airway Scope® in Simulated Difficult Airway Scenarios -Comparison with McGrath® Video Laryngoscope and Macintosh Laryngoscope**

Efficacy of the new Airway Scope (AWS) for tracheal intubation in simulated difficult airway scenarios was evaluated. Compared with the McGrath and Macintosh laryngoscopes, the AWS provided significantly better laryngeal views with shorter times for intubation in all difficult airway cases. The participants reported that the AWS was the easiest to use. In addition, use of the new AWS enabled quick confirmation of tracheal intubation in a view taken from an attached fiberscope. In conclusion, the new AWS is a valuable system for tracheal intubation in difficult airway situations because of the ease of tracheal tube placement and rapid confirmation of tracheal intubation. Akihito Tampo, M.D., Ph.D., Yuka Eto, M.D., Akihiro Suzuki, M.D., Ph.D., Hiroshi Iwasaki, M.D., Ph.D.; Emergency Medicine, Anesthesiology & Critical Care Medicine, Asahikawa Medical University, Asahikawa, Japan.

**FA A2170****The Effect of Rocuronium on the Response of CVI to Laryngoscopy**

The Composite Variability Index (CVI, Covidien, Boulder CO) combines variability in BIS and frontal EMG activity. In this study CVI was measured following laryngoscopy after one of four doses of rocuronium: 0, 0.2, 0.4 or 0.6 mg kg<sup>-1</sup>. Rocuronium decreased the response of CVI to laryngoscopy, but CVI may still have clinical utility at moderate levels of neuromuscular blockade. Donald M. Mathews, M.D., Asha Mellor, M.A., Kaitlin Ross, M.D., Alex Friend, M.S., William K. Hart, M.D., Chandran Seshagiri, Ph.D.; Anesthesiology, University of Vermont College of Medicine, Burlington, VT, Northern Westchester Hospital, Mt. Kisco, NY, Tufts University School of Medicine, Boston, MA, Covidien, Boulder, CO.

**FA A2171****Reusable Versus Disposable Laryngoscopes: Environmental and Economic Considerations**

A Life Cycle Assessment was performed to determine the environmental impacts and fiscal costs of reusable and disposable laryngoscope options at Yale New Haven Hospital. Jodi D. Sherman, M.D., Lewis Raibley, B.Eng., Matthew Eckelman, Ph.D.; Yale, New Haven, CT, Northeastern University, Boston, MA, Boston, MA.

**FA A2282****The Relationship between Minute Ventilation and End Tidal CO2 in Intubated and Spontaneously Breathing Patients**

The relationship between EtCO<sub>2</sub> via capnography and MV from non-invasive respiratory volume monitoring in intubated patients under general anesthesia (GA) and in awake, spontaneously breathing patients is evaluated in this study. EtCO<sub>2</sub> may be a sufficient indicator of ventilatory adequacy in patients under GA; however, its sensitivity to changes in MV is greatly reduced in awake, spontaneously breathing patients. Christopher Voscopoulos, M.D.1, C. Marshall MacNabb, M.S.2, Edward E. George, M.D., Ph.D.3. <sup>1</sup>Anesthesiology, Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA, <sup>2</sup>Respiratory Motion, Inc., Waltham, MA, USA, <sup>3</sup>Anesthesiology, Massachusetts General Hospital, Harvard Medical School, Boston, MA, USA.

**PO14-1 PATIENT SAFETY AND PRACTICE MANAGEMENT  
10 a.m.-12 p.m. | Hall B1-Area B****PI A2172****Effects of Surgical Training on Surgeons' Productivity**

We evaluated total factor productivity of surgeons during the beginning three months of a new academic year (period 1) and during the subsequent three months (period 2) using Malmquist index (MI). The MI of all surgeons was significantly greater than 1 ( $p = 0.0033$ ). We demonstrated that the surgeons were less productive in the beginning months of a new academic year. This suggests that the newly assigned trainees may be main factors of this productivity loss. Yoshinori Nakata, M.D., M.B.A., Yuichi Watanabe, M.S., Hiroshi Otake, M.D., Toshihito Nakamura, M.D., Ph.D., Giichiro Oiso, M.D., J.D., Tomohiro Sawa, M.D., Ph.D.; Teikyo University Graduate School of Public Health, Tokyo, Japan, Showa University Hospital, Tokyo, Japan, Chiba University Hospital, Chiba, Japan, Hamamatsu University School of Medicine, Hamamatsu, Japan, Medical Information and System Research Center, Teikyo University, Tokyo, Japan.

**PI A2173****Screening for Electromagnetic Pollution in Operating Rooms**

This study shows that about 20% of the devices used in operating Rooms emit magnetic fields >2mG. Keeping a safety distance from these devices may prevent the exposition of patients and health caregivers to magnetic fields. Musa Sesay, M.D., Patrick Tazuin-Fin, M.D., Babre Florence, M.D., Amer Chehab, M.D., Maachi Boujemaa, M.D., Mahira Penna, M.D., Monique Stockle, M.D., Matthieu Biais, M.D., Ph.D., Karine Nouette-Gaulain, M.D., Ph.D.; Anesthesiology, Pellegrin University Hospital, Bordeaux, France, Anesthesiology, Pellegrin University Hospital, Bordeaux, France.

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### PI A2174

#### An Analysis of Anesthesia Start Times

To help establish benchmark times, we have provided the average “anesthesia induction” times for 22,604 of the most commonly performed surgical procedures in our institution. This may help administrators and anesthesiology departments create realistic flow models towards improving perioperative efficiency. **Sudheer K. Jain, M.D., Lori Russo, M.D., Andrew D. Rosenberg, M.D., Germaine Cuff, DrPH, Jeanna D. Blitz, M.D., Marc J. Bloom, M.D., Ph.D., Mitchell Y. Lee, M.D., Simon Tom, M.D., Jung T. Kim, M.D.;** Anesthesiology, New York University Langone Medical Center, New York, NY, NYU School of Medicine, New York, NY, New York University Medical Center, New York, NY.

### PI A2175

#### Correlation of Measured Weight, Height and Body Mass Index (BMI) Versus Self-reported, During Preoperative Evaluation in Surgical Patients

A cross-sectional study using Spearman correlation in adult population to correlate measured weight, height and BMI with self-reported, as valid indicators to determine BMI during preoperative evaluation. **Claudia P. Cobos, M.D., Alexandra Chaves, M.D.;** Clinica Jorge Piñeros Corpas, Bogota, Colombia, Anestesiologa Laser Center Clinica Oftalmologica, Bogota, Colombia.

### PI A2176

#### An Investigation of Predictors of Anesthetic Induction Time Using Quantile Regression Analysis

A novel application of a two-step regression analysis to assess the influential factors of anesthetic induction time and their effects at distinct quantiles of induction time distribution. A more complete picture of relationships between anesthetic induction time and its influential factors could be obtained and performance standards in time domain of various combinations of anesthetic procedures under miscellaneous conditions could be set up. **Kuang-Yi Chang, M.D., Ph.D.;** Department of Anesthesiology, Taipei Veterans General Hospital, Taipei, Taiwan.



### PI A2177

#### Successful Operating Room Strategies to Improve First Case On-Time Starts at an Academic Institution

We have demonstrated an initiative to improve the percentage of first cases of the day that start on time in an academic setting. Our organizational and multidisciplinary approach proved sustainable for years. **Niharika A. Saw, M.D., Hugh L. Flanagan, M.D., Joshua C. Vacanti, M.D., Monica Sa Rego, M.D., Bhavani S. Kodali, M.D., Richard D. Urman, M.D., M.B.A., ;** Anesthesiology, Brigham and Women’s Hospital, Boston, MA.



### PI A2178

#### Do Language Barriers Affect Starting Cases in the Operating Room?

It is well-documented in the literature that language barriers have an effect on the delivery of healthcare. At our institution, Rutgers - Robert Wood Johnson Hospital, we have employed strategies to help diminish the negative impact of language barriers on operating Room efficiency. With a database of 14,357 cases between 2011-2013, we compared on-time surgery start times for first cases of the day between patients who were native English speakers and patients who spoke a foreign language. We found that our strategies improved on-time starts for surgeries for foreign language speakers over time.

**Thomas Jan, M.D., M.P.H., Tatyana Shkolnikova, M.D., Shaul Cohen, M.D.;** Anesthesia, Rutgers - Robert Wood Johnson Medical School, New Brunswick, NJ.

### PI A2179

#### Our Experience with Bundled Payment

Bundled payment is an alternative payment model being considered as a result of the Patient Protection Affordable Care Act. As a private practice group we participated in designing and implementing it in our joint replacement part of our practice. In this presentation we discuss the benefits, challenges and lessons learnt from our experience over the last two years.

**Sivasenthil Arumugam, M.B.B.S., M.D., Sanjay K. Sinha, M.D.;** Woodland Anesthesiology Associates, PC, Hartford, CT.

### PI A2180

#### The Governance Structure of Operating Room Suites

The ideal surgical suite governance for a hospital is unknown and can have profound fiscal impacts. This study queried OR management committee members in order to describe the various organizational structure and management strategies for operating Room governance. **Christopher A. Yen, M.D., Alex S. Macario, M.D., M.B.A., Mitchell H. Tsai, M.D., M.M.M.;** Anesthesiology, Dartmouth Hitchcock Medical Center, Hanover, NH, Anesthesiology, Stanford University, Stanford, CA, Anesthesiology, Fletcher Allen Healthcare, University of Vermont, South Burlington, VT.

### PI A2181

#### Interactive Computer Based Training Module Decreases Central Venous Access Simulation Training Time With Continued Improved Self Assessment Scores

Interactive computer based training modules decrease overall simulation time during central venous access simulation with continued improvement in resident skills. **Daniel S. Rubin, M.D., Avery Tung, M.D., F.C.C.M., Jennifer E. Hofer, M.D.;** University of Chicago Medical Center, Chicago, IL, University of Chicago, Chicago, IL.

### PI A2182

#### Design and Implementation of the Clean Workstation Initiative: a Quality Improvement Project

To address feedback regarding anesthesia workstation cleanliness, the Clean Workstation Initiative (CWI) was initiated to establish a standardized anesthesia workstation turnover in the operating Room (OR). Various communication strategies promoted departmental awareness, and a survey tool assessed departmental perception of workstation cleanliness before and after CWI implementation. Multiple workstation improvements were also installed to reduce the risk of cross-contamination. An improved perception of workstation cleanliness was observed after implementation of the CWI. **Alix Vandeventer, B.S., Kelsey McCarty, M.S., M.B.A., Krzysztof Klincewicz, B.A., Gina Basehore, C.R.N.A., Joseph Catricala, B.A., Eric T. Pierce, M.D., Ph.D., Aalok Agarwala, M.D., M.B.A., , T. Anderson, M.D., Ph.D.;** Department of Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital, Boston, MA.

### PI A2183

#### Business Process Modeling (BPM) Optimization of the Retained Surgical Items (RSI) X-Ray Protocol in the OR

To prevent retained surgical items (RSIs), patient safety measures include effective operative Room (OR) communication; mandatory counts of surgical instruments and sponges, methodical wound examinations, and X-ray (XR) imaging. We utilize Business process modeling (BPM) methods to improve performance by optimizing the efficiency of key RSI X-ray protocol steps that include communication, acquiring of the X-ray of the operational field, uploading images to picture archiving and communication system (PACS), and image analysis. **Mario Moric, M.S., Vicko Gluncic, M.D., Ph.D., Srdan Kobsa, M.D., Shirley Richard, B.S., C.S.T., Gady Agam, Ph.D.;** Anesthesiology, Rush University Medical Center, Chicago, IL, Surgery-General, New York Presbyterian Hospital / Columbia University Medical Center, New York, NY, Computer Science, Illinois Institute of Technology, Chicago, IL.

### PI A2184

#### Patient-Reported and Clinician-Reported Perioperative Non-Routine Events

The “non-routine event” (NRE) is defined as any event that deviates from ideal care for a specific patient in that specific clinical situation. We concurrently collected NREs from surgery patients & their clinicians. We show that 40% of ambulatory surgery patients report and that these reports rarely overlap with NRE reports by their clinicians. **Amanda N. Lorinc, M.D., Matthew B. Weinger, M.D., M.S., Jason Slagle, Ph.D., Gina M. Whitney, M.D., Eric Porterfield, M.S., Krys Dworski, B.S., Eva Cassidy, B.S.;** Anesthesiology, Vanderbilt University Medical Center, Nashville, TN.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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**PI A2185**

**The Impact of ASA Classification and Time of Scheduled Surgery on OR Turnover Time**

OR throughput problem is a multifactorial one, and all involved must be harnessed to yield improvements. This study was performed in a large metropolitan teaching institution where turnover time was followed in all patients scheduled for general surgery looking at ASA status and time of day as cofactors for increasing turnover time. **Irwin Gratz, D.O., Edward R. Deal, D.O., Elaine Allen, Ph.D., Erin W. Pukenas, M.D., Joseph Dructor, B.B.A., Alexander Lay, M.D.;** Anesthesiology, Cooper Medical School at Rowan University/Cooper University Hospital, Camden, NJ, Epidemiology & Biostatistics, University of California, San Francisco, CA.



**PI A2186**

**Audit of Quality Indicators in Anaesthesia: Creating Awareness for Improvement**

Effective monitoring of the quality of service delivery is central to the capacity of an organisation to maintain and improve standards of care. Measurement of health care outcomes is central to assess quality. **Rajneesh Bankenahally, D.A., F.R.C.A., F.C.A.I., Upeka Ranasinghe, F.R.C.A., Suresh Vasanth, F.R.C.A.;** Anaesthesia, Queen Elizabeth Hospital, Birmingham, United Kingdom, Queen Elizabeth Hospital, Birmingham, United Kingdom.



**PI A2187**

**Simulation to Test Hard-Stop Implementation of a Pre-Anesthetic Induction Checklist**

Checklists have been shown to reduce patient complications, improve communication in the OR, and improve the management of simulated OR crises. Using a randomized, controlled, observer-blinded design, we compare performance of anesthesiology residents in a simulated operating Room using a checklist in completing a pre-anesthetic induction evaluation and setup, to residents with no checklist. The checklist was implemented through a "hard stop" in the simulated electronic medical record. Data for 24 CA-1 residents show a statistically significant difference in performance in pre-anesthetic setup and evaluation as scored by blinded raters, with the checklist group performing better. **Douglas S. Wetmore, M.D., Nishant A. Gandhi, D.O., Andrew T. Goldberg, M.D., Patrick McCormick, M.D., Adam I. Levine, M.D., Samuel DeMaria, M.D.;** Anesthesiology, Icahn School of Medicine at Mount Sinai, New York, NY.

**PO15-2 PEDIATRIC ANESTHESIA  
10 a.m.-12 p.m. | Hall B1-Area E**

**PD A2188**

**Airway Morbidity in Children: A Comparison of Cuffed Endotracheal Tube, Uncuffed Endotracheal Tube and cLMA**

One hundred and fifty patients of ASA class I or II, of either sex, between 2-6 years of age were included in the study. After induction of anaesthesia in routine manner, airway was secured with cuffed ETT, uncuffed ETT and cLMA in groups C, P and L respectively. We found that first attempt success rate in the cuffed ETT group was higher (94.0%) as compared to 68% in uncuffed ETT group and 70% in cLMA group. Hypertensive tachycardiac response was more in cuffed ETT and uncuffed ETT as compared to cLMA. Overall airway morbidity was comparable in all the three groups. More than three attempts was seen as an independent risk factor of airway morbidity irrespective of group. **Suresh K. Singhal, Sr., M.D., Shilpa Khanna, M.D.;** Anaesthesiology, Pandit B D Sharma PGIMS, Rohtak, India, PGIMS, Rohtak, India.

**PD A2189**

**Point Pen Spring Aspirations Span the Respiratory Tract a Report of Two Cases**

An aspirated ballpoint pen spring can manifest from the glottis to the main stem bronchi. The ages and sizes of the patients likely contributed to the location of the spring within the respiratory tract. The patients' presenting symptoms, cough in the first patient and drooling in the second, were logically indicative of the location of the foreign body. In addition, the postoperative complications of the aspiration were also dependent on location of the aspirated object. **Michelle M. Petrie, M. D., Randall B. Brenn, M.D.;** Nemours Alfred I. Dupont Hospital for Children, Wilmington, DE.

**PD A2190**

**Large Neck Circumference Does Not Predict OSA in Pediatric Patients**

Neck circumference has been used as a screening tool for OSA in adults. However, neck circumference may not apply in pediatrics. **Methods:** We compared apnea-hyponea index (AHI) to neck circumference for age (6-18yo). **Results:** 203 patients studied. AHI (0-5): 90 patients were less, and 94 above the 95% for neck circumference for age. AHI (5-10): 3 patients were less, and 3 were above cut off. AHI (≥10): 6 patients were less, and 7 were above cutoff. **Conclusion:** We found that large neck circumference does not predict OSA in pediatric patients. **Vidya T. Raman, M.D., Kris R. Jatana, M.D., Mark Splaingard, M.D., Joseph Tobias, M.D.;** Otolaryngology, Pulmonology/Sleep Medicine, Nationwide Childrens, Columbus, OH.

**PD A2191**

**Demographics of Unplanned Admissions Following Ambulatory Surgery During 33 Months at a Children's Hospital**

Hospitals need to give quality care yet contain costs. It is important to continually analyze the demographics of patients failing the ambulatory setting. **Methods:** We retrospectively analyzed for all unplanned admissions from our PACU over 33 months. The incidence of unplanned admissions was 1.07%. Over 10% of unanticipated admissions were ASA 3 or 4. **Discussion:** Our incidence of unanticipated admissions is 1.07% over 33 months. The largest percentage continues to be patients for ENT procedures. **Arlayne K. Thung, M.D., Vidya T. Raman, M.D., Thomas A. Taghon, D.O., Joseph Tobias, M.D.;** Anesthesiology and Pain Medicine, Nationwide Childrens, Columbus, OH.

**PD A2192**

**Cartoon Distraction and Parental Presence on Alleviating Anxiety in Pediatric Anesthesia**



The presented study showed comparison between distraction with animated cartoon and parental presence on alleviating anxiety during inhalational induction of anesthesia and postoperative behavioral change in children. **Hyuck-goo Kim, M.D., Sung Mee Jung, M.D., Hwarim Yu, M.D., Sang-Jin Park, M.D.;** Anesthesiology and Pain Medicine, Yeungnam University Hospital, Daegu, Korea, Republic of.

**PD A2193**

**The Use of Non-Invasive Cardiac Output Monitoring to Detect Cardiac Physiologic Responses to Hypoxia in Pediatric Patients Under General Anesthesia**



A sample of 417 pediatric patients who underwent intraoperative monitoring with the ICON® non-invasive cardiac output monitor was retrospectively reviewed for desaturation events and the effects of desaturation on stroke index and heart rate were determined. Thirty-three events in 23 unique patients were analyzed and the results demonstrated that stroke index fell significantly with desaturation to less than 85%. The decrease in stroke index was in some cases offset by a compensatory increase in heart rate. The ICON® appeared to appropriately assess these parameters in real time during desaturation events. **Michael R. King, M.D., Thomas A. Anderson, Ph.D., M.D., Jinghu Sui, M.D., He G. Luo, M.D., Kwun Yee T. Poon, Ph.D., Charles J. Cote, M.D.;** Department of Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital, Boston, MA.

**PD A2194**

**Improving Outcomes After Neuromuscular Scoliosis Surgery: Have We Learned From Massive Transfusion Protocols?**

Patients with neuromuscular scoliosis undergoing posterior spinal fusion often have massive blood loss as defined by massive transfusion protocols. High FFP:PRBC ratios has shown to reduce mortality and morbidity in civilian and trauma patients. The purpose of our study is to compare outcomes in our neuromuscular scoliosis patients who received transfusion with high vs low FFP:PRBC ratio. Two group of patients one with high FFP:Ratio of >0.5 and other with low FFP:PRBC ratio of ≤0.5 were identified. Patient in the high FFP:PRBC ratio group had significantly less blood volume loss and increased urine output. Our preliminary result reveal that high ratio of FFP:PRBC ratio and low crystalloid will improve outcomes in neuromuscular patients. **Kesavan Sadacharam, M.D., Bruce R. Brenn, M.D., Zhaoping He, Ph.D., Youwen Zhang, B.S.;** Anesthesia and Critical Care Medicine, Department of Research, Alfred I. duPont Hospital for Children, Wilmington, DE.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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**PD A2195****Managing Perioperative Anxiety in Children: A Descriptive and Feasibility Study**

To test a virtual reality program to manage perioperative anxiety and its effects on children. Cheryl H. Chow, M.S., Ph.D. Candidate, Louis A. Schmidt, Ph.D., Ryan J. Van Lieshout, M.D., Ph.D., Pauline Leung, B.Sc. Candidate, Nadine Nejati, B.Sc. Candidate, Eliza Pope, B.Sc. Candidate, Luis Michelangeli, M.S., Ali Shahzada, M.S., Norman Buckley, M.D.; MiNDS Neuroscience Graduate Program, Department of Psychology, Neuroscience & Behaviour, Department of Psychiatry & Behavioural Neurosciences, Faculty of Health Sciences, Bachelor of Health Sciences Honours Program, Faculty of Engineering, Engineering Entrepreneurship Innovation, Department of Anesthesia, McMaster University, Hamilton, ON, Canada.

**PD A2196****Dexmedetomidine and Propofol Combination Reduces Recovery and Discharge Times Compared with Pentobarbital for Pediatric MRI Sedation**

Dexmedetomidine/propofol in combination reduce the time to recovery and discharge compared to pentobarbital following MRI sedation. The wide variety of pharmaceutical agents and advanced life support skills allow anesthesiologists the opportunity to increase efficiency and patient satisfaction while optimizing safety for diagnostic procedures. Susan P. Taylor, M.D., M.P.H., Richard J. Berens, M.D., George M. Hoffman, M.D., Pediatric Critical Care, Children's Hospital of Wisconsin, Medical College of Wisconsin, Milwaukee, WI.

**PD A2197****Endotracheal Tube Size is Associated with the Area of Subglottic Airway in Children Undergoing General Anesthesia**

We investigated 46 pediatric patients who received general anesthesia with uncuffed ETTs to compared outer ETT diameters (ODs) chosen by anesthesiologists and patients' age, height, weight, and cross-sectional area of subglottic airway (Strachea). The strongest correlation was observed between the OD and the Strachea ( $R=0.80$ ). A percentage of the ETT areas in the Stracheas was distributed within  $79.9 \pm 14.8\%$  (mean  $\pm$  SD). Ayako Hirai, M.D., Masaaki Asamoto, M.D., Ai Furuta, M.D., Hiroaki Abe, M.D., Ryo Orii, Ph.D., M.D., Yoshitsugu Yamada, Ph.D., M.D.; Anesthesiology, The University of Tokyo Hospital, Tokyo, Japan.

**PD A2198****A Retrospective Study Comparing the Peri-operative Analgesic Requirements in Morbidly Obese Adolescents Undergoing Laparoscopic Versus Robotic Assisted Gastric Sleeve Resection**

This study compares the perioperative analgesic requirements in morbidly obese adolescents undergoing laparoscopic versus robotic assisted laparoscopic gastric sleeve resection. A total of 28 patients underwent gastric sleeve resection surgery with 14 patients in each group. The intra-operative opioid use was lower in the robotic- assisted group but the postoperative opioid requirements and the postoperative pain scores have been the same in both the groups. There was no significant difference in the total perioperative opioid requirements or the pain scores. Anita S. Joselyn, M.D., Tarun Bhalla, M.D., Christopher McKee, D.O., Joseph Tobias, M.D.; Anesthesiology & Pain Medicine, Nationwide Childrens Hospital, Columbus, OH.

**PD A2199****Differences in Referral and Use of Complementary and Alternative Medicine Between Pediatric Providers and Patients**

Health care providers refer pediatric patients to CAM at a higher rate than patients report use. Increasing patient access to and use of CAM are important in closing this gap. Robert Stevenson, B.A., Brooke Gentle, M.S., Debra E. Morrison, M.D., Nicole Vincent, Ph.D., Michelle A. Fortier, Ph.D.; University of California, Irvine, CA, Pediatric Psychology, CHOC Children's Hospital, Orange, CA.

**PD A2200****Intraoperative Optimization to Decrease Postoperative PRBC Transfusion in Children Undergoing Craniofacial Reconstruction**

Craniofacial surgery is associated with large blood loss, coagulopathy, and blood transfusion. We sought to determine if there are any controllable factors that are associated with packed red blood cell (PRBC) transfusion in the postoperative period as a means of optimizing perioperative care. These results suggest that the only modifiable factor that decreases postoperative PRBC transfusion is an increase in Hct. Since this population has a small blood volume, there is routinely PRBCs left from the original units that can be transfused. Due to the increased cost and immunomodulatory effects of transfusing an additional unit from a different donor, it may be beneficial to increase Hct from the original unit if already exposed. Thanh Nguyen, M.D., Humphrey V. Lam, M.D., Thomas M. Austin, M.D.; Anesthesiology, Vanderbilt Medical Center, Nashville, TN.

**PD A2201****Postoperative Airway Complications in Children with Sanfilippo Syndrome A**

Postoperative airway complications are presented in 25 children with Sanfilippo Syndrome Type A. Elif C. Cingi, M.D.1, David S. Beebe, M.D.2, Kumar G. Belani, M.B.,B.S., M.S.2. 1Anesthesiology, University of Minnesota, Minneapolis, MN, USA, 2University of Minnesota, Minneapolis, MN, USA.

**PD A2202****Predicting Postoperative Hypotension in Adolescent Idiopathic Scoliosis Patients Undergoing Posterior Spinal Fusion**

This retrospective study of 102 consecutive adolescent idiopathic scoliosis patients who underwent posterior spinal fusion and instrumentation showed that lower body weight and height are associated with postoperative hypotension (mean arterial pressure  $<60$  mmHg). No intra-operative parameter was statistically significantly associated with postoperative hypotension. All the patients who did not exhibit hypotension within the first 4 hours, after the surgery remained stable throughout the rest of the postoperative period and therefore, they may be candidates for less intense monitoring in the general surgical floor as compared to PICU monitoring. Madhankumar Sathyamoorthy, M.B.B.S., M.S., Lawrence Haber, M.D., Patrick Wright, M.D., Erika Womack, M.S., Douglas Maposa, M.B., Ch.B., Alan D. Penman, M.B., Ch.B., Ph.D., M.P.H.; Pediatric Anesthesia, University of Mississippi Medical Center, Jackson, MS.

**PO16-2 REGIONAL ANESTHESIA AND ACUTE PAIN: ULTRASOUND GUIDED**

10 a.m.-12 p.m. | Hall B1-Area A

**RA A2203****Clinical Technique: A New, Modified Ultrasound Guided In-Plane Penile Nerve Block for Circumcision**

We described an ultrasound guided in-plane technique to conduct dorsal penile nerve blocks to avoid injury of penile vascular and neural tissues. M-Irfan Suleman, M.D.; Anesthesia/Pain, Boston Children's Hospital / Harvard Medical School, Boston, MA.

**RA A2204****Study of the Distribution of Sciatic Nerve Division Using Ultrasound Imaging in Children**

We prospectively examined the ultrasound (US) images of 153 pediatric patients in order to investigate the position of sciatic nerve (SN) division. The distance between the position of SN division and the crease of the popliteal fossa was not significantly correlated with the demographic characteristics evaluated, including age, sex, height, weight, and femoral length. High variation was observed in pediatric patients with regard to the position of SN division. In order to search the position of SN division in pediatric patients, the US scan should be started from the second distal quarter of the femur, where 65.6% of examined children have SN division. Satoshi Ideno, M.D., Noriko Miyazawa, M.D., Atsushi Shinto, M.D., Rie Minoshima, M.D., Taku Matsuoka, M.D., Rie Wakamiya, M.D., Shinichi Yamamoto, M.D.; Department of Anesthesiology, Tokyo Metropolitan Children's Medical Center, Tokyo, Japan.



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**RA A2205**

**Application of the Echogenic Needle in the Ultrasound-Guided Lumbar Medial Branch Block**

Pajunk echogenic needle displaying superior to standard needles, especially at the steep angle when in-plane. The lumbar medial branch could be accurately demonstrated by ultrasound. No validity differences were found among the four different needles. **Lin Liang, M.S.;** West China Hospital of Sichuan University, Chengdu, Sichuan, China.

**RA A2206**

**The Influence Exerted by Probe Covers on the Image Quality in Ultrasound Imaging**

In this study, we investigated the influence exerted by the probe covers on the image quality in ultrasound imaging. When probe covers were used for linear probes, while there was a decrease in the luminance of the image at a comparatively great depth, the contrast of the total image also decreased. The use of different probe covers did not affect the image quality in ultrasound imaging. **Yuki Izumi, M.D., Makoto Sato, M.D., Keiya Takahashi, M.D., Tomoki Sasakawa, M.D., Hiroshi Iwasaki, M.D.;** Department of Anesthesiology & Critical Care, Asahikawa Medical College, Asahikawa, Hokkaido, Japan.

**RA A2207**

**Incidence and Effects of Postoperative Migration of Interscalene Catheter Tips Placed Using an Ultrasound-Guided Anterolateral or Posterior Approach: A Prospective Randomized Study of Shoulder Surgery Patients**

In this prospective randomized study, we examined the incidence and effects of migration of an interscalene catheter tip during infusion for two postoperative days in patients undergoing shoulder surgery. Patients randomly received a catheter under ultrasound using either the anterolateral or posterior approach. Using ultrasound monitoring for two postoperative days, we found that the migration of the catheter tip occurs at a similar rate between anterolateral and posterior interscalene catheters and similarly decreases the analgesic effect of continuous interscalene brachial plexus block. **Shinichi Sakura, M.D., Akiko Kitajo, M.D., Naoki Kakuta, M.D., Naoya Yokoi, M.D., Yoji Saito, M.D.;** Department of Anesthesiology, Shimane University School of Medicine, Izumo City, Japan.

**RA A2208**

**Ultrasound-Guided Axillary Block With a Reduced Volume (6 ml): Onset, Effectiveness and Spread**

Ultrasound-guided nerve block have several advantages: shorter procedure and onset time, improving block quality and lower volume of local anaesthetics. An ultrasound-guided axillary block with 6 ml provides optimal surgical conditions for carpal tunnel surgery. **Hicham J. Jabbour, Sr., M.D., Nicole Naccache, M.D., Josiane Sayegh, M.D., Hicham Abou Zeid, M.D., Khalil B. Jabbour, M.D., Eliane I. Ayoub, M.D., Patricia M. Yazbeck, M.D.;** Anesthesia and Critical Care, Saint Joseph University, Beirut, Lebanon.



**RA A2209**

**Postoperative Administration of Pregabalin for the Treatment of Post-thoracotomy Pain: A Randomized Study**

The purpose of the present study was to evaluate the efficacy and safety of additional postoperative administration of pregabalin to patients who still had pain even after epidural anesthesia following thoracotomy in comparison with standard treatment as a control. Additional postoperative administration of pregabalin effectively reduced post-thoracotomy pain, improved HRQOL and sleep disorder, and prevented transition to chronic pain, and was well-tolerated. **Noritaka Yoshimura, M.D, Hiroki Iida, M.D, Shinobu Yamaguchi, M.D, Yoko Sugiyama, M.D., Motoyasu Takenaka, M.D.;** Anesthesiology and Pain Medicine, Gifu University Graduate School of Medicine, Gifu City, Japan.

**RA A2210**

**A Comparison of Transverse In Plane and Sagittal In Plane Approaches for Ultrasound Guided Fascia Iliaca Block**

Fascia iliaca block (FIB) efficacy may be practitioner dependent when using ultrasound guidance. We analyzed post-surgical hip surgery patients who received a preoperative FIB in either a transverse or sagittal plane. This study suggests that there is no statistical difference when using a transverse or sagittal approach when performing a fascia iliaca block. A nonsignificant difference in success rates was observed favoring the sagittal approach in all nerve distributions at 5 and 15 minutes post block with the exception of the LFCN at 15 minutes. Also, a narcotic sparing effect was observed in the PACU as well as decreased pain scores in both the PACU and hospital floor when using a sagittal approach. **Evan M. Sutton, M.D., Scott Byram, M.D., Matthew T. Charous, M.D., Michael O'Rourke, M.D.;** Anesthesiology, Loyola University Medical Center, Chicago, IL.

**RA A2211**

**Differences in Blood Concentration and Effects on Post- Ultrasound Guided Thoracic Paravertebral Block Hemodynamics Between Ropivacaine and Levobupivacaine: A Prospective, Randomized, Double-blind Study**

The difference of the blood concentration between ropivacaine and levobupivacaine occurred after 30 minutes by the thoracic paravertebral block. But both of them were under 2.2µg/mL. that is the concentration of neurologic manifestation of man each time. The influence of hemodynamics was not different. In addition, levobupivacaine reduced post-operative consumption of fentanyl compared to ropivacaine. In conclusion, levobupivacaine is stronger than ropivacaine and easier to reduce the total blood concentration of regional anesthetic agents. **Takafumi Iida, M.D., Kenichi Masui, M.D., Ph.D., Sasakawa Tomoki, M.D., Shigeaki Otomo, M.D., Ph.D., Keiya Takahashi, M.D., Yoshuko Onodera, M.D., Sato Makoto, M.D., Takayuki Kunisawa, M.D., Ph.D., Hiroshi Iwasaki, M.D., Ph.D.;** Anesthesiology and Critical Care Medicine, Asahikawa Medical University, Asahikawa, Japan, Department of Anesthesiology, National Defense Medical College, Tokorozawa, Japan, Asahikawa-Kosei General Hospital, Asahikawa, Japan.

**RA A2212**

**Safety of Ultrasound-Guided Supraclavicular Block: A Retrospective Analysis of 270 Consecutive Cases in a Teaching Institution**

A retrospective analysis of 270 consecutive cases performed at Parkland Hospital in Dallas, TX, regarding the safety of ultrasound-guided supraclavicular blocks. **Maria Florencia Eastlack, M.D., Dawood Nasir, M.D., Irina Gasanova, M.D., Ph.D., Babatunde O. Ogunnaike, M.D., Shiv Sharma, M.D., Charles W. Whitten, M.D.;** Anesthesiology and Pain Management, University of Texas Southwestern Medical Center, Dallas, TX.

**RA A2213**

**Ultrasound Visibility of the Neuraxial Structures at the L3-4-5 and L5-S1 Intervertebral Level in the Elderly**

The ultrasound examination of the intervertebral space at the L3-4-5 and L5-S1 level has been done in 50 elderly patients, which showed that the interlaminar space at the L5-S1 level is larger and more superficial in location than that at the L3-4-5 level. Further more, the ultrasound visibility of the neuraxial structures is also significantly better at the L5-S1 level than at the L3-4-5 level. **Liu Fei, M.D., Li Jia Wei, Ph.D., Branchobporn Songthamwat, M.D., Karmkar Manoj Kumar, M.D.;** Department of Anesthesia and Intensive Care, The Chinese University of Hong Kong, Shatin, Hong Kong.

**RA A2214**

**Is the Selective Tibial Nerve Block Truly Selective? Results from a Prospective Observational Study in Total Knee Arthroplasty Patients**

Selective tibial nerve block has been proposed to avoid masking common peroneal nerve injury following total knee arthroplasty. In this study involving 20 patients, we observed cephalad spread of local anesthetic following selective tibial nerve block which extended to the sciatic bifurcation. We also observed a high rate of partial blockade of the common peroneal nerve. Selective tibial nerve block may not be as selective as previously thought. **Eric R. Silverman, M.D., Amaresh Vydyanathan, M.B.,B.S., Naum Shaparin, M.D., Karina Gritsenko, M.D., Singh Nair, M.D., Boleslav Kosharsky, M.D.;** Anesthesiology, Montefiore Medical Center, New York, NY.



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain





### RA A2215

#### The Analgesic Efficacy of Ultrasound-Guided Supraclavicular Block in Patient Undergoing Upper Extremity Surgery

Ultrasound-guided supraclavicular block is an effective method for acute pain management of patients undergoing upper extremity surgery. The involvement of acute pain service in the perioperative setting provides low VAS scores and the use of ultrasound makes the supraclavicular block highly successful. Warren J. Choi, M.D., Dawood Nasir, M.D., Irina Gasanova, M.D., Ph.D., Gary E. Hill, M.D., Babatunde O. Ogunnaike, M.D., Charles W. Whitten, M.D.; Anesthesiology, UT Southwestern Medical Center, Dallas, TX.

### RA A2216

#### Fluoroscopic Imaging Used for Determining Accuracy of Thoracic Epidural Catheter Placement

Results of this prospective study showed that analgesia is superior when thoracic epidural catheter is both at level assumed by anesthesiologist and is in epidural space confirmed by contract fluoroscopic imaging. Kenneth D. Candido, M.D., Shahram Nafisi, M.D., Gleb Gorelick, M.D., Nebojsa N. Knezevic, M.D., Ph.D.; Anesthesiology, Radiology, Advocate Illinois Masonic Medical Center, Chicago, IL.



### RA A2217

#### Real-time Ultrasound-Guided Paramedian Epidural Access: Evaluation of a Novel In-plane Transverse View Technique

This is a preliminary study which demonstrates the feasibility of a new technique using real time ultrasound guided paramedian approach to the epidural space. We specified that feasibility of the procedure would require an observed success rate consistent with 90% or more, along with time to complete the procedure of 10 minutes or less. Marwan Abdulsattar, M.D., Andrea M. Kurz, M.D., Loran Mounir-Soliman, M.D., Sherif Zaky, M.D., Ph.D., Hesham Elsharkawy, M.D., Edward Mascha, Ph.D., Xiaohong Li, M.P.H.; Outcomes Research, Anesthesiology, Cleveland Clinic, Cleveland, OH, Cleveland Clinic Foundation, Cleveland, OH.

### RA A2218

#### Mental Rotation Test for Evaluation of Visual-Spatial Abilities in Ultrasound Guided Regional Anesthesia

The mental rotation test (MRT) is a powerful test of visual-spatial abilities that is easy to use and has been validated in learning of psychomotor skills. This prospective study evaluated the correlation of visual-spatial ability measured with MRT and BDT with performance on UGRA high fidelity simulator. The results suggest moderate to strong correlation of MRT with UGRA performance and weak or no correlation between BDT and UGRA. Gligor V. Gucev, M.D., Ed.D., Dimiter Arnaudov, M.D., Manna Hagos, M.S., Chuck D. Nguyen, M.D., B.A., Michael E. Tom, M.D., Jason B. Bang, M.D., B.A., Rana Movahedi, M.D.; Anesthesiology, Keck School of Medicine of the University of Southern California, Los Angeles, CA.

### PO03-1 CHRONIC AND CANCER PAIN

1-3 p.m. | Hall B1-Area B

### PN A2219

#### Correlation Between Severity of Lumbar Spinal Stenosis and Lumbar Epidural Steroid Injection

Computed-Tomography guided lumbar epidural steroid injections appears to be effective in the short-term for the treatment of pain related to lumbar spinal stenosis for a period of 8 weeks, but patient outcome does not seem to correlate with the degree of lumbar spinal stenosis. Chan Hong Park, M.D., Ph.D., Daegu Wooridul Spine Hospital, Daegu, Korea, Republic of.

### PN A2220

#### Sensory Nerve Sprouting in PKC $\delta$ KO Mice in an Osteoarthritic Knee Model

In a mouse knee trauma model, loss of PKC $\delta$  increased sensory nerve sprouting in the OA joint synovium which may contribute to increased OA pain. Jeffrey S. Kroin, Ph.D., Xin Li, M.D., Ph.D., Jinyuan Li, M.D., Ph.D., Asokumar Buvanendran, M.D., Kenneth J. Tuman, M.D., Di Chen, M.D., Ph.D., Hee-Jeong Im, Ph.D., Anesthesiology, Biochemistry, Rush Medical College, Chicago, IL.

### PN A2221

#### GSK-3 $\beta$ Inhibition Prevents Remifentanyl-induced Hyperalgesia Via Regulating the Expression and Function of AMPARs

A large number of literatures have confirmed that brief remifentanyl exposure can enhance pain sensitivity. We previously reported that activation of glycogen synthase kinase-3 $\beta$  (GSK-3 $\beta$ ) contributes to remifentanyl-induced hyperalgesia via regulating NMDA receptor plasticity in spinal dorsal horn. In this study, it was demonstrated that amelioration of remifentanyl-induced postoperative hyperalgesia by GSK-3 $\beta$  inhibition is attributed to down-regulated AMPA receptor GluR1 expression in the membrane fraction and inhibition of AMPA receptor function via altering pGluR1 and Rab5 expression in spinal dorsal horn. Li Yize, Ph.D., Wang Chunyan, Ph.D., Hu Nan, Ph.D., Yu Yonghao, Ph.D., Wang Guolin, Ph.D., Anesthesiology, Tianjin Medical University General Hospital, Tianjin, China.

### PN A2222

#### Impact of Pain on Disability in Elderly Japanese: The Ohsaki Cohort 2006 Study

Among Japanese elderly women, pain severity is significantly associated with an increased risk of incident disability, even after adjustment for possible confounding factors. Our findings suggest a need to evaluate and treat pain more aggressively in Japan. Yu Kaiho, M.D., Yumi Sugawara, Ph.D., Kemmyo Sugiyama, M.D., Yasutake Tomata, Ph.D., Masako Kakizaki, Ph.D., Yasuhiro Endo, M.D., Ph.D., Hiroaki Toyama, M.D., Ph.D., Masanori Yamauchi, M.D., Ph.D., Ichiro Tsuji, M.D., Ph.D., Anesthesiology, Division of Epidemiology, Department of Public Health and Forensic Medicine, Tohoku University Graduate School of Medicine, Sendai, Japan.

### PN A2223

#### Effect of Early Computed Tomography Guided Gasserian Ganglion Blockade for Facial Pain From Acute Herpes Zoster and Postoperative Neuralgia

Early computed tomography guided gasserian ganglion block, in combination with an antiviral agent, pregabalin, may be a very effective treatment for the acute herpes zoster on the face and it could decrease the acute pain, shorten the duration and reduce the incidence of PHN. Ling Ye, M.D., Hong Xiao, M.D., Jun Li, M.D., Hui Liu, M.D.; Department of Anesthesiology and Translational Neuroscience Center, West China Hospital, Chengdu, China.

### PN A2224

#### Pregnancy Reduces C-fos Expression in Chronic Constriction Injury Model

We conducted an evaluation based on fluctuations in c-fos, an indicator of peripheral neuropathy, in the spinal cord of pregnancy rat. Female SD rats were used. The c-fos protein was quantified using SDS-PAGE and Western blotting. Whereas in the non-pregnancy group the mean of c-fos expression on the CCI side relative to the non-CCI side was  $3.19 \pm 1.35$ , it was reduced in the pregnancy group at  $1.31 \pm 0.35$ . C-fos was significantly reduced in the pregnancy groups compared to the non-pregnancy groups. (P value=0.038) Expression of c-fos in the spinal cord was reduced during pregnancy in chronic constriction injury model. Yoshiko Onodera, M.D., Tomoki Sasakawa, M.D., Keiko Mamiya, M.D., Ph.D., Takafumi Iida, M.D., Daisuk Kawata, M.D., Takayuki Kunisawa, M.D., Ph.D., Osamu Takahata, M.D., Ph.D., Hiroshi Iwasaki, M.D., Ph.D., Anesthesiology & Critical Care Medicine, Asahikawa Medical University, Asahikawa, Japan.

### PN A2225

#### Gene Transfer of Glutamic Acid Decarboxylase Reduces Neuropathic Pain Induced by HIV gp120 Application in Rats

We investigated the antinociceptive effect of the HSV vector on neuropathic pain induced by HIV coat protein gp120. Our data revealed that over-expression of GABA system using the QHGAD67 is able to reduce HIV-related neuropathic pain. The study provides a promising approach to HIV-associated neuropathic pain. Hirotsugu Kanda, M.D., Megumi Kanao, M.D., Hyun Yi, Ph.D., Shue Liu, B.S., Roy C. Levitt, M.D., Keith A. Candiotti, M.D., Hiroshi Iwasaki, M.D., Ph.D., David A. Lubarsky, M.D., M.B.A., Shuanglin Hao, M.D., Ph.D., Anesthesiology, University of Miami, Miami, FL, Anesthesiology, Asahikawa Medical University, Asahikawa, Japan.



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**PN A2226**

**Radiofrequency Ablation and Lesion Size: Solution Variation and the Venom Needle**

When comparing coagulation areas created during RFA with standard and Venom monopolar RF cannulas, Venom cannulas produce a larger area of tissue ablation regardless of prior fluid injection. In addition, the injection of certain fluids such as Marcaine 0.5% with Kenalog produced significantly greater areas of ablation when compared to lesion without fluid. When performing radiofrequency ablation both cannula and preinjection fluid types should be consider when attempting to achieve expanded lesion. **Hassan H. Amhaz, M.D., M.S., Larry Manders, M.D., Sara Zimmerman, M.D., Bryant Ittiara, D.O., George M. McKelvey, Ph.D., Shushovan Chakraborty, M.B.B.S., Ph.D., Anesthesiology, Detroit Medical Center, Wayne State University, Detroit Medical Center, Detroit, MI .**

**PN A2227**

**Novel Agonist of Nicotinic Receptor Reduces Diabetes-induced Neuropathic Pain in Rats**

The new pyrazole analogue, Cris-104 is a specific ligand for the nicotinic receptor with a potential use for pain relief in diabetic-induced neuropathy. The reduction of hyperalgesia and allodynia induced by Cris-104 is not related to an anti-diabetic activity but possibly as activator of cholinergic system. **Roberto T. Sudo, M.D., Ph.D., Roberto M. Debom, PharmD, Margarete M. Trachez, M.D., Ph.D., Jaqueline S. da Silva, Ph.D., Kesley Oliveira, Ph.D., Ariel L. Garcia, Ph.D., L. M. Godoy, Ph.D., Ogari C. Pacheco, M.D., Ph.D., Gisele Zapata-Sudo, M.D., Ph.D., Pharmacology, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil, Cristalia Produtos Quimicos e Farmaceuticos Ltda, São Paulo, Brazil.**

**PN A2228**

**Hydrogen-rich Saline Attenuates Remifentanil Induced Hyperalgesia via Regulation of NMDA Receptor Trafficking in Rats**

Our study shows that Pretreatment with hydrogen-rich saline could attenuate mechanical and thermal hyperalgesia induced by remifentanil via regulation of NR2B-containing NMDAR trafficking and MnSOD nitration in a dose-dependent manner. **Linlin Zhang, M.D., Ruichen Shu, Ph.D., Haiyun Wang, Ph.D., Guolin Wang, Ph.D., Tianjin Medical University General Hospital, Tianjin, China.**

**PN A2229**

**Constipation Problem in Chronic Non-Cancer Patients - Is it Appropriately Addressed?**

Results of this study showed much higher prevalence of opioid-induced constipation in patients using opioid medication for the treatment of chronic non-cancer pain than what is self-reported, requiring us to spend more time, and more effort, asking more specific questions to these patients. **Nebojsa Nick Knezevic, M.D., Ph.D., Vipin Khare, M.D., Kenneth D. Candido, M.D.; Anesthesiology, Advocate Illinois Masonic Medical Center, Chicago, IL.**

**PN A2230**

**State or Trait Anxiety: Which Has the Greater Effect on the Postoperative Pain Course in TKA Patients?**

Total Knee Arthroplasty (TKA) provides relief from debilitating pain and restricted functionality but some patients complain of residual pain in the operated knee. High levels of preoperative anxiety may lead to issues with postoperative pain but whether the transient "Trait" or more general "State" anxiety is a better predictor is contentious and has not been evaluated in this population. State anxiety (P=0.0304) was significantly related to post-operative pain while Trait anxiety was not (P=0.2214). **Mario Moric, M.S., Asokumar Buvanendran, M.D., Jeffrey S. Kroin, Ph.D., Christine O'Neill, R.N.B.S., NKenneth J. Tuman, M.D.; Anesthesiology, Rush University Medical Center, Chicago, IL .**

**PN A2231**

**Effect of Concomitant Antidepressant and Anticonvulsant Use on Adverse Events With Intrathecal Ziconotide**

This post hoc analysis of 220 patients enrolled in an open-label extension study investigated whether adverse events (AEs) associated with intrathecal (IT) ziconotide therapy increased when medications with a similar AE profile or mechanism of action were taken concomitantly. Findings suggest a higher prevalence of somnolence and some other AEs in patients who receive antidepressants and anticonvulsants concomitantly with IT ziconotide. **Stuart Rosenblum, M.D., Ph.D., Mark S. Wallace, M.D., Lynn R. Webster, M.D., Richard L. Rauck, M.D., Sonja Hokett, PharmD., M.S., Sarah Alvarez-Horine, M.S., Geertrui Vanhove, M.D., Ph.D., OAG Interventional Pain Consultants, Portland, OR, University of California, San Diego, La Jolla, CA, Lifetree Clinical Research, Salt Lake City, UT, Carolinas Pain Institute, Winston-Salem, NC, Jazz Pharmaceuticals, Palo Alto, CA .**

**PN A2232**

**Trans-facet Epidural Steroid Injection in Facet Joint and Radicular Pain Treatment: A Novel Approach**

Many patients present with facet and radicular pain which is often treated separately. However, we aim to introduce a more comprehensive method of providing pain relief for both but with one novel approach called a Transfacet epidural steroid injection. **Vimal N. Desai, M.D., Yashar Eshraghi, M.D., Kutaiba Tabbaa, M.D., Keval Yerigeri, B.S.; Anesthesia, Case Western Reserve University, Metrohealth Hospital, Cleveland, OH, Northeast Ohio Medical University, Rootstown, OH .**

**PN A2233**

**Prevalence of IDDS Therapy According to Type of Cancer: Database Research in a Large Cancer Institute**

The prevalence of IDDS analgesia for intractable pain due to cancer varies by type of cancer, severity of pain syndromes associated with the condition, and the location of the disease. **Sanjeet Narang, M.D., Suresh Srinivasan, M.D., Niharika Saw, M.D., Edgar L. Ross, M.D.; Dept. of Anesthesiology and Pain Management, Brigham and Women's Hospital, Boston, MA, Creighton University Medical Center, Omaha, NE.**

**PN A2234**

**Increased Postoperative Opioid Administration was Associated with a Greater Incidence of Non-Small Cell Lung Cancer Recurrence: A Retrospective Analysis**

Although intraoperative opioid dose does not increase the incidence of lung cancer recurrence, increased doses of opioid given in the first 96 hours post operatively is associated with a greater incidence of recurrence at 5 years possibly due to inhibition of cell mediated immunity. **Dermot P. Maher, M.D., M.S., Waylan Wong, M.D., M.S., Paul F. White, M.D., Ph.D., Bahman Shamloo, M.D., Roya Yumul, M.D., Ph.D., Ronald Wender, M.D., Charles Louy, M.D., Ph.D., Howard L. Rosner, M.D., Vida Zhang, M.D.; Anesthesia, Cedars-Sinai Medical Center, Los Angeles, CA .**

**PO05-1 CLINICAL NEUROSCIENCES**

1-3 p.m. | Hall B1-Area E

**NA A2235**

**The Efficacy and Safety of Tranexamic Acid in Complex Skull Base Neurosurgical Procedures**

Tranexamic acid is an antifibrinolytic agent often used to minimize perioperative blood loss, yet the efficacy and safety of this drug during complex skull base procedures is not known. In our retrospective cohort study, patients who received tranexamic acid in our cohort had a lower rate of transfusion despite having larger intracranial tumors and longer procedures (6.9 vs 12.4%, p=0.037). The rate of adverse events was similar. Our results support the need for randomized controlled trials to clarify the efficacy of tranexamic acid in neurosurgical procedures. **Alana Flexman, M.D., Dmitry Mebel, B.S., cRyojo Akagami, M.D.; Anesthesiology, Pharmacology and Therapeutics, Surgery, Division of Neurosurgery, University of British Columbia, Vancouver, BC, Canada.**



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### NA A2236

#### Pituitary Tumor Excision and Perioperative Pulmonary Complications: A Study of 6,019 Subjects From a Nationwide Inpatient Sample

This is a retrospective study utilizing the HCUP NIS. Cross-matching ICD-9 codes for diagnoses of pituitary tumor and perioperative pulmonary complications for pituitary tumor resection, a total of 6,019 cases of pituitary resections were identified. Of the 493 resections with one or more complications, acute respiratory failure (12.78%) and pulmonary insufficiency following surgery (16.63%) were the most frequent perioperative pulmonary complications. The analyzed data demonstrates substantial incidence of perioperative pulmonary complications during pituitary tumor resections and can help to establish management priorities. **Deepa Asokan, M.D., Sergey Pisklakov, M.D., Alex Y. Bekker, M.D., Ph.D.,** Anesthesiology and Perioperative Care, UMDNJ - New Jersey Medical School, Newark, NJ.

### NA A2237

#### Transfer Function Analysis of Cerebral Pressure-Flow Dynamics Following Aneurysmal Subarachnoid Hemorrhage

Aneurysmal subarachnoid hemorrhage impairs normal cerebral vascular dynamics in humans as reported by transfer function analysis. **Kevin J. Gingrich, M.D., M.EngKim Rickert, M.D., Brett Whittemore, M.D., Rong Zhang, Ph.D., Hooman Heravi, B.S., Emine Melik, M.S.;** Anesthesiology and Pain Management, Neurological Surgery, Institute for Exercise and Environmental Medicine, School of Medicine, UT Southwestern Medical Center, Dallas, TX.

### NA A2238

#### Baseline D-serine Plasma Concentration: A Potential Biomarker of (R,S)-ketamine Response in Subjects with Major Depressive Disorder

This study reports on the relationship between baseline D-serine plasma levels and antidepressant response following the administration of a subanesthetic dose of (R,S)-ketamine. **Michael Goldberg, M.D., Ruin Moaddel, Ph.D., David . A. Luckenbaugh, M.A., Michel Bernier, Ph.D., Marc C. Torjman, Ph.D., Coral Barbas, Ph.D., Carlos A. Zarate, Jr.M.D., Irving W. Wainer, Ph.D.,** Anesthesiology, Cooper University Hospital, Cooper Medical School of Rowan University, Camden, NJ, The Laboratory of Clinical Investigation, NIA, Experimental Therapeutics & Pathophysiology Branch, NIMH, NIH, Bethesda, MD, Center for Metabolomics and Bioanalysis, Facultad de Farmacia, Universidad CEU San Pablo, Madrid, Spain.

### NA A2239

#### Metabolic and Hemodynamic Stability During Awake Craniotomy Without Opioids: Retrospective Study at a Single Center

The aim of this retrospective study was to verify metabolic and hemodynamic stability during awake craniotomy compared to non-awake craniotomy. The anesthesia records of neurological surgeries performed between Jan 2011 and Dec 2013 were collected. Craniotomy cases managed by total intravenous anesthesia and awake craniotomy cases were retrospectively investigated. Hyperglycemia and hypertension were observed with patients undergoing awake craniotomies without opioids. Low-dose remifentanyl will improve the adverse events associated with awake craniotomies. **Fumiyuki Sugime, M.D., Soshi Iwasaki, M.D., Ph.D., Nobuko Tachibana, M.D., Ph.D., Shunsuke Hayashi, Akihiko Watanabe, M.D., Ph.D., Michiaki Yamakage, M.D., Ph.D.,** Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan.

### NA A2240

#### Perioperative Management of Children with Giant Encephalocele: Analysis of 29 Cases

"Giant encephalocele", a term often used to describe an encephalocele sac larger than the size of head of the child, is a lesser encountered entity which may make anesthesiologist wary of tumultuous anesthetic course. Medical records of 29 children with giant encephalocele who underwent excision and repair over a period of 13 years were analyzed, retrospectively, of whom 89.6% of the children had good outcome. It highlights the importance of skillful perioperative management in these children. **Girija P Rath, M.D., D.MCharu Mahajan, M.D., D.MParmod K. Bithal, M.D.;** Neuroanaesthesiology, All India Institute of Medical Sciences, New Delhi, India, Anaesthesiology, SGPGIMS, Lucknow, India.

### NA A2241

#### Perioperative Management of Aneurysmal Subarachnoid Hemorrhage: European and American Survey Results

The European Neuroanaesthesia Research Group (ENIG) generated a online questionnaire on aneurysmal subarachnoid hemorrhage obtaining heterogeneous practices frequently at variance with available guidelines on SAH management. **Neus Fabregas, M.D., Ph.D., Lionel J. Velly, M.D., Ph.D., Martin S. Soehle, M.D., Federico Bilotta, M.D., Ph.D., Nicolas J. Bruder, M.D., Ph.D., Mike Nathanson, M.D., Ph.D.,** Anesthesiology, Hospital Clinic Universitari Barcelona, Barcelona, Spain, Anesthesiology and Critical Care Medicine, University Hospital Timone, Marseille, France, Anesthesiology and Intensive Care Medicine, University Hospital Bonn, Bonn, Germany, Anesthesiology, Critical Care and Pain Medicine, Sapienza University of Rome, Roma, Italy, Anesthesiology and Intensive Care Medicine, University Hospital Queens Medical Centre, Nottingham, United Kingdom.

### NA A2242

#### Management of Vasospasm After Aneurysmal Subarachnoid Hemorrhage: European and American Survey Results

The European Neuroanaesthesia research Group (ENIG) generated an online questionnaire on vasospasm diagnosis and treatment. A lack of evidence on several clinical practices, for example the blood pressure target, would justify prospective trials. **Neus Fabregas, M.D., Ph.D., Lionel L. Velly, M.D., Federico Bilotta, M.D., Ph.D., Martin S. Soehle, M.D., Nicolas J. Bruder, M.D., Ph.D., Mike Nathanson, M.D., Ph.D.,** Anesthesiology, Hospital Clinic Universitari Barcelona, Barcelona, Spain, Anesthesiology and Critical Care Medicine, University Hospital Timone, Marseille, France, Anesthesiology, Critical Care and Pain Medicine, Sapienza University of Rome, Roma, Italy, Anesthesiology and Intensive Care Medicine, University Hospital Bonn, Bonn, Germany, Anesthesiology and Intensive Care Medicine, University Hospital Queens Medical Centre, Nottingham, United Kingdom.

### NA A2243

#### Effects of Multiple Exposures to Sevoflurane at Subcam Dosage in the Neuroapoptosis and Cognitive Function in the Neonatal Period

AbstractObjective Analyze at a histological level the neurodegenerative, cognitive and behavioral effects following repeated exposures to sevoflurane at doses lower than the minimum alveolar concentration in neonatal ratsMethods Wistar rats were exposed for one hour during 5-7days to sevoflurane at 2.3%, one, two or three times at intervals of 24 hours between exposures. Results All experimental groups showed neuronal apoptosis . In the Morris water maze the difference found was statistically significant (t test p <0.001) when compared with the execution time of the test of the control group.Conclusions Exposure to Sevoflurane in neonatal rats during repeated and short periods induces apoptotic neuronal death possibly through the activation of caspase 3, and produces learning deficits principally in spatial memory acquisition. **Fernando Rios, SrAnesthesiologist;** University of La Sabana, Bogota, Colombia.

### NA A2244

#### Dexmedetomidine Provides Better PACU Hemodynamic Control and Reduces PACU Analgesic Requirements Than Remifentanyl in Intracranial Tumor Excision: A Randomized Trial

In this prospective randomized trial we compared remifentanyl the ultra short acting Mu agonist(Remi) with the alpha 2 agonist dexmedetomidine(Dex) when used during craniotomy for intrcranial tumor excision. 139 patients were randomized to receive either remi or dex. Our primary outcomes were hemodynamics and postoperative pain relief. Our secondary outcomes were comparing cognitive recovery and nursing resource usage. Compared to remi, administration of dex appears superior on PACU pain control and hemodynamic stability when used for a craniotomy. **Shobana Rajan, M.D., Mathew Hutcherson, M.D., Dongsheng Yang, M.S., Jinbo Liu, M.D., Rafi Avitsian, M.D.;** Anesthesiology, Outcomes Research, Cleveland Clinic, Cleveland, OH.



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**NA A2245**

**Evaluation of Social Behavior in Rats After Traumatic Brain Injury Using the Complex Diving-for-food Situation Paradigm**

In this study, using the complex diving-for-food test, we examined for the first time social behavior disturbances in a rat model of TBI. This test demonstrated a significant sensitivity for the disturbances in social activity in the moderate TBI group, but not in the mild TBI group. **Ruslan Kuts, M.D., Yulia Grinshpun, M.D., Vladislav Zvenigorodsky, M.D., Benjamin F. Gruenbaum, M.D., Shaun E. Gruenbaum, M.D.;** Department of Anesthesiology and Critical Care, Soroka Medical Center and Ben-Gurion University of the Negev, Beer Sheva, Israel, Department of Anesthesiology, Yale University School of Medicine, New Haven, CT .

**NA A2246**

**Long-term Patterns of Post-stroke Depression in Rats**

In this study we demonstrated for the first time that the sucrose preference test could be used to monitor long-term changes of PSD. The sucrose preference test is reliable, simple to perform, and is highly sensitive for studying depression. **Shaun E. Gruenbaum, M.D., Ruslan Kuts, M.D., Yulia Grinshpun, M.D., Alexander Zlotnik, M.D., Ph.D.,** Department of Anesthesiology, Yale University School of Medicine, New Haven, CT, Department of Anesthesiology and Critical Care, Soroka Medical Center, Ben-Gurion University of the Negev, Beer Sheva, Israel.

**NA A2247**

**Long-term Pattern of Depression After Traumatic Brain Injury Using a Sucrose Preference Test in Rats**

In this study we demonstrated for the first time the long-term patterns of post-TBI depression using a sucrose preference test. The sucrose preference test is a reliable, simple, and highly sensitive model to study depression. **Benjamin F. Gruenbaum, M.D., Matthew Boyko, Ph.D., Vladislav Zvenigorodsky, M.D., Evgeni Brotfain, M.D., Alexander Zlotnik, M.D., Ph.D.,** Department of Anesthesiology, Yale University School of Medicine, New Haven, CT, Department of Anesthesiology and Critical Care, Soroka Medical Center, Ben-Gurion University of the Negev, Beer Sheva, Israel.

**NA A2248**

**The Incidence of Venous Air Embolism During Various Sitting Neurosurgical Cases**

Venous air embolism (VAE) is a common complication of neurosurgical procedures performed in the sitting position. This investigation reports the incidence and severity stratification of VAE associated with neurosurgical procedures in the sitting position across 1668 patients at a single institution. The rates of VAE in patients having DBS lead implantation, cervical spine procedures, and craniotomy were 7.8%, 2.6%, and 10.8%, respectively. Of these VAE events, the incidence of suffering a moderate to severe VAE for these procedures were 44.4%, 29.8%, and 22.2% respectively. Although VAE events may have acute intraoperative consequences, no VAE-related postoperative adverse outcomes were identified. **Arney S. Abcejo, M.D., Jeffrey J. Pasternak, M.D., William J. Perkins, M.D.;** Anesthesia, Mayo Clinic, St. Mary's Hospital - Mayo Clinic, Rochester, MN.

**NA A2249**

**Association Between Preoperative Depressive Symptoms and Postoperative Cognitive Dysfunction in Patients Undergoing Surgery under General Anesthesia**

Postoperative Cognitive Dysfunction (POCD) is a multifactorial disease and little is known about its association with preoperative depressive symptoms. This study aims to investigate associations between POCD and depressive symptoms in elderly patients. **Livia S. Valentin, Ph.D., Leticia Maria A. Souza, Student of Psychology, Matheus F. Vane, M.D., Vinicius Fernando Da Luz, M.D., Katia Osternack-Pinto, Ph.D., Maria Jose C. Carmona, Ph.D., M.D.;** Anesthesiology, Laboratory of Anesthesiology, Discipline of Anesthesiology, Faculdade de Medicina da Universidade de São Paulo, Sao Paulo, Brazil.

**PO11-2 HISTORY AND EDUCATION: EVALUATION: STRATEGIES AND RESOURCES**

1-3 p.m. | Hall B1-Area D

**PI A2250**

**Evaluation of the Inter-rater Faculty Reliability Utilizing a Standardized Resident Interview Scoring System**

We have developed a quantitative scoring system to capture these data from an application and have confirmed inter-rater reliability with excellent agreement between independent faculty reviewers. **Sam Gumbert, M.D., Katherine C. Normand, M.D., Evan G. Pivalizza, M.B., Carlos A. Artime, M.D., Omonele O. Nwokolo, M.D., Semhar Ghebremichael, M.D., Srikanth Sridhar, M.D., George Williams, II, M.D., Carin A. Hagberg, M.D.;** UT-Houston Medical Center Dept of Anesthesiology, Houston, TX.

**PI A2251**

**New Residency Candidate Interview Scoring Template Reliability**

We devised a standardized evaluation form for each residency application used by two faculty reviewers and found a strong agreement. **Katherine C. Normand, M.D., Sam Gumbert, M.D., Evan G. Pivalizza, M.B., Carlos A. Artime, M.D., Sara Guzman-Reyes, M.D., Omonele O. Nwokolo, M.D., George Williams, II, M.D., Carin A. Hagberg, M.D., Amy D. Graham-Carlson, M.D., Olga Pawelek, M.D.;** Department of Anesthesiology, UT-Houston Medical Center, Houston, TX.

**PI A2252**

**Evaluation of a New Curriculum of Focus-Assessed Transthoracic Echocardiography for Anesthesiology Residents**

This abstract presents the initial evaluation of a new teaching education curriculum on transthoracic echocardiography in Anesthesiology. Residents underwent didactic and hands-on training sessions. Data was analysed on pre and post test improvement as well as time to completion of TTE protocol. **Nicholas J. Schott, M.D., Mark I. Lischner, D.O., Christopher Schott, M.D., Stephen M. McHugh, M.D., Li Meng, M.D., Steven L. Orebaugh, M.D., Tetsuro Sakai, M.D., Ph.D.;** Anesthesiology, Critical Care Medicine and Emergency Medicine, University of Pittsburgh Medical Center, Pittsburgh, PA.

**PI A2253**

**Crisis Simulation and Checklist for Anesthesia Resident Education**

Crisis simulation and checklist education is a useful education tool to train the anesthesia resident for crisis management. **Chuanyao Tong, M.D., Ka Wang, M.D., Guogang Tian, M.D., Yi Tian, M.D., Yingling Wang, M.D., Xiao Wei, M.D.;** Anesthesiology, Wake Forest University Medical Center, Winston Salem, NC, Anesthesiology, Haikou People's Hospital, Haikou, China.

**PI A2254**

**Interdisciplinary Crisis Resource Management Team Skills Training: Bridging the Gap Between Training and Practice**

Most crises require management by interdisciplinary teams, in contrast to classical training, which focuses on single physician leadership. To bridge this perceived training-to-practice gap, we designed an interdisciplinary Crisis Resource Management team-training program. We report Anesthesia residents' clinical experience in interdisciplinary teams and current available team training. Findings support the need for and benefit of such training, as participants report perceived improvement in skills relevant to interdisciplinary teams following course participation. **Milene A. Azzam, M.D., C.M., Rachel Fisher, M.D., C.M., F.R.C.P.C., Ilana Bank, M.D., C.M., F.R.C.P.C., F.A.A.P., Lily Hp Nguyen, M.D., C.M., M.Sc., F.R.C.S.C., Francoise Yung, M.D., Chantal Hickey, M.D., F.R.C.P.C., Arielle Levy, M.D., M.Ed., F.R.C.P.C., F.A.A.P., Annie Lapointe, M.D., M.P.H., Meredith Young, Ph.D.;** McGill University, Montreal, QC, Canada, Université de Montréal, Montreal, QC, Canada.



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain

## PI A2255

### Development of an Internet Based Educational Resource in Anesthesiology - O.R.C.A.

We describe an online educational tool in cardiac anesthesia called O.R.C.A., which uses a Moodle template. The purpose of the site was to provide a resource for anesthesiology residents to use. The site divides topics into monthly modules providing 3-4 multiformat items for each topic - didactic CV anesthesia (24 months) and basic TEE (12 months) are the two main courses. The receptivity of anesthesiology residents to the website and e-attendance are discussed. Examples from the website are provided and the implications of this educational method in the future are discussed. **Paul G. Loubser, M.B.Ch.B., Mohamed A. Koronfel, M.B.,Ch.B., Mohamad E. Hashim, M.B., B.Ch.; Anesthesiology, University of Texas Medical School at Houston, Houston, TX, Anesthesiology, University of Miami Miller School of Medicine, Miami, FL, Department of Anesthesia, Children's Cancer Hospital Egypt (CCHE), Cairo, Egypt.**



## PI A2256

### Impact of Perioperative Evaluation of the Airway via Sonography (PEAS) Protocol Workshop for Obtaining Scanning Skill and Confidence to Perform Cannula Cricothyroidotomy

We propose the PEAS (perioperative evaluation of the airway via sonography) protocol to identify cricothyroid membrane to assess difficulty in performing surgical airway access in daily anesthesia practice. Impact of one hour PEAS workshop to obtain visualization skill was introduced here. **Kenji Yamamoto, M.D., Akihiro Suzuki, M.D, Ph.D., Hiroshi Tanaka, M.D., Akihito Tampo, M.D, Ph.D., Takayuki Kunisawa, M.D, Ph.D., Hiroshi Iwasaki, M.D, Ph.D., Satoshi Fujita, M.D, Ph.D.; Anesthesiology, Emergency, Asahikawa Medical University, Asahikawa-City, Japan.**

## PI A2257

### Generalizability of Simulation-Based Objective Structured Clinical Examination Scenarios

The aim of this study was to determine the "portability," or sharing of scenarios developed for the non-American Objective Structured Clinical Examination with an American academic environment for formative (teaching) and summative (testing) assessment. **Avner Sidi, M.D., Nikolaus Gravenstein, M.D., Samsun Lampotang, Ph.D.; Department of Anesthesiology, University of Florida, Gainesville, FL.**

## PI A2258

### Implementation and External Validation of the Z-Score System for Normalizing Residency Evaluations

Assessment of resident clinical competence is an essential element for evaluating learning within a residency program. Validated and reliable measurements of resident clinical performance are important for accurate assessment of clinical skills. Recently, Baker (2011) described a system of normalizing resident evaluations. This study demonstrates an implementation of the Z-score system, and provides an external validation of the Z-score system using 1 year of observations from 1 independent institution. **Jonathan P. Wanderer, M.D., M.Phil., Nimesh Patel, M.S., John R. Boulet, Ph.D., Michael A. Pilla, M.D., Warren S. Sandberg, M.D., Ph.D., John T. Algren, M.D., Brian S. Rothman, M.D.; Department of Anesthesiology, Vanderbilt University, Nashville, TN, Foundation for Advancement of International Medical Education and Research, Philadelphia, PA.**

## PI A2259

### Effectiveness of Interdisciplinary Crisis Resource Management Simulation in Residency: A Pilot Study

Anesthesiology and general surgery faculty collaborated to create a simulation-based multidisciplinary crisis resource management (MCRM) curriculum between anesthesiology and general surgery residents. Residents participating in this pilot study demonstrated improved confidence in interdisciplinary teamwork and communication skills in the operating Room setting. Based on these results, residency programs should consider including MCRM simulation-based learning as a routine part of anesthesiology and general surgery residency training. **Felipe De Jesus Perez, B.A., Jai Madhok, B.S., Cara A. Liebert, M.D., James Lau, M.D., Ankeet D. Udani, M.D., B.A., Anesthesiology, Stanford University School of Medicine, Stanford, CA, General Surgery, Stanford University Medical Center, Stanford, CA, Anesthesiology, Perioperative, and Pain Medicine, Stanford University Medical Center, Stanford, CA.**

## PI A2260

### Are Pre- and Post-Exams an Acceptable Metric for Assessing the Educational Efficacy of a Regional Anesthesia Week-Long Course?

Anesthesiology residents have varying levels of experience with ultrasonography. With the increase in use of ultrasound-guided regional nerve blocks, we decided to implement a week-long course covering this topic, including a 4-hour hands on standardized patient simulation workshop, as part of our anesthesia residency education. We administered a pre and post course exam to better gauge the educational impact of this experience. We collected data for four years (2010-2013). Test scores significantly increased after course implementation. Subjectively, residents felt more confident about their ultrasound skills after attending the lectures and participating in the simulation exercise using standardized volunteers. **Michael F. Esposito, M.D., Christine L. Carqueville, M.D., Stephan J. Cohn, M.D., Angela D. Blood, M.B.A., M.P.H.; Anesthesia and Critical Care, University of Chicago, Chicago, IL.**



## PI A2261

### Using High-Fidelity Simulation for Transitioning to Practice: Pediatric Anesthesiology Crisis Management and Team Training

Initial experience with a developed simulation based training program for pediatric anesthesiology fellows with a specific focus on those challenges encountered with transition into clinical practice. **Kimberly R. Blasius, M.D., Hemanth A. Baboolal, M.D.; Pediatric Anesthesiology, University of North Carolina, Chapel Hill, NC.**

## PI A2262

### Development, Evaluation and Use of a Multi-viewpoint and Multi-layer 3-Dimensional Clinical Atlas System

We constructed a 3D multiview anatomy system (3DMAS), in which users can freely change their viewpoint (multi viewpoints) and depth of dissection (multi layers). We evaluated the educational usefulness of 3DMAS for teaching clinical anatomy to young residents and used the 3DMAS to assist dissection in a cadaver workshop. Geographical relationships were understood better in the 3DMAS group than in the conventional atlas group. The 3DMAS was useful as a reference for dissection in the cadaver workshop and may facilitate the understanding of anatomy by reviewing at home. **Yoshimasa Takeda, Associate Professor, Shinichi Ishikawa, Assistant Professor, Keisuke Suetsugi, Manager, Aiji Ohtsuka, Ph.D.; Panasonic, Osaka, Japan, Human Morphology, Omayama University Medical School, Okayama, Japan.**

## PI A2263

### Current and Future Teaching Practices on Point-of-Care Ultrasound Education for Anesthesiology Residents

This survey aims to report the current practices of ultrasound education at academic anesthesiology programs as well as indicate what areas of point-of-care ultrasound (POCUS) education are of interest to educate residents in the future. This study consists of an electronic survey sent to all 125 academic anesthesiology program directors in the United States. Results show there is a large discrepancy between the topics of POCUS currently taught vs. topics that were reported to be of importance for future anesthesiologists. **Khanhvan Le, B.A., Ryan M. Konoske, M.D., Suzanne L. Strom, M.D., Maxime Cannesson, M.D., Ph.D., Davinder S. Ramsingh, M.D.; Anesthesiology & Perioperative Care, University of California, Irvine Medical Center, Orange, CA.**

## PI A2264

### Use of Telesimulation to Teach Ultrasound-Guided Regional Anesthesia to Anesthetists in Ontario

Telesimulation involves both audio and visual connection of individuals and their simulators using the Internet and a series of webcams. In this study, we present qualitative and quantitative preliminary results from the first use of this platform to teach ultrasound-guided regional anesthesia (UGRA) skills in hospitals across Ontario. **David Burckett-St-Laurent, M.B.B.S., Ahtsham Uddin Niazi, M.B.B.S., Melissa S. Cunningham, M.Sc., Sherif Abbas, M.D., Vincent W. Chan, M.D., Allan Okrainec, M.D., MHPE; Department of Anesthesia, Division of General Surgery, Toronto Western Hospital-University Health Network, Toronto, ON, Canada.**

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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**PI A2265**

**Interactive Computing for Anesthesiology - Education, Quality, & Patient Care**

Interactive computing typically refers to software that allows for human interaction and the immediate processing and visual representation that results from any given interaction. Applying this science to healthcare has numerous advantages to help connect two disparate fields where experts speak different languages. The development of interactive documents, where front-end users can interact with complex mathematical models allows for modification of data or variables and immediate display of information that can be used for decision making or teaching, without the need to understand the computer programming behind the scenes. **Donald M. Voltz, M.D., Matthew Joy, M.D., Alfred C. Pinchak, M.D., Ph.D.;** Anesthesiology, Aultman Hospital, Canton, OH, Anesthesiology, MetroHealth Medical Center, Cleveland, OH.

**PO13-5 OUTCOMES AND DATABASE RESEARCH**

1-3 p.m. | Hall B1-Area A

**FA A2266**

**Establishment of Objective Criteria for Operating Room Exit is Associated With Improved Early Postoperative Outcome in Pediatric Cardiac Surgery**

Following surgical correction of congenital heart defects, surgical re-intervention in the early postoperative period may result in morbidity and mortality. Goal-directed treatment by the anesthesia team can lead to a significant decrease in surgical re-interventions in the intensive care unit. **Suanne M. Daves, M.D., Johnson Wong, B.S., Matthew S. Shotwell, Ph.D., Gina M. Whitney, M.D., Alexander K. Hughes, M.D., Scott Watkins, M.D., Brian Donahue, M.D., Ph.D.;** Department of Anesthesia & Critical Care, Monroe Carell, Jr. Children's Hospital at Vanderbilt, Meharry Medical College, Department of Biostatistics, Vanderbilt University, Nashville, TN.

**FA A2267**

**The Effect of Elevated Glyco-Hemoglobin (HbA1C) on Postoperative Morbidity: A Prospective Observational Study**

Diabetics with elevated HbA1c have a higher incidence of post-op infections and complications. Our study also shows that a high HbA1c may foreshadow difficult post-operative glucose control with wider glucose variability and both of those factors may be important predictors of post-operative infections and wound complications. **Pinxia Chen, M.D., Verghese T. Cherian, M.B., B.S., M.D., Katherine Hallock, B.S., Christie Mulvey, Arthur Berg, Ph.D.;** Anesthesiology, M.S. Hershey Medical Center, Penn State College of Medicine, Hershey, PA.

**FA A2268**

**Towards a Core Generic Outcome Set for Randomized Controlled Trials in Perioperative Medicine: A Systematic Review Protocol**

Defining a standardised set of core outcome measures for perioperative randomised controlled trials would facilitate meta-analysis and reduce ambiguity in systematic reviews. We present a protocol for a comprehensive review of outcome measures used in existing perioperative literature. This analysis of precisely what outcomes are commonly measured will inform an international Delphi consensus process aimed at defining a standardised 'core set' of perioperative outcome measures. **Oliver Boney, M.B.B.S, Michael Grocott, M.D, Ramani Moonesinghe, M.B.B.S;** Anaesthetics, University College London, London, United Kingdom.

**FA A2269**

**Prophylactic Endotracheal Intubation Versus Conscious Sedation During Emergency Upper Endoscopy for Peptic Ulcer Bleeding: A Population-based Cohort Study of 3638 Consecutive Patients**

Prospective, population-based cohort study of 3638 Danish patients undergoing emergency endoscopy for upper gastrointestinal bleeding. Airway protection with endotracheal intubation was equal to conscious sedation with regard to 90d mortality (18.8 vs 18.4%) and length of stay in hospital (8.18 vs 7.62 days). A randomized clinical trial is needed to fully answer this important clinical question. **Nicolai Lohse, M.D., Ph.D., Lars H. Lundström, M.D., Ph.D., Therese R. Vestergaard, M.D., Ph.D., Martin Risom, M.D., Steffen J. Rosenstock, M.D., D.M.Sc., Nicolai B. Foss, M.D., D.M.Sc., Morten H. Møller, M.D., Ph.D.;** Department of Anaesthesiology, Department of Surgical Gastroenterology, Copenhagen University Hospital Hvidovre, Hvidovre, Denmark, Department of Anaesthesiology and Intensive Care Medicine, Hospital of North Zealand, Copenhagen University, Hillerød, Denmark.

**FA A2270**

**Peri-operative T-wave Inversion in Patients Undergoing Non-cardiac Surgery and Post-operative Outcomes**

The goal of this study was to determine whether the incidence of perioperative T-wave inversions (TWIs) is associated with post-operative complications, including 30-day acute myocardial infarction (AMI) and 30-day mortality, in patients undergoing non-cardiac surgery. Statistical analysis demonstrated that TWI was positively associated with post-operative AMI (OR: 4.3, 95% CI: 2.66-6.95, P <0.001) and mortality (OR: 2.52, 95% CI: 1.74-3.65, P<0.001). Further studies may be warranted to investigate the association between TWIs and serum troponins with adverse post-operative outcomes. **Wilson Kwan, M.S., Katherine Peterson, B.S., Lijun He, M.S., Ling Zheng, Ph.D., M.B.B.S., Zaruhi Meliksetyan, M.D., Mary M. Joseph, M.D.;** Anesthesiology, Biostatistics, Neurology, Keck School of Medicine, Los Angeles, CA.

**FA A2271**

**Multi-Organ Dysfunction After General Surgery: Synergism Between Acute Kidney Injury, Acute Lung Injury, and Sepsis on 30-day Mortality**

Perioperative sepsis, acute lung injury (ALI), and acute kidney injury (AKI) are thought to be interdependent, inflammatory processes that increase the risk of mortality after surgery. Using ACS-NSQIP data, we examined the joint effects of developing one, two, or all three of these complications on short-term mortality in patients undergoing high-risk general surgery procedures. Sepsis, ALI, and AKI were independently associated with an increased risk of mortality. In addition, multiple complications were associated with a synergistically increased risk of mortality beyond that which could be explained by the additive effects of individual complications. **Minjae Kim, M.D., M.S., Joanne Brady, M.S., Guohua Li, M.B.;** Anesthesiology, Columbia University, New York, NY, Columbia University, New York, NY.

**FA A2272**

**Perioperative Utilization of Arterial Catheterization in Elective Orthopedic Surgery**

Using a large national database the perioperative utilization of arterial catheters in elective orthopedic surgery was investigated. The use of arterial catheterization differed significantly by the type of procedure, while overall comorbidity burden seemed to be associated with higher utilization. Patients receiving invasive hemodynamic monitoring were more likely to suffer complications and need ICU care. **Mathias Opperer, M.D., Jashvant Poeran, M.D., Ph.D., Thomas Danninger, M.D., Sumudu Dehipawala, B.S., Rehana Rasul, M.A., M.PH., Stavros G. Memtsoudis, M.D., Ph.D.;** Department of Anesthesiology, Hospital for Special Surgery, Department of Healthcare Policy and Research, Weill Cornell Medical College, New York, NY, Department of Anesthesiology, Landeskrankenhaus Salzburg, Salzburg, Austria.



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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#### FA A2273

##### The Relationship of Postoperative Beta-blocker and Statin Use With Mortality After Noncardiac Surgery

Postoperative beta-blocker and statin use are not associated with a decreased risk of perioperative mortality in patients undergoing noncardiac surgery. Miklos D. Kertai, M.D., Ph.D., William D. White, M.S., M.P.H., Tong J. Gan, M.D.; Anesthesiology, Duke University Medical Center, Durham, NC, Duke University Medical Center, Durham, NC.

#### FA A2274

##### Anesthesia Type and Perioperative Outcome After Colectomy in the United States: 2006-2012

Using a large claims-based database we describe the distribution of anesthesia type among patients undergoing colectomies as well as its association with perioperative outcome. We found no clear pattern of consistent favorable results for patients undergoing their procedure under general versus general/neuraxial anesthesia combined. Our results may follow from the small sample size of the latter group, or certain decision triggers. These findings warrant further prospective research. Jashvant Poeran, M.D., M.Sc., Ph.D., Heather Yeo, M.D., M.H.S., Mathias Opperer, M.D., Rehana Rasul, M.A., M.P.H., Stavros G. Memtsoudis, M.D., Ph.D., Madhu Mazumdar, Ph.D.; Healthcare Policy and Research, Weill Cornell Medical College, New York, NY, Colon and Rectal Surgery, Weill Cornell Medical College / NewYork-Presbyterian Hospital, New York, NY, Hospital for Special Surgery, New York, NY.

#### FA A2275

##### Hospital-Specific Neuraxial Anesthesia Rate and Perioperative Outcomes

As a follow-up on previous studies showing neuraxial anesthesia associated with better perioperative outcome we aimed to elucidate the role of hospital-level effects of neuraxial anesthesia on perioperative outcomes in hip and knee arthroplasties. There appeared to be little agreement between hospital-specific percentage use of neuraxial or general/neuraxial anesthesia and the hospital-specific rate of combined complications. These findings suggest that instead of hospital-level factors, patient-level factors or true biological effects may be more likely contributors to the beneficial effects of neuraxial anesthesia found in previous studies. Jashvant Poeran, M.D., M.Sc., Ph.D., Mathias Opperer, M.D., Rehana Rasul, M.A., M.P.H., Madhu Mazumdar, Ph.D., Stavros G. Memtsoudis, M.D., Ph.D.; Healthcare Policy and Research, Weill Cornell Medical College, New York, NY, Hospital for Special Surgery, New York, NY.

#### FA A2276

##### Adverse Events Associated with Moderate Procedural Sedation Outside of the Operating Room

Careful patient evaluation and risk assessment is necessary before delivering moderate procedural sedation. Multiple factors related to the patient, procedural location, and the procedure itself can be predictive of sedation-related complications and should be taken into consideration by providers. Richard D. Urman, M.D., M.B.A., Sergey Karamnov, M.D., Sarkisian Natalia, Ph.D., Ehren R. Nelson, M.D., Alison M. Weisheipl, M.D., Wendy L. Gross, M.D.; Anesthesiology, Brigham and Women's Hospital, Boston, MA, Department of Sociology, Boston College, Chestnut Hill, MA.

#### FA A2277

##### Preoperative Serum Potassium Concentration Cannot Be Predicted in Patients Who Had Been Hemodialysis-Dependent

The purpose of this study was to investigate serum potassium concentration on the morning of surgery when hemodialysis is performed one day before surgery. The serum potassium concentration was compared between just after hemodialysis and on the morning of surgery. Present study revealed that serum potassium concentration elevated to more than 5.0 mEq/L in 33 % of the patients. Especially, in 12% of the patients, emergency hemodialysis was required before anesthesia because of unexpected hyperkalemia. We conclude that serum potassium concentration may increase on the next day of hemodialysis and the magnitude of increase would not be expected. Jun Kawaguchi, D.D.S., Ph.D., Kyotaro Koshika, D.D.S., Ph.D., Takao Kato, M.D., Takashi Ouchi, M.D., Ph.D., Ryohei Serita, M.D., Ph.D., Toshiya Koitabashi, M.D., Ph.D.; Ichikawa General Hospital, Tokyo Dental College, Ichikawa, Japan.

#### FA A2278

##### Subsequent Research Funding Among FAER Career Development Award Recipients and Applicants

To better understand the effect of career development awards on the future success and productivity of academic anesthesiologists, this investigator-designed web-based survey was sent to 830 individuals that applied for Foundation for Anesthesia Education and Research (FAER) career development funding between January 1973-February 2013. The survey included 59-items on demographics, subsequent research funding, leadership positions, mentoring, and career satisfaction. Participants were also asked to upload their curriculum vitae. Lee A. Fleisher, M.D., Denham S. Ward, M.D., Ph.D., Rebecca M. Speck, Ph.D., M.P.H.; Anesthesiology & Critical Care, University of Pennsylvania, Philadelphia, PA, FAER, Rochester, MN.

#### FA A2279

##### Career Satisfaction and Retention Among Academic Anesthesiologists - Data From FAER and AUA

Toward the goal of identifying elements critical to attracting, supporting, and retaining the best academic anesthesiologists, this web-based survey queried FAER funding applicants and AUA members about career satisfaction and retention. Rebecca M. Speck, Ph.D., M.P.H., Lee A. Fleisher, M.D., Denham S. Ward, M.D., Ph.D.; Anesthesiology and Critical Care, University of Pennsylvania, Philadelphia, PA, FAER, Rochester, MN.

#### FA A2280

##### Preoperative Aspirin Use and Postoperative Outcomes in Non-emergency Cardiac Surgery Patients

We investigated the effect of preoperative aspirin use on postoperative outcomes in non-emergency cardiac surgery patients. Aspirin use was associated with a significant decrease in postoperative permanent stroke and infectious endocarditis. Vwaire J. Orhurhu, B.A., M.P.H., Khurram Owais, M.D., Jeffrey Hubbard, M.D., Mario Montealegre, M.D., Anam Pal, M.D., Emmanuel Akintoye, M.D., Kamal Khabbaz, M.D., John Mitchell, M.D., Feroze Mahmood, M.D., Robina Matyal, M.D.; Department of Epidemiology and Biostatistics, Harvard School of Public Health, Boston, MA, Department of Anesthesia, Critical Care and Pain Medicine, Department of Surgery, Division of Cardiac Surgery, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA.

#### FA A2281

##### Comparison of Propofol and Midazolam for Premedication - A Placebo-Controlled, Randomized Double-Blinded Study

A randomized, double-blind, placebo-controlled study was designed to test the hypothesis that a sub-hypnotic dose of propofol, 20 mg (~0.2 mg/kg) IV, would be more effective than midazolam, 2 mg IV, in producing sedation and anxiolysis upon entering the operating room. A secondary outcome measure was the effect of premedication on recall at induction of anesthesia. Roya Yumul, M.D., Ph.D., Ofelia L. Elvir Lazo, M.D., Jun Tang, M.D., Jonathan Hausman, M.D., Antonio Hernandez Conte, M.D., Kapil Anand, M.D., Emad Hemaya, M.D., Firuz Yumul, B.A., Ronald H. Wender, M.D., Paul F. White, Ph.D., M.D.; Anesthesiology, Cedars-Sinai Medical Center, Los Angeles, CA.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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**ORAL PRESENTATIONS**

**OR01-1 AMBULATORY ANESTHESIA: ANESTHESIA OUTCOMES, DELIRIUM AND COGNITIVE DYSFUNCTION**  
 8-9:30 a.m. | Room 243



**AM A3000**

**The QoR-15 Questionnaire is an Acceptable and Feasible Measure of Patient Reported Outcome After Ambulatory Orthopedic Surgery**

We present results of a study assessing quality of recovery in 633 ambulatory orthopedic surgery patients using the QoR-15 questionnaire at 24h, 48h, and 7 days after surgery. It was found to be both an acceptable and feasible method of obtaining patient reported outcome measures in this population. **Maria Chazapis, M.B.B.S., Ellie Walker, M.BCh.BMartin Rooms, M.B.B.S., Damon Kamming, M.D., Ramani Moonasinghe, M.D.;** UCL/UCLH Surgical Outcomes Research Centre, University College Hospital, London, United Kingdom.

**AM A3001**

**Postoperative Cognitive Dysfunction, Beyond a Single Domain**

Postoperative cognitive dysfunction (POCD) is a complication found most commonly in the elderly. In this study we focus on the perioperative performance of memory vs. executive domains in elderly patients. We hypothesized that there would be a difference in predictive variables between patients with memory and executive dysfunction. Our data demonstrates that POCD is characterized by two subtypes which tend not to occur in the same patient and are fundamentally different. Future studies to identify risk factors or interventions for POCD look by subtype since causal factors may differ. **Stacie G. Deiner, M.S., M.D., Xiaodong Luo, Ph.D., Henry Badgery, CCS, Mary Sano, Ph.D.;** Anesthesiology and Psychiatry, The Icahn School of Medicine at Mt. Sinai, New York, NY, Monash University, Melbourne, Australia.

**AM A3002**

**Parecoxib Supplemented Morphine Analgesia Decreases the Incidence of Postoperative Delirium in Elderly Patients After Joint Replacement Surgery: A Randomized Control Trial**

Our study demonstrated that, in elderly patients after joint replacement surgery, parecoxib administered as adjuvant to intravenous morphine analgesia significantly improved the quality of analgesia, reduced the consumption of morphine, decreased the incidence of postoperative delirium, and alleviated postoperative cognitive decline. **Dong-Xin Wang, M.D., Ph.D., Dong-Liang Mu, M.D., Da-Zhi Zhang, M.D., Geng Wang, M.D., Ph.D., Chun-Jing Li, M.D., Zhao-Ting Meng, M.D., Ya-Wei Li, M.D., Chao Liu, M.D.;** Department of Anesthesiology and Critical Care Medicine, Peking University First Hospital, Beijing Jishuitan Hospital, Beijing, China.

**AM A3003**

**Cognitive Deficits After Surgery in Persons with a Family History of Alzheimer's Disease**

In a sample enriched for healthy adult children of parents with Alzheimer's Disease, prospective psychometric testing revealed persistent cognitive deficits after surgery within a 9 year test interval. **Kirk Hogan, M.D., J.D., Rebecca L. Kosciak, Ph.D., Katie J. Schenning, M.D., John C. Bonczyk, M.D., Allen L. Wenzel, B.S., Asenath A. La Rue, Ph.D., Bruce P. Hermann, Ph.D., Sterling C. Johnson, Ph.D., Mark A. Sager, M.D.;** Anesthesiology, School of Medicine and Public Health, University of Wisconsin, Madison, WI, Anesthesiology, University of Oregon, Portland, OR.

**AM A3004**

**Volatile Anesthetics and Postoperative Delirium**

A prospective cohort study in patients who underwent major non-cardiac surgery was conducted to examine the effect of volatile anesthetics on postoperative delirium (POD) on postoperative days 1 and 2. The aim of the study was to investigate if specific volatile agents would increase the risk of POD. Patients who received general anesthesia with desflurane, isoflurane or sevoflurane were included in the study. 570 patients were studied, with a mean age of 73.4 ± 6.0 years. The overall incidence of POD on postoperative day 1 or 2 was 41%. Desflurane was associated with higher POD rate than sevoflurane or isoflurane in low or intermediate surgical risk group. In high surgical risk patients, there was no difference in POD among 3 groups. **Sakura Kinjo, M.D., Eunjung Lim, Ph.D., Jacqueline M. Leung, M.D.;** University of California, San Francisco, CA; University of Hawaii, Honolulu, HI.

**AM A3005**

**The Alteration of the Blood-Brain Barrier Integrity in POCD Induced by Orthopedic Surgery and the Relative Mechanisms**

Orthopedic surgery disrupts the BBB integrity via down-regulation of tight junctions claudin-3 and ZO-1 as well as adhesion junction VE-cadherin, leading to impaired spatial working memory in aged rats, and the up-regulation of MMP-9 and VEGFA were involved in this process. **Hu Nan, M.D.;** Anesthesiology Department, Tianjin General Hospital, Tianjin, China.



**OR13-3 OUTCOMES AND DATABASE RESEARCH**

8-9:30 a.m. | Room 245

**FA A3006**

**Preoperative Chronic Use of Opioids Is Associated With Early Knee Implant Failure in Patients Undergoing Knee Replacement**

This nationwide VA database research of nearly 40,000 veterans undergoing TKA during 6 years demonstrated early knee implant failure in patient with history of chronic preoperative use of opioids requiring re-operation within one year after TKA. **Alon Y. Ben-Ari, M.D., Irene Rozet, M.D.;** Department of Anesthesiology and Pain Medicine, University of Washington, VA Puget Sound Medical Center, Seattle, WA.

**FA A3007**

**The Influences of Head and Neck Radiation Therapy on Intraoperative Hemodynamic Responses: A 10-Year Data Review**

The data review showed that HNRT affected individuals not only presented changes in their resting BP and HR as compared to that of their counterpart but also demonstrated increased cardioinhibitory effects under anesthesia as decrease in both BP and HR upon incision. Clinical observation showed that cardioinhibitory overshooting upon stimulations results in profound bradycardia and hypotension and to extreme, cardiac arrest. The results of study are consistent with our clinical observations. **Gang Zheng, M.D., Carol M. Lewis, M.D., Wenli Dong, M.S., Neal Huang, B.S., Marc A. Rozner, M.D., Ph.D.;** Anesthesiology and Perioperative Medicine, Head and Neck Surgery, Biostatistics, University of Texas MD Anderson Cancer Center, Houston, TX.

**FA 3008**

**Psychiatric Disorders and Psychopharmacologic Treatment as Risk Factors in Elective Fast-Track Total Hip and Knee Arthroplasty**

This prospective descriptive analysis in 8756 elective fast-track total hip and total knee arthroplasties with complete 90-days follow-up, found that preoperative psychopharmacologically treated psychiatric disorder is an important risk factor for postoperative morbidity and readmissions. This was regardless of the specific type of psychopharmacologicals used and after adjustments for patient characteristics. **Christoffer C. Jørgensen, M.D., Joachim Knop, M.D., DMSci, Merete Nordentoft, M.D., DmSci, Henrik Kehlet, M.D., Ph.D.;** Section for Surgical Pathophysiology, Copenhagen University, Rigshospitalet, Institute of Preventive Medicine, Bispebjerg & Frederiksberg Hospitals, Mental Health Centre Copenhagen, Copenhagen University, Copenhagen, Denmark.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain

**FA A3009**

**System-Level Factors Beyond Hospital Volume Affecting Failure to Rescue After Open Abdominal Aortic Surgery**

This study reveals that system-level factors, including low hospital volume, and a high hospital safety-net burden are strongly associated with higher likelihood of failure to rescue (FTR) after open abdominal aortic surgery. In contrast, high hospital technology are significantly associated with lower FTR rates. **Eric B. Rosero, M.D., M.S.C., J. Gregory Modrall, M.D., Carlos H. Timaran, M.D., Girish P. Joshi, M.B.,B.S., M.D.;** Anesthesiology and Pain Management, Surgery, UT Southwestern Medical Center, Dallas, TX.



**FA A3010**

**Lack of Association Between Routine ACEI Use and Acute Renal Injury After Non-Cardiac Surgery in Patients Given Hydroxyethyl Starch Solutions**

Hydroxyethyl starch (HES) solutions are commonly used for volume resuscitation, but recent studies suggest HES solutions can be associated with a significant risk of increased mortality and acute kidney injury (AKI). It is known Angiotensin-converting enzyme inhibitors (ACEI) are frequently used to slow progression of nephropathy in patients diagnosed with diabetes. This retrospective study evaluated the extent to which ACEI use is associated with reduced risk of AKI in patients given perioperative HES solutions. **Omar F. Dyara, D.O., Ehab S. Farag, M.D., Maged Y. Argalious, M.D., Andrea M. Kurz, M.D., Praveen Chahar, M.D.;** Cleveland Clinic Foundation, Cleveland, OH.

**FA A3011**

**Comparative Safety of Anesthetic Technique for Hip Fracture Surgery in Adults**

In the current study we evaluated the effect of anesthesia type on the risk of in-hospital mortality among patients undergoing hip fracture surgery using the largest nationwide database of inpatient hospitalizations that contains information of type of anesthesia available in the United States. We found that contrary to some prior reports, mortality risk did not differ significantly by anesthesia type among patients undergoing hip fracture surgery. **Elisabetta Paterno, M.D., Dr.PHMark D. Neuman, M.D., Ph.D., Sebastian Schneeweiss, M.D., Sc.DHelen Mogun, M.S., Brian T. Bateman, M.D.;** Brigham and Women's Hospital, Harvard Medical School, Boston, MA, University of Pennsylvania, Philadelphia, PA.

**OR02-1 ANESTHETIC ACTION AND BIOCHEMISTRY: OFF TARGET EFFECTS OF ANESTHETICS TO IMPROVE PATIENT SAFETY 1-2:30 p.m. | Room 231-232**

**FA A3012**

**Differential Effects of Sevoflurane versus Propofol on the Morphoproteomic Expression of Oral Cavity and Oropharyngeal Squamous Cell Carcinoma**

This in vivo human pilot study tested the hypothesis that sevoflurane and propofol (prototypical inhalational and intravenous anesthetics) exert differing effects on the molecular biology of oral cavity and oropharyngeal SCCA using morphoproteomic analysis. **Davide Cattano, M.D., Ph.D., Jay Ferrell, M.D., Robert Brown, M.D., Chirag B. Patel, M.D., Ph.D., Ron Karni, M.D.;** Otorhinolaryngology, Pathology & Laboratory Medicine, The University of Texas Medical School at Houston, Houston, TX, Neurology, University of California, Los Angeles, Los Angeles, CA.

**FA A3013**

**Inhibiting Spinal mTOR Attenuates the Development and Maintenance of Morphine-Induced Tolerance and Hyperalgesia**

Spinal mTOR participates in the development and maintenance of chronic morphine tolerance and hyperalgesia. **Yuanxiang Tao, Ph.D., M.D., Lingli Liang, Ph.D., M.D., Linlin Sun, Ph.D., Shaogen Wu, Ph.D., Xiyao Gu, Ph.D., Brianna Marie Lutz, Ph.D., Candidate, Alex Y. Bekker, M.D., Ph.D.;** Anesthesiology, Rutgers New Jersey Medical School, Newark, NJ.

**FA A3014**

**Morphine Induces Dose-Dependent Epigenetic Alterations Through Modification of the Pro-Metastatic IDH-R132H Protein Variant**

This in vitro research builds on previous work from our team linking the epigenetic and metabolomic consequences of morphine exposure with specific cancers. We have identified increases in methylated DNA and enzymatic processes (IDH1, IDH1 R132H) as plausible mechanisms. Both of these processes are realistic targets that could lead to clinical trials. **Dean Bunbury, M.B.B.S., F.A.N.Z.C.ALawrence Wengle, B.S., cManasvi Vanama, B.S., cJason T. Maynes, Ph.D., M.D.;** Anaesthesia and Pain Medicine, Hospital for Sick Children, Toronto, ON, Canada.

**FA A3015**

**Cytoprotective Polymer Formulations Containing Emulsified Volatile Anesthetics for Beta Cell Encapsulation**

To isolate beta cells from the recipient immune system while facilitate nutrient diffusion, we developed a novel microcapsule containing our manufactured PFC/Isoflurane nanoemulsion. The data show that this inclusion greatly enhances viability of the cells and reduces the oxidative stress from hypoxia. This is consistent with existing reports describing the pre and post conditioning effects of inhaled volatile anesthetics. **Behrouz Ashrafi, M.D., Ernesto A. Pretto, Jr., M.D., M.PH., Antonello Pileggi, M.D., Ph.D., Camillo Ricordi, M.D., David A. Lubarsky, M.D., M.B.A., Keith A. Candiotti, M.D., Christopher A. Fraker, Ph.D.;** Department of Anesthesiology, Perioperative Medicine and Pain Management, Cell Transplant Center, Department of Surgery, Diabetes Research Institute, University of Miami Leonard M. Miller School of Medicine, Miami, FL .

**FA A3016**

**Deep Depth of Sevoflurane Anesthesia Worsens the Prognosis of Endotoxemic Rats**

In a LPS-treated rat model, we showed that deep depth of sevoflurane anesthesia augments the discharges of inflammatory cytokine, impairs lung function, and worsens the outcome. **Kei Inoue, M.D., Igarashi Toru, M.D., Suzuki Takeshi, M.D., Seki Hiroyuki, M.D., Minamishima Shizuka, M.D., Kosugi Shizuko, M.D., Katori Nobuyuki, M.D., Morisaki Hiroshi, M.D.;** Department of Anesthesiology, Keio University School of Medicine, Tokyo, Japan.



**FA A3017**

**Autophagy Dysfunctions and Anesthesia Related Complications in Muscular Dystrophy**

Muscular dystrophy patients are associated with high incidence of anesthesia-induced complications. We documented that general anesthesia-induces skeletal muscle autophagy in a time-dependent fashion. In vivo microscopy and Western Blotting showed the maturation but not induction of skeletal muscle autophagy was defective in mdx mice. Mdx mice showed elevated levels of plasma potassium as compare to control mice after anesthesia with isoflurane. Autophagy dysfunction is likely important in anesthesia- induced hyperkalemia in DMD. **Aki Kashiwagi, M.D., Ph.D., Sachiko Hosokawa, Ph.D., Ryusuke Ueki, M.D., Ph.D., Yusuke Norimatsu, M.D., Ph.D., Jeevendra Martyn, M.D., Shingo Yasuhara, M.D., Ph.D.;** Department of Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital, Shriners Hospital for Children, Harvard Medical School, Boston, MA .

**OR10-2 EXPERIMENTAL NEUROSCIENCES 1-2 p.m. | Room 238-239**

**NA A3018**

**Intubation Mechanics-2: Unstable C1-C2 Motion During Intubation With High- and Low-Force Laryngoscopes in Cadavers**

Although extension of an unstable C1-C2 segment was greater with the Macintosh than with an Airtraq laryngoscope, physiologically normal values were not exceeded. **Bradley J. Hindman, M.D., Brandon G. Santoni, Ph.D., Ricardo B. Fontes, M.D., Robert P. From, D.O., Michael M. Todd, M.D., Vincent C. Traynelis, M.D., Christian M. Puttlitz, Ph.D.;** Anesthesia, University of Iowa Roy J. and Lucille A. Carver College of Medicine, Iowa City, IA, Foundation for Orthopaedic Research and Education, Tampa, FL, Neurosurgery, Rush University Medical Center, Chicago, IL, Mechanical Engineering, Colorado State University, Fort Collins, CO.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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### NA A3019

#### Hypoxic Preconditioning and the Unfolded Protein Response - A New Target for Neuroprotection Against Hypoxic Brain Injury

Hypoxic preconditioning is an adaptive response to hypoxia that enables cells to survive subsequent severe insults such as ischemia. The unfolded protein response (UPR) in the endoplasmic reticulum may be integral to this adaptation. Our aim is to investigate whether the UPR pathways PERK, ATF6, and IRE1 are required for hypoxic preconditioning of rat cortical neurons. This knowledge may point to better treatment for brain ischemia. **Christopher A. Sanchez, B.S., Philip E. Bickler, M.D., Ph.D., University of California - San Francisco, San Francisco, CA.**

### NA A3020

#### Human Mesenchymal Stem Cells Reduce the Rupture Rate of Intracranial Aneurysms

Mesenchymal stem cells (MSCs) have unique tissue regeneration properties and immunosuppressive properties. We investigated the effect of intravenous human MSCs treatment in an intracranial aneurysm mouse model. The MSCs treatment significantly reduced the rupture rate of intracranial aneurysms without affecting the overall incidence of aneurysms. **Atsushi Kuwabara, M.D., Jia Liu, M.D., Jae-Woo Lee, M.D., Tomoki Hashimoto, M.D.; Anesthesia/ Perioperative Care, University of California San Francisco, San Francisco, CA.**

### NA A3021

#### Epidural Administration of a Single Injection of Glutamate Produces Long-lasting Bilateral Allodynia in Rats

Disc injury induces release of the nearby excitatory neurotransmitter glutamate via breakdown of nucleus pulposus aggrecan protein. This results in heightened peripheral nociception by spillover onto adjacent dorsal root ganglia. Epidural infusion of glutamate for 72 hours at physiologically relevant concentrations in rats produces heightened concomitant mechanical allodynia modulated by local ionotropic kainite and AMPA receptors. Here we show that a single injection of glutamate produces long-lasting allodynia up to 3 days post injection, implying activation of a secondary pathological inflammatory cascade. **Kathleen Reyes, M.D., Ryan Whitehead, Ph.D., Kyle Tuffli, M.D., Erin Milligan, Ph.D., Fred Harrington, M.D., Nicholas C. Lam, M.D.; Anesthesiology, Neurosurgery, University of New Mexico, Albuquerque, NM.**

### NA A3022

#### Obese Mice With Insulin Resistance Are Susceptible to Postoperative Cognitive Decline

In order to ascertain the possible reasons for the enhanced risk patients with metabolic syndrome we used an animal model involving New Zealand Obese mice, a putative model for OSA, in which the male species also has insulin resistance. **Susana Vacas, M.D., Ph.D., Martin V. Contreras, Ph.D., Nitin Chopra, B.S., M.B.A., Suneil Koliwad, M.D., Ph.D., Mervyn Maze, M.BCh.B.; Anesthesia and Perioperative Care, Diabetes Center, University California San Francisco, San Francisco, CA.**

### NA A3023

#### Neonatal Inflammation Induces Long-term Alteration of the Microglial Response to a Novel Inflammatory Challenge

In a murine model of moderate systemic perinatal inflammation mimicking neurological handicaps observed in some human preterm infants, microglial polarization induced by a systemic inflammatory challenge in young adulthood is modified. Using a battery of M1-M2 phenotype markers we shown that the peak of M1 and M2b-like markers occurred earlier in adults exposed to neonatal inflammation. These results highlight long-term modifications in microglia that may have consequences on acute brain injury, neurodegenerative diseases or sepsis associated encephalopathy. **Stéphanie Sigaut, M.D., Vincent Degos, M.D., Ph.D., Juliette Van Steenwinkel, Ph.D., Anne-Laure Schang, Ph.D., Bobbi Fleiss, Ph.D., Jean Mantz, M.D., Ph.D., Pierre Gressens, M.D., Ph.D., UMR 111, INSERM, Paris, France, Neuroanesthesia and Neurointensive Care, Pitié Salpêtrière Hospital, Paris, France, Beaujon University Hospital, Clichy Hauts de Seine, France.**

### OR11-2 HISTORY AND EDUCATION: HOW DO KNOW WHAT WE TEACH

1-2:30 p.m. | Room 245

### PI A3024

#### Effects of Self- and Instructor-Regulated Learning on Skill Acquisition, Retention and Trainees' Conceptions

Medical students randomized to 2 groups (self vs. instructor) practiced diagnosing murmurs. The groups' accuracy did not differ on the post-test, retention, and retention test. Instructor's strategies were not used. **Gianni R. Lorello, B.S., M.D., Maria Mylopoulos, Ph.D., S. Barry Issenberg, M.D., FACS, Carol-anne Moulton, M.D., FACS, M.EdPh.D., Ryan Brydges, Ph.D., Department of Anesthesiology and The Wilson Centre, University of Toronto, Toronto, ON, Canada, Department of Pediatrics, Sick Kids Learning Institute, and The Wilson Centre, University of Toronto, Toronto, ON, Canada, Department of General Internal Medicine, University of Miami and The Gordon Centre for Research in Medical Education, Miami, FL, Department of General Surgery and The Wilson Centre, University of Toronto, Toronto, ON, Canada, Department of General Internal Medicine and The Wilson Centre, University of Toronto, Toronto, ON, Canada.**

### PI A3025

#### Medical Student Exposure to Negative Intraoperative Behaviors and Post-Clerkship Interest in Anesthesiology and Surgery

Negative behaviors such as berating, social exclusion, and even violence are none to occur in the operative setting. The impact of exposure to these behaviors on medical student post-clerkship interest in anesthesiology and surgery is understudied. Using partial correlations and a multivariate GLM, we find that exposure to negative intraoperative behaviors is associated with, and predictive of, decreases in post-clerkship interest in surgery, independent of pre-clerkship interest levels, and respondent sex. However, no such relationships exist for anesthesiology. **Alexander Villafranca, Ph.D., Candidate, Peter Benoit, B.S., cMed, Eric Jacobsohn, M.B.,Ch.B.; Anesthesiology, University of Manitoba, Winnipeg, MB, Canada, Anesthesiology, University of Manitoba, Winnipeg, MB, Canada, Anesthesiology, University of Manitoba, Winnipeg, MB, Canada.**

### PI A3026

#### Predicting Success in the First Year of Residency

A correlational and probit analysis of CA-1 performance data and results of a 3-question Gestalt survey faculty complete on new residents early in their CA-1 year that evaluates their knowledge, clinical performance, and the perceived strength of the resident. Data from 2008-2010 were employed to determine predictors of success in the first year of residency. The Gestalt survey was highly predictive of residents who would require academic intervention. **Thomas J. Ebert, M.D., Ph.D., Chris A. Fox, Ph.D., Anesthesiology, Medical College of Wisconsin & Zablocki VA Medical Center, Milwaukee, WI, Anesthesiology, Medical College of Wisconsin, Milwaukee, WI .**

### PI A3027

#### A Curriculum-Based Approach to Transesophageal Echocardiography Training Using Kinematic Analysis

We performed kinematic analysis of probe motion to track improvement of transesophageal echocardiography (TEE)- naive trainees during a simulator based multimodal training course. The trainees demonstrated a progressive decrease in their cumulative path length, total time to acquire views and probe accelerations from rest. The trainees were also able to obtain standard TEE views on patients undergoing cardiac surgery, though their number of probe transitions and total time was greater in comparison to an expert. **Mario Montealegre-Gallegos, M.D., Robina Matyal, M.D., John D. Mitchell, M.D., Khurram Owais, M.D., Anam Pal, M.D., Katie M. Hawthorne, M.D., David O'Halloran, M.D., Vanessa Wong, B.S., Phillip Hess, M.D., Feroze Mahmood, M.D.; Beth Israel Deaconess Medical Center, Boston, MA .**



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**PI A3028****Milestone Assessment of Resident Professionalism During OSCEs is Best Discriminated by Professional Standardized Patients**

The ABA is requiring the OSCE in 2017 for board certification. The OSCE exercise on professionalism was used to verify ACGME milestones and evaluate resident behavior. Standardized patients were shown to be able to discriminate high and low achieving students in this competency most consistently compared to peer and self-evaluators. Aaron N. Primm, M.D., Ian Zolnowski, M.D., Wanda Chin, M.D., Richard Kline, Ph.D., Michael C. Wajda, M.D.; Anesthesiology, New York University, New York, NY, New York University, New York, NY .

**PI A3029****Development of a Resident Evaluation System (RES) for Milestones: Improving Assessment, Feedback, and Reporting**

The transition from core-competency focused assessment tools to milestone-based assessments has added complexity to the evaluation process in residency. Our department developed a new system, the Resident Evaluation System (RES), to address the milestone-based evaluation requirements. This secure online program enables the collection and statistical analysis of resident evaluations to ensure timely and efficient review of data regarding resident progress. Kevin S. Jenner, M.D., M.B.A., Elizabeth H. Ellins, M.D., Chris Fox, Ph.D., Jacob Mischka, Daniel Maley, B.S., Anthony LaBuda, B.S., Evan Sutherland, B.S., Thomas J. Ebert, M.D., Ph.D., Department of Anesthesiology, Medical College of Wisconsin, Milwaukee, WI, College of Business and Economics, College of Letters & Sciences, University of Wisconsin-Whitewater, Whitewater, WI .

**OR14-3 PATIENT SAFETY AND PRACTICE MANAGEMENT  
1-2:30 p.m. | Room 243****PI A3030****Measuring Anesthesia Patient Experience**

An electronic anesthesia patient survey system with feedback continuously reporting to providers, and improved patient satisfaction scores. Moeed S. Azam, M.D., Thomas D. Looke, M.D., Ph.D., John C. Dalton, M.D., Richard P. Dutton, M.D., M.B.A., Hugh M. Pratt, M.D., Steven L. Weissman, M.D., Brandon J. Wong, M.D., Brian P. Woods, M.D., B.S., ; Anesthesiology, US Anesthesia Partners - JLR Medical Group Division, Maitland, FL, Anesthesiology, US Anesthesia Partners - JLR Medical Group, Orlando, FL, Anesthesiology, PhyMed - Anesthesia Medical Group, Nashville, TN, Anesthesia Quality Institute AQI, Schaumburg, IL, Anesthesiology, Rainier Anesthesia Associates, Puyallup, WA, Anesthesiology, Greater Florida Anesthesiologists, Tampa, FL, Anesthesiology, Anesthesia Medical Consultants, PC, Grand Rapids, MI, Anesthesiology, Northstar Anesthesia PA, Arlington, TX .

**PI A3031****Propofol-Remifentanyl Anesthesia for Diagnostic Panendoscopy of the Upper Airway: A Randomized Trial**

In a randomized placebo-controlled trial, the adjunction of remifentanyl to the target controlled infusion of propofol does not improve the conditions of the diagnostic panendoscopy of the upper airway performed under tubeless general anesthesia, but provides a greater hemodynamic stability with no increase in pulmonary complications. Guillaume Besch, Sr., M.D., Angéline Guillemain-Chopard, M.D., Arnaud Causeret, M.D., Elisabeth Monnet, M.D., Ph.D., Amélie Jurine, M.D., Laurent Tavernier, M.D., Ph.D., Emmanuel Samain, M.D., Ph.D., Sébastien Pili-Floury, M.D., Ph.D., Anesthesia and Intensive Care, CHRU Besançon, Besançon, France.

**PI A3032****Unexpected Post-Operative Hyperthermia in Infants Transported to the Intensive Care Unit**

An institutional audit intended to determine the frequency of post-operative hypothermia in 467 NICU infants was performed. Only 2.1% of infants were found to be severely hypothermic (< 35°C). Hyperthermia > 38°C was more common, presumably due to unintentional overheating. Infants weighing <1500gm were at increased risk for hyperthermia (30% of 20 low-weight infants). Hedwig Schroeck, M.D., Nathan Kirkpatrick, Wendy Benedict, Satya-Krishna Ramachandran, M.D., FRCA; Anesthesiology, University of Michigan, Ann Arbor, MI.

**PI A3033****Perioperative Thermoregulation Compliance Effectively Prevents Hypothermia**

Perioperative thermoregulation (SCIP measure Inf-10) non-compliance contributes to an increase of adverse outcomes and costs for the healthcare system. Andrew Scott, B.S., Steven M. Frank, M.D., Mark Schoenberg, M.D.; Anesthesiology/Critical Care Medicine, Urology, Johns Hopkins Medical Institutions, Baltimore, MD.

**PI A3034****Modifying Perioperative Antibiotic Prophylaxis Can Decrease Surgical Site Infections In Orthopedic Patients Undergoing Total Hip Replacement Or Spine Surgery**

With rising isolates of gram-negative bacteria (GNB) resistant to standard antibiotic prophylaxis, such treatment may no longer be appropriate for patients undergoing total hip arthroplasty and spine fusion. We analyzed a new protocol, based on national recommendations, which included addition of gentamicin or aztreonam and its effect on surgical site infections (SSI). In those who received the new protocol, the overall SSI rate decreased from 1.8% to 0.9% (p=0.004) and SSI of the hip and spine caused by GNB decreased from 0.53% to 0.19% (p=0.04). Andrew D. Rosenberg, M.D., Michael Phillips, M.D., P. Ranier Tejada, B.A., Anthony Catanzano, B.A., Germaine Cuff, DrPH, Mitchell Marshall, M.D., Joseph Bosco, M.D.; Anesthesiology, Medicine, Orthopedic Surgery, NYU School of Medicine, New York, NY.

**PI A3035****Deep Breathing Alleviates Propofol-Induced Pain**

Deep breathing is effective in reducing pain on propofol injection without obvious complications. This safe and cost-effective technique contributes patients' satisfaction significantly. Taku Hamada, M.D., Katsuki Tanaka, M.D., Yuko Yoshizumi, M.D., Taiki Matsuyama, M.D., Atsuko Uesugi, M.D., Mika Mikawa, M.D., Takashi Mori, M.D., Kiyonobu Nishikawa, M.D.; Osaka City University Graduate School of Medicine, Osaka, Japan, Okayama University Graduate School of Medicine, Okayama, Japan.

**OR07-1 DRUG DISPOSITION, METABOLISM AND ELIMINATION  
3-4:30 p.m. | Room 245****FA A3036****The Effects of Single-shot or Steady-state Propofol Anesthesia on the Dose-Response Relationship of Rocuronium**

This study is designed to determine the effective dose ED95 (the dose required for a 95% twitch inhibition, respectively) of rocuronium after single-shot or steady-state propofol anesthesia in a clinical setting. Christiane G. Frick, M.D., Roland Stäuble, M.D., Stefan J. Schaller, M.D., Manfred Blobner, M.D.; Klinik für Anaesthesiologie, Klinikum Rechts der Isar, Technische Universität München, München, Germany.

**FA A3037****Prediction of Movement During Surgical Stimulation With Change in Pupillary Diameter in Response to a Noxious Pretest**

Assessment of the nociception/anti-nociception balance during general anesthesia relies on the analysis of non-specific marker. Analysis of change in pupillary diameter in response to a noxious pretest is an accurate marker of this balance. It could help adapt opiates effect-site concentration. Jean Guglielminotti, M.D., Ph.D., Marine Paule, M.D., Nicolas Grillot, M.D., Frederique Servin, M.D., Philippe Montravers, M.D., Ph.D., Dan Longrois, M.D., Ph.D., Anesthesiology, CUMC, New York, NY, Anesthesiology, Bichat Hospital, Paris, France.

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### FA A3038

#### Phase II Study of an Ultra-Short Acting Benzodiazepine (Remimazolam) Versus a Standard Regime of Propofol/Sevoflurane in Patients Undergoing Cardio-Surgery

Phase II study to evaluate the ability of remimazolam (a new short acting benzodiazepine) to provide anesthesia in cardiac surgery patients. The primary efficacy variable was success of general anesthesia defined as no need for rescue sedative medication. Intraoperative awareness, Narcotrend index, quality of life, safety, Pulse Contour Cardiac Output (PICCO) were also assessed. **Stefan Probst, Senior Consultant, Sarah Eibel, Fellow, Elmar Grossmann, Senior Consultant, Carmine Bevilacqua, Senior Consultant, Keith Borkett, Director of Clinical Operations, Wolfgang Soenghen, M.D., Mariola Soehngen, M.D., Karin Wilhelm-Ogynbiyi, M.D., Joerg Ender, M.D.;** Anesthesia and Intensive Care Medicine, Heart Center University of Leipzig, Leipzig, Germany, Paion UK Ltd, Cambridge, United Kingdom, Paion Deutschland GmbH, Aachen, Germany.

### FA A3039

#### Morphine and Loperamide Interact Differently With Uptake Transporters of the OATP-family

Uptake transport proteins play a crucial role in drug absorption, distribution and elimination. This work used a cell model to discover potential substrate and inhibitor properties of morphine and loperamide towards uptake transporters of the OATP-family. **Anett Engel, Dr. Sieling, Student, Annette Wegner, Dipl.-Ing, Julia Kolbow, Student, Markus Keiser, D.M. V. Werner Siegmund, M.D., Konrad Meissner, M.D.;** Clinic of Anesthesiology and Intensive Care, Institute of Pharmacology, University of Greifswald, Greifswald, Germany.



### FA A3040

#### Neuromuscular Blocking Agent Reduces Propofol and Remifentanyl Requirements During Bispectral Index-guided Closed-loop Anesthesia: A Randomized Multicenter Trial

This randomized placebo controlled study showed that neuromuscular blockade during maintenance of general anesthesia guided by the BIS significantly reduced the requirement for both propofol and remifentanyl in patients undergoing noncardiac surgery. **Melanie Claveau, Jr., M.D., Nathalie Boichut, M.D., Stephanie Villeminey, M.D., Ngay Liu, M.D., Sebastien Pili-Floury, M.D., Ph.D., Emmanuel Samain, M.D.;** Anesthesiology, University Hospital of Besancon, Besancon, France, Anesthesiology, Foch Hospital, Suresne, France.

### FA A3041

#### Derivation and Interpretation of an Equation Describing the Uptake of Inhaled Anesthetics

An equation describing the uptake of inhaled anesthetics is presented. Based on principles from the closed-circuit literature, the equation exhibits good agreement with published uptake curves from human subjects. Analysis of the equation reveals simple prediction regarding numerical relationships between uptake for different anesthetics, as well as a simple mechanism to uptake at a given time in an anesthetic. **Joel B. Gunter, M.D.;** Department of Anesthesia, Children's Hospital Medical Center, Cincinnati, OH.

### OR10-1 EXPERIMENTAL NEUROSCIENCES: MECHANISMS

3-4:30 p.m. | Room 243



### NA A3042

#### Alteration of Temporal Organization of EEG Microstate Sequences During Propofol-Induced Loss of Consciousness

We assessed EEG microstate dynamics as a function of the gradual loss of consciousness during a step-wise induction of general anesthesia with propofol. We found that long-range dependency of EEG microstate sequences decreased significantly both as a function of clinical assessment of consciousness (OAA/S) and estimated effect site concentration. **Julien Maillard, M.D., Juliane Britz, Ph.D., Christopher Lysakowski, M.D., Dimitri Van de Ville, Ph.D., Ioana M. Tomescu, M.Sc., Nadia Elia, M.D., M.Sc., Christoph Michel, Ph.D., Martin Tramer, M.D., D. Phil.;** Anesthesiology, Fundamental Neurosciences, Institute of Social and Preventive Medicine, University of Geneva, Geneva, Switzerland, Institute of Bioengineering, Ecole Polytechnique Fédérale EPFL, Lausanne, Switzerland.

### NA A3043

#### Effect of Sevoflurane 0.5 MAC on 10 Standard Resting State Networks - fMRI Study in Healthy Volunteers

The effect of sevoflurane 0.5 MAC was examined on ten resting state networks using fMRI in healthy volunteers. fMRI BOLD was measured before anesthesia, during anesthesia, and after anesthesia was given. Independent component analysis was utilized to analyze the results. During the transition from awake to LOC it was shown that the Executive Control Network and Salience Network were suppressed before the Default Mode Network. Activation in the transition stage is related to either persistent mentation in sleep and/or disinhibition in stage 2. **Stephen L. Thorp, M.D., Ramachandran Ramani, M.D., Maolin Qiu, Ph.D., Roberto Martuzzi, Ph.D., Divya Shree, M.EFrancisco Gomez, Ph.D., Robert Constable, Ph.D.;** Anesthesiology, Yale-New Haven Hospital, New Haven, CT, Computer Science, Universidad Central de Colombia, Bogota, Condinamarca, Colombia.

### NA A3044

#### The Molecular Transitions that Initiate and Control Excitation-evoked Calcium Influx

Voltage-gated Ca channels (CaV) are the main pathways of excitation-evoked Ca entry, regulating physiological functions such as pain sensation. The voltage dependence and timing of this potent message are governed by up to four CaV transmembrane voltage sensor domains (VSDs) that surround the pore. However, the voltage-sensing properties and functional roles of each non-identical VSD are unknown. By using voltage clamp fluorometry and structurally-relevant models in human CaV1.2 channels for the first time, we discovered that each VSD has distinct functional properties and that the activations of VSDs II & III control Ca entry. **Antonios Pantazis, Ph.D., Nicoletta Savalli, Ph.D., Daniel Sigg, M.D., Ph.D., Alan Neely, Ph.D., Riccardo Olcese, Ph.D.;** Anesthesiology, Division of Molecular Medicine, UCLA, Los Angeles, CA, dPET, Spokane, WA, Centro Interdisciplinario de Neurociencia de Valparaíso, Valparaíso, Chile.

### NA A3045

#### Effects of Isoflurane on Synaptic Vesicle Pool Dynamics and the Calcium Sensitivity of Exocytosis

Identification of presynaptic anesthetic mechanisms is critical to understanding their effects on synaptic transmission. Using a strictly presynaptic assay of both intracellular [Ca<sup>2+</sup>] and neurotransmitter release in cultured hippocampal neurons, we demonstrated that neuromodulators that regulate presynaptic Ca<sup>2+</sup> can in turn reduce both Pv and RRP size, which has important implications for understanding the pharmacological regulation of synaptic transmission in central synapses. **Joel Baumgart, Ph.D., Zhenyu Zhou, M.D., Ph.D., Masato Hara, M.D., Ph.D., Michael B. Hoppa, Ph.D., Hugh C. Hemmings, M.D., Ph.D.;** Anesthesiology, Weill Cornell Medical College, New York, NY, Biology, Dartmouth College, Hanover, NH.

### NA A3046

#### Propofol-Induced Loss of Consciousness and Cortical Single Neuron Responses in Primates

Single neuron activities were recorded in a primate cortical network in the awake - anesthetized continuum during propofol infusion. Propofol-induced loss of consciousness (LOC) was marked by a decrease in the neuronal firing in all regions. Propofol selectively inhibited cross-modal auditory responses while unimodal tactile responses were maintained both in the primary somatosensory cortex and a higher-order cortex. **Yumiko Ishizawa, M.D., M.P.H., Ph.D., Shaun Patel, Ph.D., Omar J. Ahmed, Ph.D., Emery N. Brown, M.D., Ph.D., Emad N. Eskandar, M.D.;** Anesthesia, Critical Care & Pain Medicine, Neurosurgery, Neurology, Massachusetts General Hospital, Boston, MA, Neurosurgery, Massachusetts General Hospital, Boston, MA.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain

**NA A3047**

**A Comparison of Propofol- and Dexmedetomidine-induced Electroencephalogram Dynamics Using Spectral and Coherence Analysis**

Our results demonstrate distinct differences in the properties of slow oscillations and thalamocortical oscillations induced by dexmedetomidine and propofol. These differences are relatable to their neural-circuit level mechanisms and could be used clinically to more precisely monitor patients' states of consciousness. **Oluwaseun Johnson-Akeju, M.D., M.M.S.c., Kara J. Pavone, B.S., Brandon Westover, M.D., Ph.D., Rafael Vazquez, M.D., James Rhee, M.D., Ph.D., Priscilla G. Harrell, M.D., Katharine Hartnack, B.S., Emery N. Brown, M.D., Ph.D., Patrick L. Purdon, Ph.D.,** Massachusetts General Hospital, Boston, MA.

**OR16-1 REGIONAL ANESTHESIA AND ACUTE PAIN**  
**3-4:30 p.m. | Room 231-232**

**RA A3048**

**Breast Pain 3 and 12 Months After Mastectomy With and Without a Continuous Paravertebral Nerve Block**

Following mastectomy, adding a multiple-day, ambulatory, continuous ropivacaine infusion to a single-injection ropivacaine paravertebral nerve block in the immediate postoperative period results in improved analgesia and less functional deficit one year later. **Brian M. Ilfeld, M.D., M.S., Sarah J. Madison, M.D., Preetham J. Suresh, M.D., NavParkash S. Sandhu, M.D., M.S., Nicholas J. Kormylo, M.D., Nisha Malhotra, M.D., Vanessa Loland, M.D., Mark S. Wallace, M.D., Edward J. Mascha, Ph.D., Anne M. Wallace, M.D.;** Anesthesiology, Surgery, UC San Diego, San Diego, CA, University of Washington Medical Center, Seattle, WA, Cleveland Clinic, Cleveland, OH.

**RA 3049**

**Comparison of Analgesic Efficacy of Ultrasound-Guided Bilateral Superficial Cervical Plexus Block and Cervical Nerves Pathway Block in Patients Undergoing Thyroidectomy**

This randomized, double-blind, controlled trial was designed to observe the analgesic efficacy of ultrasound-guided bilateral superficial cervical plexus (SCP) block and cervical nerves pathway (CNP) block in patients undergoing thyroidectomy. 42 patients were enrolled into two groups. All patients received ultrasound-guided bilateral SCP block (group S) and CNP block (group P) with ropivacaine 0.4 % 40 ml respectively. The CNP block reduced VAS score on 1, 4, 6, 12 h postoperative time points on movement (  $P < 0.01$  ). Bilateral ultrasound-guided SCP block and CNP block provides effective intra and postoperative analgesia for thyroidectomy. **Li Xu, M.D., Yan Zhou, M.D., Huihua Lin, B.S., ;** Anesthesiology, Beijing Jishuitan Hospital, Beijing, China, Beijing Jishuitan Hospital, Beijing, China.

**RA A3050**

**Intraoperative Methadone for the Prevention Postoperative Pain: A Randomized, Double-Blinded Clinical Trial in Cardiac Surgical Patients**

The administration of intraoperative methadone in cardiac surgical patients resulted in reductions in analgesic requirements, improvements in pain scores, and enhanced patient-perceived quality of pain management. **Glenn S. Murphy, M.D., Joseph W. Szokol, M.D., Stephen B. Greenberg, M.D., Torin D. Shear, M.D., Michael J. Avram, Ph.D.,** Anesthesiology, NorthShore University HealthSystem, Evanston, IL, Anesthesiology, Northwestern University Feinberg School of Medicine, Chicago, IL .

**RA A3051**

**Bilateral Paravertebral Block Versus Epidural Block for Postoperative Analgesia in Open Liver Resection: A Prospective Randomized Clinical Trial**

This prospective randomized study of patients undergoing elective open liver resection compared thoracic T7-8 epidural with bilateral paravertebral continuous block with ropivacaine (0.2%) until POD3. Pain scores, incentive spirometry volumes, and postoperative PCA utilization were not different between groups. In populations who are at risk for coagulopathy, bilateral PVB may provide an important and viable alternative to epidural block. **Kristin L. Schreiber, M.D., Ph.D., Jacques E. Chelly, M.D., Ph.D., M.B.A., R. Scott Lang, M.D., Ezeldeen Abuelkasem, M.D., M.S.C., David A. Geller, M.D., FACS, Allan Tsung, M.D., J. Wallis Marsh, M.D., M.B.A., Tetsuro Sakai, M.D., Ph.D.,** Anesthesiology, Perioperative and Pain Management, Brigham and Women's Hospital, Brookline, MA, Anesthesiology, Surgery, University of Pittsburgh Medical Center, Pittsburgh, PA.

**RA A3052**

**Prolonged Local Anesthesia With Neosaxitoxin in Combination With 0.2% Bupivacaine Versus Bupivacaine Alone: A Randomized, Controlled, Double-Blind, Dose Escalation Trial**

Neosaxitoxin (NeoSTX) is a sodium channel blocker that produces prolonged local anesthesia. We performed a FDA-approved investigator-initiated IND dose-escalation safety study using subcutaneous injection; secondary analyses assessed cutaneous anesthesia with NeoSTX (alone) and in combination with 0.2% bupivacaine (BUP), compared to 0.2% BUP (alone) and placebo. Cutaneous anesthesia (by QST) is more prolonged with NeoSTX , 5-40mcg, combined with BUP than with BUP alone. This is the first clinical dose escalation study of NeoSTX combinations in awake human subjects. **Laura Cornelissen, Ph.D., Carolina Donado, M.D., Joseph Kim, M.AKimberly Lobo, M.S., M.PH., Mary Ellen McCann, M.D., M.PH., Karen R. Boretsky, M.D., Joseph Cravero, M.D., Charles B. Berde, M.D., Ph.D.,** Department of Anesthesiology, Perioperative and Pain Medicine, Boston Children's Hospital/Harvard Medical School, Boston, MA .

**RA A3053**

**Safety of Liposome Bupivacaine (EXPAREL®) Used in Peripheral Nerve Blocks**

Liposome bupivacaine (EXPAREL®; bupivacaine liposome injectable suspension; Pacira Pharmaceuticals; Parsippany, NJ) is a long-acting local analgesic with United States Food and Drug Administration (US FDA) approval exclusively for administration into a surgical site for postoperative analgesia in adults. This liposome bupivacaine formulation is currently being evaluated by the US FDA for use in peripheral nerve blocks. This is a review of the safety data from six phase 1-3 clinical trials of liposome bupivacaine used in peripheral nerve blocks. The currently-available data suggests that liposome bupivacaine appears to have a similar safety profile to bupivacaine HCl and placebo when used in a peripheral nerve block. **Brian M. Ilfeld, M.D., M.S., (Clinical Investigation);** Anesthesiology, University California San Diego, San Diego, CA.

**POSTER DISCUSSIONS**

**PD15-2 PEDIATRIC ANESTHESIA: MISCELLANEOUS**  
**8-9:30 a.m. | Room 244**

**PD A3054**

**Surprisingly Low Levels of Cortisol in Patients During Posterior Spine Fusion. Does It Signify a Pathological Adrenal Suppression?**

Search for the etiology of NM patients experiencing more complications during surgery led us to the unexpected finding of low cortisol levels in patients undergoing spine fusion surgeries both idiopathic and NM. Many of these patients experienced Intraoperative complications, both of minor and of major types. Whether the low cortisol levels are causative of these complications or are an association is unclear and warrants further prospective studies. **Michelle M. Petrie, M. DRobert Olszewski, M. DSabina DiCindio, M. DKirk Dabney, M. DMary Theroux, M.D.;** Anesthesiology and Critical Care, Nemours Alfred I Dupont Hospital for Children, Wilmington, DE.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain

**PD A3055****Pharmacokinetics of Aminocaproic Acid in Adolescents Undergoing Posterior Spinal Fusion Surgery**

The aim of this study was to determine the pharmacokinetics of epsilon-aminocaproic acid in adolescents undergoing posterior spinal fusion surgery for scoliosis and make dosing recommendations. The recommended dosing strategy is significantly higher than what has been reported in previous clinical trials in this population. Efficacy trials using the recommended dosing strategy are warranted. Paul Stricker, M.D., Devika Singh, M.D., John Fiadjo, M.D., Emily M. Sussman, B.A., Eric Y. Pruitt, B.A., Theodora K. Goebel, R.N., B.S.N., CCRC, Marc R. Gastonguay, Ph.D., Athena F. Zuppa, M.D., MSCE; Department of Anesthesiology, Children's Hospital of Philadelphia, Philadelphia, PA, Metrum Institute, Tariffville, CT.

**PD A3056****Novel Association of OPRM1 A118G Variant with Risk of Morphine Induced Respiratory Depression Following Spine Fusion in Adolescents**

Prospective genotype-blinded study in post-surgical adolescents provides evidence that G allele at A118G variant (OPRM1) affects susceptibility to morphine induced respiratory depression. Vidya Chidambaram, M.B.B.S., M.D., Hope Esslinger, CCRC IV, Valentina Pilipenko, Ph.D., Lisa Martin, Ph.D., Kejian Zhang, M.D., M.B.A., Senthilkumar Sadhasivam, M.D.; Cincinnati Children's Hospital Medical Center, Cincinnati, OH.

**PD A3057****Blood Transfusion Increases the Risk of Portal Vein Thrombosis in Living Donor Pediatric Liver Transplantation**

Pediatric patients submitted to living donor liver transplantation are more likely to develop portal vein thrombosis if they are given perioperative large amounts of blood products. High-volume blood transfusion was associated with prolonged ICU and hospital stay. Karina Gordon, M.D., Estela Regina R. Figueira, M.D., Ph.D., Joel A. Rocha Filho, M.D., Ph.D., Maria Jose C. Carmona, M.D., Ph.D., Luiz A. Mondadori, M.D., Joao S. Neto, M.D., Eduardo H.g. Joaquim, M.D., Luiz Augusto C. D'Albuquerque, M.D., Ph.D., Jose Otavio C. Auler Junior, M.D., Ph.D., Anesthesiology, Gastroenterology, University of Sao Paulo, Liver Transplantation, AC Camargo Cancer Center, Sao Paulo, Brazil.

**PD A3058****Cuffed Tracheal Tubes and Airway Management in Infants and Children: A Survey of Practice Patterns**

A survey of pediatric anesthesiologists' practice demonstrated that the use of cuffed tracheal tubes (TT) increases directly with the children's age. Those who are fellowship trained and have been in practice for <5 years use cuffed TT in neonates more frequently than those who are not fellowship trained and have been in practice for >20 years. The most common reasons for using cuffed TT include more effective ventilation, avoiding reintubation, better monitoring of end-tidal gases and emergency surgery. A leak at peak pressure <15-30 cmH2O is most commonly used to determine the appropriate size of TT. The cuff pressure of TT is monitored infrequently during anesthesia. Madhankumar Sathyamoorthy, M.B.B.S., M.S., Jerrold Lerman, M.D., FRCPC, FANZCA; Pediatric Anesthesia, University of Mississippi Medical Center, Jackson, MS, Anesthesiology, Children's Hospital of Buffalo, Buffalo, NY.

**PD A3059****Evoked Potentials in Children Less Than 6 Years Old**

Motor evoked potentials were obtained more frequently than SSEPs in children under 6 years of age when a TIVA technique was employed. MEPs were obtained in 111 of 117 patients who were under 72 months of age. Special stimulation techniques were used in half the cases in which MEPs were obtained. John J. McAuliffe, M.D., M.B.A.; Anesthesiology, Cincinnati Children's Hospital, Cincinnati, OH.

**PD A3060****Disparities in Pain Management: Identifying Barriers to Management of Postoperative Pain in Low Income Hispanic/Latino Children**

Parents of Hispanic/Latino children with low income endorsed many barriers to management of postoperative pain in the home setting. Acculturation emerged as a factor associated with beliefs about analgesic use in children. Culturally-tailored interventions are needed to address barriers to pain management in ethnically diverse children. Robert Stevenson, B.A., Suzanne L. Strom, M.D., Zeev N. Kain, M.D., M.B.A., Michelle A. Fortier, Ph.D., University of California Medical Center Irvine, Orange, CA.

**PD A3061****Intraoperative Tranexamic Acid May Reduce Blood Loss During Choroid Plexus Papilloma Surgery In Infants**

Choroid plexus papilloma (CPP) is a highly vascular tumor of infancy. Gross total surgical resection is the mainstay of treatment but profuse intraoperative bleeding during resection with intraoperative blood losses between 100-200% of the total blood volume is commonly reported. METHODS: We administered tranexamic acid to two infants with CPP during surgical removal to potentially aid hemostasis and therefore lessen intraoperative bleeding. RESULTS: Gross total surgical resection was accomplished and the total calculated blood loss was less than 20% of the patients' total circulating blood volume. CONCLUSION: Tranexamic acid (TXA) may be effective to help reduce intraoperative blood loss as part of a comprehensive patient blood management strategy in during CPP resection. Susan Goobie, M.D.; Anesthesia, Children's Hospital Boston, Boston, MA.

**POSTER DISCUSSIONS****PD03-2 CHRONIC AND CANCER PAIN**

1-2:30 p.m. | Room 244

**PN A3062****Increased Mu Opioid Receptor Expression in Metastatic Lung Cancer**

Mu opiate receptor expression was significantly increased in lung cancer tissue compared to adjacent normal control samples, consistent with a direct effect of the mu opiate receptor on cancer progression. Jonathan Moss, M.D., Ph.D., Patrick A. Singleton, Ph.D., Tamara Mirzapoiazova, M.D., Ph.D., Rifat Hasina, M.D., Ravi Salgia, M.D., Ph.D., Anesthesia and Critical Care, University of Chicago, Chicago, IL.

**PN A3063****An IL-1 Receptor Antagonist Improves Anxiety-Like Behavior Induced by Chronic Neuropathic Pain Via the Blockade of Phosphorylation of NMDA receptors on Neurons in the Amygdala**

We investigated the effects of IL-1 receptor (IL-1R) antagonist on neuropathic pain-induced anxiety. Neuropathic pain induced anxiety-like behavior and promoted bone marrow-derived microglia which expressed IL-1 $\beta$  aggregate into the central nucleus of the amygdala (CeA) at day 28 after surgery. Intracerebroventricular injection of IL-1R reversed anxiety-like behavior, and neurons in the CeA did not express phosphorylated NMDA receptors (pNMDARs). Microinjection into the CeA of IL-1R antagonist reversed anxiety-like behavior. Blockade of IL-1R successfully reversed the anxiety-like behavior, suggesting that neuron-microglia interactions between pNMDARs and IL-1 $\beta$  might be important in neuropathic pain-induced anxiety. Atsushi Sawada, M.D., Ph.D., Yukitoshi Niyama, M.D., Ph.D., Michiaki Yamakage, M.D., Ph.D., Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan.

**PN A3064****Loss of PKC $\delta$  Genes in Experimental Osteoarthritis Augments Osteoarthritic Knee Joint Pain**

In this mouse knee trauma model, loss of PKC $\delta$  increased osteoarthritis-induced pain. Jeffrey S. Kroin, Ph.D., Xin Li, M.D., Ph.D., Jinyuan Li, M.D., Ph.D., Asokumar Buvanendran, M.D., Kenneth J. Tuman, M.D., Di Chen, M.D., Ph.D., Hee-Jeong Im, Ph.D., Anesthesiology, Biochemistry, Rush Medical College, Chicago, IL.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain

**PN A3065**

**Augmentation of the NGF/TrkA Axis in PKC $\delta$  KO Mice in an Osteoarthritic Knee Model**

In a mouse knee trauma model, NGF and trkA receptors increase in the OA joint synovium, and in the lumbar DRGs, which may contribute to increased OA pain. **Jeffrey S. Kroin, Ph.D., Xin Li, M.D., Ph.D., Jinyuan Li, M.D., Ph.D., Asokumar Buvanendran, M.D., Kenneth J. Tuman, M.D., Di Chen, M.D., Ph.D., Hee-Jeong Im, Ph.D., Anesthesiology, Biochemistry, Rush Medical College, Chicago, IL .**

**PN A3066**

**Cathepsin G in the Development of Chronic Postsurgical Pain**

Cathepsin G contributed to the development of chronic pain, owing to its chemotactic properties, and represents a new target for pain control. **Matthew T.V. Chan, M.B. B.S., F.A.N.Z.C.A., Xiaodong Liu, Ph.D., Yuanyuan Tian, Ph.D., Zhaoyu Meng, M.Phil, Yan Chen, Ph.D., Chris Hk Cheng, Ph.D., Tony Gin, M.D.; Anaesthesia and Intensive Care, The Chinese University of Hong Kong, Shatin, Hong Kong, China.**

**PN A3067**

**Methylprednisilone Acetate with Reduced Concentrations of Preservatives is Not Cytotoxic to Dorsal Root Ganglion Neurons**

The present study showed a cytotoxic effect of MPA with preservatives on sensory DRG neurons and no significant differences between the vehicle and MPA with reduced preservatives, confirming that either PEG or myristylgamma-picolinium chloride or their combination, has harmful effects on these cells. Nevertheless, the reduction of concentrations of preservatives from MPA suspension not that only makes injections of this depot steroid safer, but also may prove to be an alternative to using compounded MPA. **Nebojsa Nick Knezevic, M.D., Ph.D., Kenneth D. Candido, M.D., Aleksandar Krbanjevic, M.D., Ivana N. Knezevic, M.D.; Anesthesiology, Advocate Illinois Masonic Medical Center, Pharmacology, University of Illinois, Chicago, IL .**



**PN A3068**

**Protective Effects of Hydrogen-rich Medium on Schwann Cells Apoptosis Induced by High Glucose**

Our results indicated that hydrogen-rich medium inhibited the HG-induced oxidative stress-induced apoptosis of SCs in both caspase-dependent and caspase-independent pathways, seems to be an effective buttress of treatment for DPN that can largely improve the quality of patients' life. **Yang Yu, M.D., Ph.D. Department of Anesthesiology, General Hospital of Tianjin Medical University, Tianjin, China.**

**PN A3069**

**Enhanced Activation of the Affective and Reward Systems in Chronic Low Back Pain Patients: A Functional Magnetic Resonance Imaging Study**

We performed fMRI with lumbar mechanical pain stimulation in 8 chronic low back pain patients and 8 healthy control subjects. We found an enhanced activation in the patients at specific brain areas engaged with the emotional aspect of pain and reward processing, which could potentially be a cerebral biomarker for chronic low back pain. **Shuo Zhang, Bachelor of Medicine, Tianjiao Li, Bachelor of Medicine, Yoshitaka Kobayashi, M.D., Ph.D., Shin-ichi Konno, M.D., Ph.D., Koshi Makita, M.D., Jiro Kurata, M.D., Ph.D., Anesthesiology, Tokyo Medical and Dental University, Tokyo, Japan, Department of Orthopedic Surgery, Fukushima Medical University, Fukushima, Japan.**

**POSTER PRESENTATIONS**

**P003-3 CHRONIC AND CANCER PAIN**

**8-10 a.m. | Hall B1-Area B**

**PN A3070**

**Light Sensitivity Correlates Positively With Pain Sensitivity in Fibromyalgia Patients: A Look at the Potential Utility of Photoaversion in Functional Pain Syndromes**



Fibromyalgia (FM) involves a maladaptive hypersensitivity to pain known as central sensitization. Other non-painful stimuli sensitivities have been reported in FM. This pilot study explores and identifies significant photosensitivity differences between FM and healthy controls, creating an indicator of potential clinical utility. **Omar I. Halawa, M.D., M.S., Charlene A. Maxwell, F.N.P, Karen J. Tonsfeldt, B.S., Janice H. Hoffman, B.S., Robert M. Bennett, M.D., Kim D. Jones, Ph.D., F.N.P, Kimberly M. Mauer, M.D., Mary M. Heinricher, Ph.D., Anesthesiology and Perioperative Medicine, Oregon Health and Science University, Portland, OR.**

**PN A3071**

**Outcome Measurements in Chronic Pain Patients Following Ketamine Infusions**



Patients with chronic pain were asked to complete a survey concerning the impact of their pain on aspects of their quality of life (QOL) before receiving ketamine infusion and two to four weeks after the ketamine infusions at the follow up clinic visit. Overall change in QOL both prior to treatment with ketamine infusion and after administration were evaluated. Ketamine infusions improved patient pain scores, sleep, and overall enjoyment of life. General activity, mood, walking, work, and ability to relate to others were not significantly different. **Ramon C. Go, M.D., Karthik Dwarki, B.S., May L. Chin, M.D., Richard Amdur, Ph.D., Anesthesiology and Critical Care, George Washington University School of Medicine, Biostatistics, George Washington University Medical Center, Washington, DC .**

**PN A3072**

**Perioperative Lidocaine Infusion Reduces the Incidence of Post-Mastectomy Chronic Pain: A Double Blind, Placebo Controlled Randomized Trial**

Chronic post-surgical pain (CPSP) is a not uncommon complication after mastectomy. We found perioperative lidocaine administration was associated with lower incidence of CPSP, while breast implant and radiotherapy were associated with higher incidence. These findings indicate a protective effect of lidocaine for CPSP in mastectomy patients. **Mohamed Tiouririne, M.D., Abdullah S. Terkawi, M.D., Swapna Thammishetti, M.D., David Brenin, M.D., Antje Gottschalk, M.D., Marcel E. Durieux, M.D., Ph.D.; Anesthesiology, Surgery, University of Virginia, Charlottesville, VA .**

**PN A3073**

**Duration of Gasserian Ganglion Radiofrequency Thermocoagulation for Trigeminal Neuralgia - Evaluation of 63 Procedures**

Radiofrequency thermocoagulation of Gasserian ganglion (RFTG) is one of long-term effective treatments for trigeminal neuralgia (TN). The aim of our study was to examine the efficacy and complications associated with RFTG for patients with classical TN, and detect which factor of patients' background could be responsible for unsuccessful outcome. Our results showed that RFTG was a safe, long and highly effective therapy for classical TN, but the patients with TN at V2 alone had shorter duration of pain relief and needed more frequent additional intervention compared to patients with TN at other distributions. **Makito Oji, Jr., M.D., Tetsuya Sakai, M.D., Ph.D., Tetsuya Hara, M.D., Ph.D., Anesthesiology, Nagasaki University School of Medicine, Nagasaki, Japan.**

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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**PN A3074**

**The Effectiveness and Safety of Radiofrequency Thermocoagulation Combined Use of Oxygen-Ozone Therapy for the Treatment of Lumbar Disc Herniation: A Meta-Analysis**

We conducted a meta-analysis to determine statistically significant effects and safety of radiofrequency thermocoagulation(RFT) combined use of oxygen-ozone therapy(OOT) for the treatment of contained lumbar disc herniation(LDH). We found the patients in combination group can significantly achieve higher excellent rate and lower VAS with few adverse effects. In conclusion, we considered that the combined treatment might significantly improve symptoms, alleviate pain and enhance the life quality of LDH patients. Fan Lu, M.S., Hui Liu, Ph.D., Department of Anesthesiology, West China Hospital, Sichuan University, ChengDu, China.

**PN 3075**

**The Effect of Stellate Ganglion Block on Idiopathic Sudden Sensorineural Hearing Loss**

Idiopathic sudden sensorineural hearing loss (ISSHL) is related to circulatory disturbance of internal ear. The objective of this study was to investigate whether SGB can enhance the recovery of ISSHL. In this study 135 patients with ISSHL were included. Sixty patients underwent conservative treatment with steroids plus vitamin B12 (Non-SGB group) and 75 patients underwent SGB plus conservative treatment (SGB group). SGB significantly increased hearing gain and percentage of recovery more than 80% (vs Non-SGB, P < 0.05, respectively). We concluded that SGB was effective to treat ISSHL.

Kwangook Choi, M.D., Kibum Park, M.D., Junmo Park, M.D., .Ph.D., Junngu Yi, M.D., Younghoon Jeon, M.D., Ph.D., Anesthesiology and Pain Medicine, School of Medicine, Anesthesiology and Pain Medicine, School of Dentistry, Kyungpook National University, Daegu, Korea, Republic of.

**PN A3076**

**Comparison Between Digital Subtraction Angiography and Real Time Fluoroscopy to Detect Intravascular Injection During Lumbar Transforaminal Epidural Injections**

Real-time fluoroscopy failed to detect 9 cases of intravascular injections that were subsequently detected by DSA (real-time fluoroscopy sensitivity=71.0%). DSA is superior to real time fluoroscopy for detecting intravascular injections. Ji H. Hong, M.D., Ph.D., JinYong Jung, M.D., Ph.D., Anesthesiology and Pain Medicine, Keimyung University, Catholic University, DaeGu, Korea, Republic of.

**PN A3077**

**The Association of Preoperative Psychological Stress With Postsurgical Chronic Pain in Patients Undergoing Partial Mastectomy**

We prospectively investigated the association of preoperative psychological stress with postsurgical chronic pain in patients undergoing partial mastectomy. Thirty-six patients were included. Hospital Anxiety and Depression Scale (HADS) and 24-hour urine cortisol was assessed before surgery. Postsurgical chronic pain was assessed 1, 3, and 6 months after surgery by the short-form McGill Pain Questionnaire. Preoperative anxiety was a strong predictor of postsurgical chronic pain, whereas preoperative urinary cortisol was not associated with preoperative anxiety, depression and postsurgical chronic pain. Daisuke Nishimura, M.D., Shizuko Kosugi, M.D., Naho Ihara, M.D., Yuki Onishi, M.D., Saori Hashiguchi, M.D., Hiroshi Morisaki, M.D., Ph.D., Department of Anesthesiology, Keio University School of Medicine, Tokyo, Japan.

**PN A3078**

**Distinct Sensory Profiles in Neuropathic Pain Patients With Diabetes Mellitus or Sarcoidosis**

Symptoms of peripheral neuropathy severely affect patient quality of life and require prompt recognition. In this study, patients with peripheral neuropathy and diabetes mellitus or sarcoidosis were surveyed using questionnaires and quantitative sensory testing. Disease-specific sensory profiles of peripheral neuropathy corresponded with distinct pain and quality of life scores. Monique van Velzen, Ph.D., Marieke Niesters, M.D., M.S.C., Albert Dahan, M.D., Ph.D., Anesthesiology, Leiden University Medical Center, Leiden, Netherlands.

**PN A3079**

**Obesity Increases the Risk of Persistent Moderate or Severe Overall Pain 6 Months and 1 Year After Motor Vehicle Collision**

Increasing body mass index(BMI), increases the risk of chronic moderate or severe pain after motor vehicle accident in stepwise fashion. The interaction of this BMI effect with genetic variants which restrain the inflammatory response suggests that the influence of BMI is mediated, at least in part, by the pro-inflammatory effects of increasing BMI. Goonjan Sunil Shah, M.D., JunMei Hu, M.AAna Bermudez, B.S., Andrey Bortsov, M.D., Ph.D., Robert A. Swor, D.ODavid A. Peak, M.D., Jeffrey S. Jones, M.D., Neils K. Rathlev, M.D., David C. Lee, M.D., Samuel A. McLean, M.D.; The University of North Carolina, Chapel Hill, NC, William Beaumont Hospital, Royal Oak, MI, Massachusetts General Hospital, Boston, MA, Spectrum Health System, Grand Rapids, MI, Baystate Medical Center, Springfield, MA, North Shore University Hospital, Manhasset, NY .

**PN A3080**

**Loco-Regional Anesthesia for Long-term Outcome After Total Knee Arthroplasty in Italy: Preliminary Results**

In this observational, longitudinal, prospective, multicenter study we evaluated the effects of Regional Anesthesia on the risk to develop Persistent postoperative pain 3 months after TKA. Gianluca Cappelleri, M.D., Erika Basso Ricci, M.D., Francesca Mare, M.D.; Azienda Ospedaliera Istituto Ortopedico Gaetano Pini, Milan, Italy.

**PN A3081**

**Oxycodone DETERx®: An Extended-Release, Abuse-Deterrent Formulation for Management of Patients with Chronic Pain**

Oxycodone DETERx®, an extended-release, abuse-deterrent formulation, can be effectively administered via alternate oral methods of administration such as opening a capsule and pouring the contents (microspheres) directly into the mouth, sprinkling onto soft food, or administering through nasogastric and gastrostomy tubes. Feasibility of use of using these alternative oral methods of administration with Oxycodone DETERx may minimize the need for opioid rotation in patients who develop iatrogenic dysphagia or dysphagia due to disease progression. Ravi Kumar Varanasi, MPharm, Alison B. Fleming, Ph.D., Said Saim, Ph.D., Michael Grima, B.S., Stephen P. Mayock, B.S., Ernest A. Kopecky, Ph.D., M.B.A., Collegium Pharmaceutical, IncCanton, MA .

**PN A3082**

**Associations Between Heat Pain Perception and Pain Catastrophizing Among Adults with Chronic Pain**

Elevated pain catastrophizing scores (PCS) were associated with more hyperalgesic values of heat pain (HP) perception in adults with chronic pain. The findings of this research suggest that PCS may be an important clinical marker for identifying patients at risk for harboring alterations in HP perception. Marisa Terry, M.D., Susan Moeschler, M.D., W. Michael Hooten, M.D.; Mayo Clinic, Rochester, MN.

**PN A3083**

**The Effect of Nitrous Oxide on Pro-inflammatory Cytokines After Epidural Blocks for Neuropathic Back Pain**

Nitrous oxide (N2O) is an NMDA receptor antagonist. Elevated levels of IL-1β, IL-2, IL-6, IFN-β, and TNF-β in plasma correlate with increasing pain intensity in chronic pain patients. We therefore thus tested the hypothesis that nitrous oxide reduces pro-inflammatory cytokines on patients with neuropathic chronic low back pain. Nitrous oxide administration did not significantly improve pro-inflammatory cytokines. Nitrous oxide does not appear to be an effective treatment for chronic neuropathic back pain. Hani F. Yousef, M.D., Ph.D., Sheryar Sarwar, M.D., Sumit Katyal, M.D., Abdulkadir Atim, M.D., Daniel Leizman, M.D., Nagy Mekhail, M.D., Ph.D., Manu Matthews, M.D., Jing You, M.S., Alparslan Turan, M.D.; Pain Management, Cleveland Clinic Foundation, Family Medicine, University Hospital, Cleveland, OH.



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain

**PN A3084**

**Pain Catastrophizing and Postoperative Pain Course in TKA Patients**

Many OA patient with limited mobility find considerable relief and better quality of life after a Total Knee Arthroplasty (TKA) but a certain subset of patients experience postoperative pain. New research implicates cognitive distortions such as pain catastrophizing as possible risk factors for negative long term outcomes. High catastrophizers were more likely to have higher pain scores throughout the postoperative time course of the study (P=0.0242). **Mario Moric, M.S., Asokumar Buvanendran, M.D., Jeffrey S. Kroin, Ph.D., Christine O'Neill, R.N.B.S., .NKenneth J. Tuman, M.D.;** Anesthesiology, Rush University Medical Center, Chicago, IL .



**PN A3085**

**An Observation Of Bispectral Index Scores In Thirty Patients Undergoing Outpatient Ketamine Infusions**

With IRB approval, we enrolled thirty patients undergoing outpatient ketamine infusions for intractable chronic neuropathic pain or generalized pain such as fibromyalgia. The BIS scores did not differ significantly with dose of ketamine, the day of infusion, the age or gender of the patient. The BIS scores showed mild positive correlation with nursing sedation scores. **Nima Adimi, M.D., Andrew Christiana, B.S., Genaro J. Gutierrez, M.D., May L. Chin, M.D., Richard Amdur, Ph.D., Sonia John, B.S., George Washington University, Washington, DC, Beth Israel Deaconess, Boston, MA.**

**PO08-2 EQUIPMENT, MONITORING AND ENGINEERING TECHNOLOGY: COAGULATION, HEMOGLOBIN, AND GLUCOSE 8-10 a.m. | Hall B1-Area C**

**FA A3086**

**Radiofrequency Bipolar Hemostatic Sealer Reduces Blood Loss, Transfusion Requirements, and Cost for Patients Undergoing Multilevel Spinal Fusion Surgery**

We conducted a retrospective review of blood loss, transfusion requirements and cost savings to assess the benefits of the radiofrequency bipolar hemostatic sealer (Aquamantys®, Medtronic, Minneapolis, MN) in patients undergoing multilevel spinal fusion surgery. Blood loss and transfusion requirements were decreased by about 50%, and the decrease in hemoglobin was 1.2 g/dL less when the this new cautery method was used to achieve hemostasis. A substantial cost savings was recognized with the decreased transfusion. **Steven M. Frank, M.D., Jack O. Wasey, B.M., B.Ch., Paul M. Ness, M.D., Elizabeth A. Dackiw, R.N., Khaled M. Kebaish, M.D.;** Anesthesiology/Critical Care Medicine, Pathology (Transfusion Medicine), Orthopaedic Surgery, The Johns Hopkins Medical Institutions, Baltimore, MD.

**FA A3087**

**Early Assessment of Fibrinolysis With Thromboelastometry (ROTEM) in Orthotopic Liver Transplantation**

Orthotopic liver transplantation recipients developed severe fibrinolysis measured by thromboelastometry during ahepatic phase. The clot amplitude at 10 min (A10) and 20 min (A20) of EXTEM were significantly lower than non-fibrinolysis group, which showed that A10 might provide the early assessment of severe fibrinolysis. **Midoriko Higashi, M.D., Ken Yamaura, M.D., Tsukasa Shimauchi, M.D., Sumio Hoka, M.D.;** Operating Rooms, Anesthesiology and Critical Care Medicine, Kyushu University Hospital, Fukuoka, Japan.

**FA A3088**

**The Use of Thromboelastometry During Surgery Reduces Perioperative Blood Loss and Transfusion Requirements in Cardiac Surgery with Cardiopulmonary Bypass**

Although fresh frozen plasma (FFP) was administered based on thromboelastometry (ROTEM) results performed only during cardiac surgery with cardiopulmonary bypass (CPB), data showed reduced blood loss and concentrated red cells and FFP requirements perioperatively. Therefore, it is important to achieve a well-balanced coagulation status in the operating Room. ROTEM is useful to rapidly diagnose any hemostatic defects even during complete anticoagulation during CPB. **Junko Ichikawa, M.D., Mitsuharu Kodaka, M.D., Goro Kaneko, M.D., Mariko Oono, M.D., Keiko Nishiyama, M.D., Makiko Komori, M.D.;** Tokyo Women's Medical University Medical Center East, Tokyo, Japan.

**FA A3089**

**Need for Transfusion During Abdominal Aortic Aneurysm Surgery Reduced using the Flo-Trac® System and Pre-Sep® Catheters**

We compared the management of bleeding and transfusion using Pre-Sep® catheters and the Flo-Trac® system with conventional management during surgery for abdominal aortic aneurysms in control (C) and target (PF) patient groups. Group C was administered with blood cell concentrate, vasoactive agents and colloid solution (250 mL) when Hb reached <8 g/dL, APCI reached <2.2 L/min and SVV exceeded 13%, respectively. Red blood cells were transfused when ScvO2 fell below 70%. The ratio of the dose of red blood cell concentrate to the amount of bleeding was lower in group PF than group C (0.22 ± 0.24 vs. 0.39 ± 0.20, P < 0.05). None of Hb, blood CO2, and lactate levels, preoperative catecholamine dose and urine volume significantly differed between the groups. **Takafumi Iida, M.D., Takayuki Kunisawa, M.D., Ph.D., Atsushi Kurosawa, M.D., Yuki Toyama, M.D., Kunihiro Yamamoto, M.D., Keiya Takahashi, M.D., Ph.D., Osamu Takahata, M.D., Ph.D., Hiroshi Iwasaki, M.D.;** Anesthesiology and Critical Care Medicine, Asahikawa Medical University, Asahikawa, Japan.

**FA A3090**

**Is the Continuous Interstitial Subcutaneous Fluid Glucose Monitoring System Useful for Intraoperative Glucose Management?**

We were able to grasp a rough change of the blood glucose concentration during surgery using CGMS. However, we need attention in a case with a sudden change, the use under hypothermia or low peripheral perfusion. **Naoji Mita, M.D., Shinji Kawahito, M.D., Tomiya Kawahara, M.D., Katsuyoshi Kume, M.D., Sachiyo Higashijima, M.D., Yoko Sakai, M.D., Toshiko Katayama, M.D., Kazumi Takaishi, M.D., Hiroshi Kitahata, M.D.;** Tokushima University Hospital, Tokushima, Japan.

**FA A3091**

**Usefulness of Continuous Blood Glucose Monitoring and Control for Patients Undergoing Total Pancreatectomy**

An artificial endocrine pancreas used during total pancreatectomy proved to be useful for maintaining strict blood glucose control with minimal variability in blood glucose concentration. **Naoji Mita, M.D., Shinji Kawahito, M.D., Tomiya Kawahara, M.D., Katsuyoshi Kume, M.D., Sachiyo Higashijima, M.D., Yoko Sakai, M.D., Toshiko Katayama, M.D., Kazumi Takaishi, M.D., Hiroshi Kitahata, M.D.;** Tokushima University Hospital, Tokushima, Japan.

**FA A3092**

**Behavioral Modification in the Management of Hyperglycemia With Use of a Novel Audiovisual Feedback Device**

Perioperative hyperglycemia (BG ≥200 mg/dL) is associated with increased hospital length of stay, morbidity, and 30-day mortality after noncardiac surgery. The use of a novel audiovisual feedback device is associated with a significant increase in the intraoperative treatment of hyperglycemia with insulin, and a significant increase in providers rechecking BG post-treatment. These associations were independent of preoperative patient factors, provider-level factors, and case complexity (AOR 1.5 [1.2, 1.8]). The positive behavioral response in this study suggests that audiovisual displays serve as effective tools in intraoperative BG management. **Manda E. Lai, M.D., M.B.A., Subramanian Sathishkumar, M.B.B.S., Michelle Morris, M.S., Sachin Kheterpal, M.D., M.B.A., Paul Picton, M.D., F.R.C.A., Satya-Krishna Ramachandran, M.D., F.R.C.A.;** Anesthesiology, The University of Michigan, Ann Arbor, MI.



**FA A3093**

**Agreement of Noninvasive Hemoglobin Monitoring by Pulse CO-Oximetry (SpHb) with Invasive Laboratory Measurements**

In this study, we compared absolute and trending agreement of SpHb and a Blood Gas Analyzer (BGA) with a hematology analyzer measurement reference (HbXE). Analysis of absolute accuracy showed a smaller bias but slightly larger standard deviation for SpHb than the Blood Gas analyzer when compared to the hematology analyzer reference. SpHb measurements had less outliers than BGA and similar sensitivity to follow the correct directional sample to sample trend as determined by the reference. **Edmundo P. Souza Neto, Ph.D., M.D., José Francisco Cursino de Moura Junior, M.D., Juliana Carneiro Laish, M.D., Osni Lalier Junior, M.D., Pedro Freitas Mortatti, M.D.;** Faculty of Medicine, University of West Paulista (UNOESTE), Regional Hospital of Presidente Prudente, Presidente Prudente, Brazil.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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#### FA A3094

##### Applicability of Rapid Thrombelastography and Functional Fibrinogen Assay in Adult Liver Transplantation

This is a prospective observational study addressing the applicability of using rapid TEG and functional fibrinogen TEG in liver transplantation. Our findings suggest that r-TEG is able to provide results on the overall coagulation status of patients undergoing liver transplantation faster than conventional kaolin TEG. Functional fibrinogen TEG can be used during liver transplantation to predict plasma fibrinogen levels. However, one should be cautious of the results because the functional fibrinogen TEG has the tendency to overestimate fibrinogen level during the post liver graft reperfusion stage. **Shu Lu, B.S., Kenichi A. Tanaka, M.D., M.Sc., Ezeldeen Abuelkasem, M.B.,Ch.B., Raymond M. Planinsic, M.D., Tetsuro Sakai, M.D., Ph.D.;** University of Pittsburgh SOM, Pittsburgh, PA.

#### FA A3095

##### Interest of Continuous Glucose Monitoring in Surgical Patients in the Intensive Care Unit: A Prospective Observational Study

The purpose of this study was to evaluate the clinical utility of a continuous glucose monitoring (288 measures by day) versus an intermittent technique (glucometer with a measure each 3 hours). There were significant differences between the glucometer and the Ipro2 in the ability to detect the number of hyperglycemia ( $p < 0.0001$ ) and to detect the number of minor hypoglycemia ( $p = 0.017$ ) in 156 patients. Continuous glucose monitoring system allows for more identification of hypoglycemia and/or hyperglycemia episodes as compared to intermittent glucose monitoring. Glucose monitoring for certain patients at risk should be intensified using continuous monitoring device. **Stéphanie Genay, Ph.D., Sabine Ethgen, M.D., Arnaud Alluin, M.D., Bertrand Décaudin, Ph.D., Pascal Odou, Ph.D., Gilles Lebuffe, M.D.;** CHRU de Lille, Lille, France.

#### FA A3096

##### Blood Transfusion Prediction Using Continuous Non-invasive Hemoglobin Monitoring

This study examined whether pulse-oximetry-derived continuous hemoglobin can predict the need for blood transfusion during trauma patient resuscitation. **Samuel M. Galvagno, Jr., D.O., Ph.D., Colin F. MacKenzie, M.B.,Ch.B., Thomas E. Grissom, M.D., Zafar Qasim, M.B.,Ch.B., Cheng Gao, Ph.D., David Hanna, B.S., Stacy Shackelford, M.D., Amechi Anazodo, M.D., M.P.H., Cristina Imle, M.S., Peter Hu, Ph.D.;** Anesthesiology, Surgical Critical Care, University of Maryland School of Medicine, Baltimore, MD, Medical Corps, United States Air Force-Center for Sustainment in Trauma and Readiness Skills, Baltimore, MD.

#### FA 3097

##### Assessing the Preoperative Effectiveness of Dual Anti-Platelet Therapy (Clopidogrel/Aspirin) in Surgical Patients

Thrombelastograph® Platelet Mapping™ detects platelet inhibition of arachadonic acid (AA) and/or ADP-induced platelet aggregation. Our aim was to assess the ability of the TEG-PM™ to detect platelet inhibition secondary to clopidogrel and/or aspirin therapy in patients presenting to the preoperative anesthesia clinic or day surgery unit. **Alfonso Altamirano, M.D., Rashida Callender, B.S., Carin A. Hagberg, M.D., Evan G. Pivalizza, M.D., Davide Cattano, M.D., Ph.D.;** Anesthesiology, The University of Texas at Houston Medical School, Houston, TX.

#### FA A3098

##### Bleeding Curves: Time-course Assessment of Surgical Hemoglobin Loss

We measured bleeding curves during elective surgery and caesarean delivery and assessed the accuracy of a hemoglobin (Hb) loss monitor. **Gerhardt Konig, M.D., Bridget M. Philip, M.D., Vicki Ting, M.D., Gaurav Abbi, M.D., Gregg Adams, M.D., Siddarth Satish, M.S., Jonathan H. Waters, M.D.;** Anesthesiology, University of Pittsburgh Medical Center, Pittsburgh, PA, Anesthesia, Orthopedic Surgery, Santa Clara Valley Medical Center, San Jose, CA, R&D, Gauss Surgical, Inc., Los Altos, CA.

#### FA A3099

##### Partially Reversed Platelet Inhibition by Surgical Stimulation in Patients on Effective Anti-Platelet Therapy

Thrombelastograph® Platelet Mapping™ detects platelet inhibition of arachidonic acid (AA) and/or of ADP-induced aggregation. Our aim was to detect preoperative platelet inhibition secondary to clopidogrel and/or aspirin and observe the effect of surgery on platelet inhibition by comparing preoperative to postoperative samples. **Alfonso Altamirano, M.D., Rashida Callender, B.S., Chunyab Cai, Ph.D., Carin A. Hagberg, M.D., Evan G. Pivalizza, M.B., Davide Cattano, M.D., Ph.D.;** Anesthesiology, Clinical & Translational Science, The University of Texas at Houston Medical School, Houston, TX.

#### FA A3100

##### Spot-check Technique for Assessing Hemoglobin Loss in Suction Canisters

We assess a novel spot-check technique for Assessing hemoglobin loss in suction canisters. **Alexander M. Kadokura, B.S., Yossi Weinberg, B.S., Bridget M. Philip, M.D., Vicki Ting, M.D., Gaurav Abbi, M.D., Siddarth Satish, M.S., Gregg Adams, M.D.;** R&D, Gauss Surgical, Inc., Los Altos, CA, Santa Clara Valley Medical Center, San Jose, CA.

#### FA A3101

##### Noninvasive Hemoglobin Monitoring in Patients During Cesarean Section

SpHb tended to slightly overestimate laboratory Hb but had clinically acceptable precision. We expect that precision will continue to improve with future revisions. **Ravpreet Singh Gill, M.D., Jaya Ramanathan, M.D., Aruna K. Vaddadi, M.D.;** Anesthesiology, University of Tennessee Health Science Center, Memphis, TN.

#### PO10-3 EXPERIMENTAL NEUROSCIENCES: CEREBRAL BLOOD FLOW AND CNS ISCHEMIA

8-10 a.m. | Hall B1-Area E

#### NA A3102

##### Effects of Pentobarbital and Isoflurane Anesthesia on Microregional O<sub>2</sub> Balance in Cerebral Ischemia-Reperfusion

Microregional O<sub>2</sub> balance was improved under pentobarbital compared to isoflurane anesthesia in the early stage of cerebral ischemia-reperfusion. **Oak Z. Chi, M.D., Sylviana S. Barsoum, M.D., Kang H. Rah, M.D., Xia Liu, M.D., Harvey R. Weiss, Ph. D.;** Department of Anesthesiology, Rutgers Robert Wood Johnson Medical School, New Brunswick, NJ, Department of Neuroscience and Cell Biology, Rutgers Robert Wood Johnson Medical School, Piscataway, NJ.

#### NA A3103

##### Hemoglobin-based Oxygen Carrier Attenuates Cardiopulmonary Bypass-induced Cerebral Damage by Improving Tissue Oxygen Preload in Dogs

HBOC pretreatment decreased neurological markers and inflammatory cytokines in the cerebrospinal fluid and serum after cardiopulmonary bypass. The proposed mechanism for this protection is associated with the improved tissue O<sub>2</sub> preload. **Qian Li, M.D., Ph.D., Tao Li, Ph.D.;** Anesthesia, West China Hospital of Sichuan University, Chengdu, China.

#### NA A3104

##### Inhibition of Neuronal Nitric Oxide Synthase Improved Microregional O<sub>2</sub> Balance in Cerebral Ischemia-Reperfusion

Inhibition of neuronal nitric oxide synthase improved microregional O<sub>2</sub> balance in the ischemic-reperfused cortex and the improvement was associated with a decrease in cortical infarct size during the early stage of cerebral ischemia-reperfusion. **Oak Z. Chi, M.D., Kang H. Rah, M.D., Sylviana S. Barsoum, M.D., Xia Liu, M.D., Harvey R. Weiss, Ph.D.;** Department of Anesthesiology, Department of Neuroscience and Cell Biology, Rutgers Robert Wood Johnson Medical School, New Brunswick, NJ.



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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**NA A3105**

**Inhibiting Hippocampal Microglial Activation Contributes to the Propofol-Induced Protective Effect Against Post-Asphyxia Cardiac Arrest Brain Injury**

Microglial activation is involved in the brain injury following cardiac arrest. Propofol pre-conditioning prevents cardiac arrest-induced brain injury through inhibiting microglial activation. **Hui Zhang, M.D.; Anesthesiology, The Fourth Military Medical University Stomatology of Hospital, Xi'an, China.**



**NA A3106**

**Hyperoxia-Induced Immature Brain Injury Through TLR4 Signaling Pathway in Newborn Mice**

Hyperoxia exposure causes the up-regulation of TLR4, leading to nerve excitotoxicity, neuron apoptosis in newborn mouse brains, which induce long-term impairments in animal learning and memory. **Yang Liu, M.S., Ying Xu, Ph.D., Pu Jiang, Ph.D., Fei Cao, Ph.D.; Children's Hospital of Chongqing Medical University, Ministry of Education Key Laboratory of Child Development and Disorders; Key Laboratory of Pediatrics, Chongqing International Science and Technology Cooperation Center for Child Development and Disorders, Department of Forensic Medicine, College of Basic Medicine, Chongqing Medical University, Chongqing, China, The Department of Anesthesiology and Pain Medicine, Tongji Hospital, Wuhan, China, The Department of Neuroscience, Baylor College of Medicine, Houston, TX.**

**NA A3107**

**Subarachnoid Hemorrhage Decreases Isoflurane Requirement in Mouse Model of Intracranial Aneurysm**

To study brain protection and prevention of vasospasm after subarachnoid hemorrhage (SAH) using new mouse model developed by Dr. Hashimoto would become popular. To perform these studies, general anesthesia is required for animal preparation. However, SAH dramatically worsens the health condition of the mouse. To prevent unexpected deaths due to anesthesia, we measured minimum alveolar concentration change of isoflurane before and after SAH. Almost 50% reduction of isoflurane concentration may contribute to safe anesthesia for the mouse with SAH. **Tetsuro Kimura, M.D., Hiroshi Makino, M.D., Ph.D., Takasumi Katoh, M.D., Ph.D., Shigehito Sato, M.D., Ph.D.; Anesthesiology and Intensive Care, Hamamatsu University School of Medicine, Hamamatsu, Japan.**



**NA A3108**

**Pharmacologic Blockade of Vascular Adhesion Protein-1 Lessens Neurologic Dysfunction in Rats Subjected to Subarachnoid Hemorrhage**

Despite advances in the diagnosis and treatment of subarachnoid hemorrhage (SAH), outcome remains unfavorable. An increased inflammatory state has been reported to contribute to neuronal injury in association with hemorrhagic stroke. This experimental study in rats was designed to investigate the neuropathologic role of leukocyte trafficking following SAH. These experiments focused on the initial 48h post-SAH, and demonstrated that blocking vascular adhesion protein-1 (VAP-1), with LJP-1586, was able to improve neurologic outcomes by reducing leukocyte adhesion/extravasation. **Francesco Vetri, M.D., Ph.D., Haoliang Xu, M.D., Ph.D., Dale A. Pelligrino, Ph.D., Chanannait Paisansathan, M.D.; Anesthesiology, University of Illinois at Chicago, Chicago, IL.**

**NA A3109**

**Anesthetic Agent Alter Protein Folding and Induce the Unfolded Protein Response (UPR)**

Congenital Central Hypoventilation Syndrome has become symptomatic after exposure to anaesthetic drugs, indicating that anesthetics can affect the function of the Phox2B protein and potentially affect protein folding. We showed that morphine and isoflurane can induce Phox2B protein misfolding and precipitate the CCHS disease phenotype. Our results shed light on the induction of CCHS by anesthesia but also show how anesthetic agents can affect protein folding and induce other protein misfolding diseases. **Matthew Coghlan, M.B., B.Ch., BAO, Sadiq Shaik, M.B., B.S., Christelle Petroz, Mark W. Crawford, M.B., B.S., Jason T. Maynes, M.D.; The Hospital for Sick Children, Toronto, ON, Canada.**

**NA A3110**

**The Therapeutic Time Window of 25% Xenon Postconditioning to Protect Against Spinal Cord Ischemia-Reperfusion Injury in Rats**

This study assesses the neuroprotective effect and therapeutic time window of 25% xenon postconditioning on spinal cord ischemia-reperfusion injury (IRI) in the rat. This study demonstrated for the first time that administration of 25% xenon postconditioning protects against spinal cord IRI in rats, and a therapeutic time window (1 h after reperfusion) was determined during which 25% xenon provides optimum neuroprotection. **Yanwei Yang, M.D., Jiakai Lu, M.D., Weiping Cheng, M.D.; Department of Anesthesiology, Beijing Anzhen Hospital, Capital Medical University, Beijing, China.**

**NA A3111**

**The Effects of Inhaled Nitric Oxide on Pial Microvessels Under Ischemia in Rabbits**

We evaluated the effects of inhaled NO with a high dose (80 ppm) on cerebral pial microvessels during ischemia-reperfusion period in rabbits using cranial window technique. Experiments were performed on Japanese white rabbits weighing 3.0-3.4 kg. The high-dose of inhaled NO (80 ppm) did not show a dilatory action on the cerebral pial microvessels during the ischemia-reperfusion period. The high-dose of inhaled NO (80 ppm) could therefore not work as a vasodilator on cerebral pial microvessels under ischemia. **Kazuha Mitsui, M.D., Tadahiko Ishiyama, M.D., Masakazu Kotoda, M.D., Nobumasa Asano, M.D., Takashi Matsukawa, M.D.; Surgical Center, Anesthesiology, University of Yamanashi Hospital, Chuo, Japan.**

**NA A3112**

**Estradiol Enhances Female Pica Behavior Through TACR1 Expression in the Caudate Putamen**

Postoperative nausea and vomiting (PONV) is a common complication after general anesthesia. We examined the involvement of estradiol in pica behavior in mice as an alternative emetic behavior and the mRNA level of neurokinin 1 (NK1) receptors for which the ligand is a major emetic neurotransmitter in emetic nuclei of the brain. We found that estradiol promoted pica behavior in female mice, probably via expression of the TACR1 gene, which encodes the NK1 receptor, followed by NK1 receptor expression in the caudate putamen. **Tomo Hayase, M.D., Shigekazu Sugino, M.D., Ph.D., Shun-suke Tachibana, M.D., Michiaki Yamakage, M.D., Ph.D.; Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan.**

**NA A3113**

**Feasibility of Using Clinical 3T MRI to Monitor Infarct Zone and BBB Disruption in a Rat Model of Stroke**

The purpose of the present study was to report the feasibility of using clinical magnetic resonance (MR) imaging devices for the depiction of stroke in a rat model. To validate our approach, we compared our MRI results with histological analysis. **Yoram Shapira, M.D., Ph.D., Ruslan Kuts, M.D., Shaun E. Gruenbaum, M.D., Benjamin F. Gruenbaum, M.D., Matthew Boyko, Ph.D.; Department of Anesthesiology and Critical Care, Soroka Medical Center, Beer-Sheva, Israel, Department of Anesthesiology, Yale University School of Medicine, New Haven, CT.**

**NA A3114**

**Limited Value of Laser-Doppler Flowmetry for Intraluminal Middle Cerebral Artery Occlusion in Wistar Rats**

We evaluated the value of laser Doppler flowmetry (LDF) use in rat intraluminal MCAO. LDF values were (Assisted) or were not (Blinded) made available to the 4 surgeons with various experience in performing MCAO. Neurological and histological outcome were evaluated 7 days after ischemia. LDF use affected neither cerebral blood flow during MCAO nor neurological and histological outcomes. However, the coefficient of variation for histological outcome was decreased by LDF use. Therefore, LDF use should be optional for surgeons and might allow using fewer animals to test hypotheses. **Hideki Taninishi, M.D., Ph.D., Jin Yong Jung, M.D., Huaxin Sheng, M.D., Miwa Izutsu, M.D., Zengfeng Wang, M.D., David S. Warner, M.D.; Department of Anesthesiology, Surgery, University Medical Center, Durham, NC.**

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain



### NA A3115

#### Dietary Nitrite Supplementation Can Enhance Collateral Network and Improve Neurological Outcome After Spinal Cord Ischemia in Rat

Dietary nitrite supplementation can increase spinal cord blood flow and exert profound neuroprotective effects against spinal cord ischemia in rat. **Satoshi Iseki, M.D., Takasuke Fukuda, D.D.S., Manabu Kakinohana, M.D., Ph.D., Kazuhiro Sugahara, M.D., Ph.D.;** Anesthesiology, University of the Ryukyus, Okinawa, Japan.

### NA A3116

#### The Effects of Adrenaline and Vasopressin on Pial Microvessels During Global Brain Ischemia-reperfusion Period in Rabbits

The aims of the present study were to evaluate the direct effects of adrenaline and vasopressin on cerebral pial arterial diameter changes in the normal state and during ischemia-reperfusion period using cranial window. Conclusions: Adrenaline and vasopressin did not act on directly cerebral pial arterioles in the normal state. But in the ischemia-reperfusion period, adrenaline increased cerebral pial arterial diameter at 60, 80, 100, 120 min compared with vasopressin and control. Adrenaline may counteract the cerebral vasoconstriction during global brain ischemia-reperfusion period. **Nobumasa Asano, M.D., Tadahiko Ishiyama, M.D., Ph.D., Noriyuki Shintani, M.D., Kazuha Mitsui, M.D., Godai Ikemoto, M.D., Takashi Matsukawa, M.D., Ph.D., Sho Suzuki, M.D.;** University of Yamanashi, Yamanashi Medical University, Yamanashi Prefectural Central Hospital, Chuo Yamanashi, Japan.

### NA A3117

#### The Role of ADAR2-AMPA Receptor GluR2 Subunit Pathway in Neuroprotection Induced by Propofol Post-conditioning in Cerebral Ischemia-Reperfusion Injury: In Vivo and in Vitro

Propofol conditioning could provide neuroprotection in cerebral ischemia-reperfusion injury through ADAR2-AMPA GluR2 subunit pathway. **Zhu Min, M.D., Fu Wei, M.D., Wang Haiyun, Ph.D., Wang Guolin, Ph.D.;** Tianjin Medical University General Hospital, Tianjin, China.

### PO11-3 HISTORY AND EDUCATION: HOW FAR WE HAVE COME 8-10 a.m. | Hall B1-Area D

### PI A3118

#### Development of a Web Site Devoted Entirely to Medicine in the First World War

Faculty at Kansas University Medical center (KUMC) joined together in 2013 to develop a website, "Medicine in the First World War" ([www.kumc.edu/wwwi.html](http://www.kumc.edu/wwwi.html)) as a cooperative venture with The National WW1 Museum. KUMC is the host institution. The web development and management group at KUMC assisted with the creation of the web site. This presentation will demonstrate the web site and discuss how it may be incorporated into a medical history education curriculum. **Anthony L. Kovac, M.D., Frederick Holmes, M.D., Grace Holmes, M.D., Nancy Hulston, M.A.;** Anesthesiology, History and Philosophy of Medicine, University of Kansas Medical Center, Kansas City, KS.

### PI A3119

#### Last Days of Horace Wells: A Sad Story of his Arrest and a Suicide

In researching details and documentation of the events occurring during the last days of Dr. Horace Wells remarkable data was found. In January 1848 Wells became increasingly deranged. One day, delirious, Wells rushed from his office out into the street and threw sulfuric acid over the clothing of two street girls. He was committed to New York's Tombs Prison, where he later committed suicide. In 1848 a number of periodicals published articles describing misfortunate events, stating that Dr. Wells "provided sulphuric acid to his friend to pay back to a loose female" and the "sport continued to go on Broadway". The articles also talked about Dr. Wells' chloroform addiction and included Dr. Wells' two final letters. **Katherine Liu, M.D., Ming Xiong, M.D., Ph.D., Anuradha P. Patel, M.D., Sergey Pisklakov, M.D.;** Anesthesiology, Rutgers-NJMS, Newark, NJ.

### PI A3120

#### Ultrasound-Guided Internal Jugular Vein Cannulation: How a Simple Educational Action Can Change the Practice of a Department

This study reports the impact of a single, simple educational action on the use of ultrasound for internal jugular vein (IJV) cannulation. In a department where only 16% of the anesthesiologists had prior experience with ultrasound, 81% of the professionals are now successfully performing ultrasound-guided IJV cannulation. This approach to this invasive technique is now the mainstay of practice in our department. **Nuno Veiga, M.D., Nuno Serrano, M.D.;** Portuguese Institute of Oncology of Lisbon, Lisbon, Portugal.

### PI A3121

#### The American Board of Anesthesia (ABA) Basic Science Exam Has Added a Major Stressor to CA-1 Anesthesia Residents

The Basic Science Exam has motivated CA-1 residents to begin their studying early in their anesthesia training and without the exam the residents would be studying less. Considering all the stressors in their life, this exam has become one of their major stressors. **Michael C. Wajda, M.D., Lior Levy, M.D., Ian Zolnowski, M.D., Mitchell Y. Lee, M.D., David Furguele, M.D., Daniel K. O'Neill, M.D.;** Anesthesiology, New York University, University Langone Medical Center, New York, NY.

### PI A3122

#### Traveling Exhibition of the Anesthesia Museum of the Japanese Society of Anesthesiologists

The Anesthesia Museum of the Japanese Society of Anesthesiologists (JSA) organize traveling exhibition as the joint event of the JSA annual meeting. The main aim of the exhibition is to stimulate JSA members' interest in the history of anesthesia. **Hiroshi Makino, M.D., Ph.D., Takasumi Katoh, M.D., Ph.D., Shigehito Sato, M.D., Ph.D., Toyoki Kugimiya, M.D., Ph.D., F.A.C.A.;** Hamamatsu University school of Medicine, Hamamatsu, Japan, Yugawara Kouseinenkin Hospital, Yugawara-machi, Japan.

### PI A3123

#### Horace Wells Was His Hero

In the early 1930's, the man who fueled and dedicated his heart and soul to the development of training programs in oral surgery was William Harry Archer, the father of oral surgery training. In the process, he wrote many textbooks on oral surgery and dental anesthesia. Doctor Archer traveled the world lecturing on oral surgery; however, his hobby of anesthesia history was the spark that made him known worldwide. As the biographer of Horace Wells, his efforts made him a highly respected anesthesia historian as he spent years unraveling the history behind the discoverer and discovery of nitrous oxide. **Antonio Aponte-Feliciano, M.D., Anthony L. Kovac, M.D.;** Anesthesiology, UMass Memorial Healthcare, Worcester, MA, University of Kansas Medical Center, Kansas City, KS.

### PI A3124

#### Dr. Jonathan E. Rhoads and His Elder Sister Esther B. Rhoads in Introduction of Modern Anesthesiology to Japan

Dr. Jonathan Rhoads was a member of the first Unitarian Service Committee Medical Mission from the USA to Japan in 1950 which introduced modern anesthesiology to Japan for the first time. At this mission, Dr. Rhoads lectured topics related to anesthesiology and had joint sessions with Dr. Meyer Saklad, an anesthesiologist from Rhode Island Hospital. An elder sister of Dr. Rhoads, Esther B. Rhoads, devoted her entire life as an educator in Tokyo. This article deals with their contribution to the education and welfare of the people in the Far East in association with the introduction of organized anesthesiology to Japan. **Naosuke Sugai, M.D., Ph.D.;** Department of Anesthesiology, Shonan Fujisawa Tokushukai Hospital, Fujisawa, Japan.



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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**PI A3125**

**Patients' Pre-operative Understanding Regarding the Role of Anesthesiologists**

Despite that the majority of patients attended their PAT visit in our study; only 76% of them felt that the roles of anesthesiologists were adequately explained. Most patients did not have knowledge of the wide scope of roles provided to them by their anesthesiologist. Anesthesia personnel should be encouraged to use a standardized checklist to ensure thoroughness of the visit and make use of educational literature and media to make that visit effective and efficient. By continuing to improve the quality of communication in PAT visits, patient understanding of anesthesia and the services provided will further advance the unique role of anesthesiologists in patient care and correlate to patient satisfaction. **Ferdinand D. Iannaccone, D.O., Shail Patel, B.A., Lawrence W. Chinn, Sr., M.D., B.A., Anesthesia, Rutgers New Jersey Medical School, Newark, NJ.**



**PI A3126**

**Preferring Pain Over Comfort: Resistance to Acceptance of Anesthesia in the Mid-19th Century**

The widespread adoption of anesthesia lagged decades behind its discovery in 1848. A careful analysis of the social, cultural, and clinical aspects of its discovery can offer a reasonable explanation as to why. **Rachel Meyer, M.D., Sukumar P. Desai, M.D.; Anesthesiology, Brigham and Women's Hospital, Boston, MA.**



**PI A3127**

**Placement of the Pulmonary Artery Catheter in Adult Patients Undergoing Cardiovascular Surgery: An Analysis of the Factors Influencing the Placement Time**

We sought to examine factors increasing the placement time of a pulmonary artery catheter and demonstrated that cardiothoracic ratio (CTR) is a significant factor. Our data suggest that in order to save time, a more experienced doctor may replace the resident earlier or some guidance such as TEE or X-ray fluoroscopic photographing system may be introduced earlier, if the placement was performed in patients with wide CTR, for example dilated cardiomyopathy. **Saya Hakata, M.D., Chiho Ota, M.D., Yoshiko Kato, M.D., Hiroyasu Terashima, M.D., Yu Matsumoto, M.D., Takeshi Iritakenishi, M.D., Takahiko Kamibayashi, M.D., Ph.D., Yuji Fujino, M.D., Ph.D., Yukio Hayashi, M.D., Ph.D.; Department of Anesthesiology, Osaka University Hospital, Suita-City, Sakurabashi-Watanabe Hospital, Osaka, Japan.**

**PI A3128**

**Dr. Thomas Irving, Department Chair and Productive Limb on Waters' Tree**

Thomas Irving, MD, was the chairman of the Department of Anesthesiology at Bowman Gray School of Medicine/North Carolina Baptist Hospital (now known as Wake Forest Baptist Health) from 1967 to 1983. He was a branch of the Dripp's limb on the Waters' tree, and he produced ten academic department chairs and numerous other leaders in our specialty. He transformed the insignificant anesthesia section of a small hospital into a leading academic department with national prominence. **Robert Strickland, M.D.; Wake Forest School of Medicine, Winston-Salem, NC.**



**PI A3129**

**History of Medicine in US Medical School Curricula**

Courses related to history of medicine [HOM] are not always included in the curriculum of US medical schools. We examined the proportion of medical schools that offered such courses and the nature of faculty and departments devoted to such instruction. We explain why HOM fails to attract the attention it deserves, and suggest remedial action. History of medicine does not receive sufficient coverage in medical school curricula for several reasons. We propose several remedial actions to correct this imbalance. **David J. Arcella, M.D., Justin Caramiciu, M.D., Manisha S. Desai, M.D.; Anesthesiology, University of Massachusetts Medical School, Worcester, MA.**

**PI A3130**

**Hybrid Simulation Models to Teach Lung Sonography**

We have developed models that simulate pulmonary sonopathology and allow supervised teaching. Pig rib cages or hands of investigators were placed on the surface of dry polyurethane (PU) foams. Transverse sonograms of the metacarpal bones resembled sonographic images of ribs and intercostal spaces. To simulate pneumothorax rib cages and hands were elevated above PU foams and sonograms showed multiple horizontal artifacts (A-lines). Sonograms of rib cages and hands placed on wet PU foams showed vertical lines (B-lines). Sliding lung sign could be demonstrated by sliding the dorsum of hand back and forth on the surface of a PU foam or a metal plate. **Jacek A. Wojtczak, M.D., Ph.D., Achikam Oren-Grinberg, M.D., M.S.; Department of Anesthesiology, University of Rochester Medical Center, Rochester, NY, Departments of Anesthesia, Critical Care and Pain Medicine, Beth Israel Deaconess Medical Center, Boston, MA.**

**PI A3131**

**Witnesses to the First Public Demonstration of Ether - Their Roles and Subsequent Careers**

The audience on October 16, 1846 included physicians, surgeons, medical students, an ex-patient, and a journalist. A previous attempt at pain relief during dental extraction had been deemed a failure, yet an undercurrent of hope prevailed. We examine the lives and careers of the individuals who were witness to this marvelous gift to suffering humanity and how the momentous occasion affected their lives. However on retrospective analysis despite bearing witness to one of the greatest advances in medicine, the event left the careers of the majority of individuals unaffected. Exceptions include WTG Morton, John Call Dalton and surgeons Henry Jacob Bigelow and John Collins Warren. **Lalitha V. Sundararaman, M.D., Sukumar P. Desai, M.D.; Anesthesiology, Brigham and Women's Hospital, Boston, MA.**

**PI A3132**

**Do Additional Years of Clinical Experience Improve Capnogram Interpretation Outside of the Operating Room?**

Capnography monitoring has recently become more common throughout the hospital. We observed that clinicians have a difficult time with capnogram interpretation regardless of their number of years of clinical experience. Clinicians could not successfully identify individual breaths observed in difficult waveforms recorded from patients outside the OR. We suggest that all clinicians who are expected to interpret difficult capnograms should receive additional training. Simulation training could also be improved by using more realistic capnograms. **Lara Brewer, Ph.D., Preston Erickson, B.S., Joseph A. Orr, Ph.D.; Anesthesiology, University of Utah Health Science Center, Salt Lake City, UT.**

**PI A3133**

**Waters and Rovenstine 1935-36 Correspondence: The First Two Years at Bellevue**

Emery Rovenstine left the University of Wisconsin and established the Anesthesia Department at Bellevue Hospital in 1935. His correspondence with Ralph Waters illuminates the challenges he faced in this major step forward for physician anesthesia. **Mark E. Schroeder, M.D.; Department of Anesthesiology, University of Wisconsin, Madison, WI.**

**PO14-5 PATIENT SAFETY AND PRACTICE MANAGEMENT  
8-10 a.m. | Hall B1-Area A**

**PI A3134**

**Awake Nasotracheal Fiberoptic Intubation for Difficult Airway in Maxillofacial Procedures Using Rubber Nasal Airway as a Conduit**

Using rubber nasopharyngeal airway as a conduit during awake fiberoptic guided tracheal intubation was found to be atraumatic, safer and faster technique for managing difficult airway in patients undergoing maxillofacial surgeries with fewer complications. We recommend this modified technique to be used as routine step during awake fiberoptic nasal intubation. **Ashraf A. Hamada, IV, M.D., Ayman Rayan, M.D.; Anesthesia and Intensive Care, King Abdulaziz Airbase Hospital, Alkhobar, Saudi Arabia, Anesthesia, Menoufia University, Menoufia, Egypt.**

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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**PI A3135**

**Efficacy of Education Followed by Computerized Provider Order Entry (CPOE) with Clinician Decision Support (CDS) to Reduce RBC Utilization in a Tertiary Care Academic Medical Center**

Adding computerized provider order entry (CPOE) with clinician decision support after a successful educational effort to promote evidence-based transfusion practice had no impact in further reducing blood utilization. Patient blood management efforts to reduce RBC utilization were less successful in surgical services with more than 50% of transfused units given to massively transfused patients. Steven M. Frank, M.D., Gabe S. Zuckerberg, B.S., Nishant D. Patel, M.D., Timothy M. Pawlik, M.D., Paul M. Ness, M.D., Linda Ms Resar, M.D.; Anesthesiology/Critical Care Medicine, Surgery, Pathology (Transfusion Medicine), Hematology, The Johns Hopkins Medical Institutions, Baltimore, MD.

**PI A3136**

**A Comparison of Six Endotracheal Tube Adhesive Stabilization Methods in a Live Pediatric Dermal Model**

Our study compared the force required to retract an endotracheal tube taped to skin using six commonly used adhesive stabilization methods on a live human dermal model. Of the tested methods Medipore™ tape with pre-applied tincture of benzoin provided the greatest adhesive strength while Elastoplast™ tape with pre-application of tincture of benzoin provide the least. Jonathan Gamble, M.D., William McKay, M.D., Jennifer O'Brien, Ph.D.(c), Andrew Wang, M.D.(c), Andrew Frost, M.D.(c), Jayden Cowen, B.Sc., Brendan Kushneriuk, B.Sc.; Department of Anesthesiology, Perioperative Medicine and Pain Management, College of Medicine, University of Saskatchewan, Saskatoon, SK, Canada.

**PI A3137**

**Anesthesiologist Satisfaction With Computerized Order Entry**

We conducted a 10 question survey of the Anesthesiology Department Faculty and residents one year after initiation computerized physician order entry. Using structural equation modelling, we demonstrated that ability to render patient care, user friendliness of the system and IT support contributed to 76.9% of the user satisfaction. Satisfaction did not play a role in expansion of the system to other activities, although perceived receptivity of the system by users did. Perceived reduction in medication errors minimally influenced user satisfaction. Paul G. Loubser, M.B., Ch.B., Val Hooper, Ph.D., M.B.A., Yasser M. Youssef, M.B., B.Ch., M.Sc.; Anesthesiology, University of Texas Medical School at Houston, Houston, TX, School of Information Sciences, Victoria University, Wellington, New Zealand, Anesthesiology, National Cancer Institute, Cairo University, Cairo, Egypt.

**PI A3138**

**Polytrauma in Children: Challenge of Interprofessional Management With Full Scale Simulation**

Polytrauma in children requires trained medical and paramedical staff, and a major technical set. Because of the severity of such a relatively rare situation, interprofessional training by simulation is useful to develop teamwork. Claire Bopp, M.D., Chloe Chauvin, M.D., Gilles Mahoudeau, M.D., Isabelle Lacreuse, M.D., Victor Gasia, Engineer, Pierre Diemunsch, Ph.D., Thierry Pottecher, M.D.; Strasbourg University Hospital, Strasbourg, France, Pedagogic Simulation Unit, Strasbourg, France.

**PI A3139**

**Effect of Dexmedetomidine on Glycemic and Insulin Levels in the Perioperative Period of Obese Insulin Resistant Patients**

We examined the effect of dexmedetomidine on postoperative glucose and insulin levels of obese patients with impaired glucose tolerance undergoing bariatric surgery. Our main result, was that the administration of dexmedetomidine produces a mismatch between the observed glucose level and the expected insulin secretion pattern, without hyperglycemia. Eduardo A. Vega Perez, Sr., M.D., Mauricio Ibacache, Ph.D., M.D., Ivonne Rampinelli, M.D., Claudio Nazar, M.D., Francisca Elgueta, M.D., Ghislaine C. Echevarria, M.D.; Anesthesiology, Pontificia Universidad Católica de Chile, Santiago, Chile.

**PI A3140**

**Continuous Negative External Pressure Reduces Apneas, Improves Oxygenation in Sedated Colonoscopy Patients**

We studied apneas and oxygen desaturation events occurring during routine colonoscopy, and the effects of continuous negative external pressure (cNEP) (5i Sciences) on such events. cNEP involved application of a low vacuum (-45cm H2O), via a soft collar placed on the anterior neck over the upper airway. The percentage of patients with one or more apneas > 30 seconds declined from 65% in the control group to 17% in the cNEP group (p=0.0006), and the percentage of patients requiring an increase in oxygen declined from 42% to 10% (p=0.02). Mean obstructive apnea episodes were ten-fold fewer in the cNEP group (p=0.01). cNEP was a simple, safe and effective means of lessening respiratory impairment. Richard M. Rose, M.D., Kenneth Klein, M.D., Susan Kais, M.D., Walter Coyle, M.D.; i Sciences, Inc., Rancho Santa Fe, CA, Endpoint LLC, Bainbridge Island, WA, Gastroenterology, Scripps Green Hospital, La Jolla, CA.

**PI A3141**

**Reducing Mortality after Emergency Laparotomy Using the ELPQuiC Bundle**

LPQuiC (Emergency Laparotomy Pathway Quality Improvement Care bundle) is an evidence-based care bundle. After introduction in four UK hospitals risk adjusted mortality has reduced across all sites - relative risk reduction 42%, NNT 14.2 (p<0.001). The care-bundle model and multicentre collaboration are viable means of quality improvement in emergency general surgery. Sam Huddart, F.R.C.A., Carol J. Peden, M.D., F.R.C.A., Mike Swart, F.R.C.A., Bruce McCormick, F.R.C.A., Matthew Dickinson, F.R.C.A., Mohammed A. Mohammed, Ph.D., Nial Quiney, F.R.C.A.; Anaesthetics/ITU, Royal Surrey County Hospital, Guildford, United Kingdom, Anaesthetics/ITU, Royal United Hospital Bath, Bath, United Kingdom, Anaesthetics/ITU, Torbay Hospital, Torquay, United Kingdom, Anaesthetics/ITU, Royal Devon and Exeter Hospital, Exeter, United Kingdom, School of Health Sciences, University of Bradford, Bradford, United Kingdom.

**PI A3142**

**The Glidescope vs. the McGrath MAC for Intubation in Cadavers with Simulated Oropharyngeal Bleeding**

Blood or emesis may potentially disrupt the view with video laryngoscopy. This study compares the efficacy of the Glidescope and the McGrath MAC video laryngoscopes when used by anesthesiologists to intubate the trachea of clinical grade cadavers with simulated oropharyngeal bleeding. Data analysis shows no difference in the time to intubation or with the grade of glottic view for these two devices. The small, portable, and affordable McGrath MAC could potentially play an important role in airway management. David MacDonald, M.D., Jinbin Zhang, M.Med., M.B.B.S., Orlando R. Hung, FRCP, M.D.; Dalhousie University, Halifax, NS, Canada, Tan Tock Seng Hospital, Singapore, Singapore.

**PI A3143**

**Comparison of Risk- and Reliability-adjusted Rates of Anesthesia-related Complications in Labor and Delivery**

The assessment of obstetric anesthesia safety with the rate of anesthesia-related complications should rely on a robust estimate of this rate. A rate adjusted on both the case-mix and on the hospital represents a more robust method for monitoring obstetric anesthesia safety across hospitals and over time than a rate adjusted on the case-mix. Jean Guglielminotti, M.D., Ph.D., Guohua Li, M.D., Dr.PH.; Anesthesiology, CUMC, New York, NY.

**PI A3144**

**Effect of Anesthetic Technique on Surgical Field Visualization During Functional Endoscopic Sinus Surgery: Preliminary Data From a Prospective Randomized Controlled Study**

When remifentanyl is used for controlled hypotension during general anesthesia for functional endoscopic sinus surgery, total intravenous anesthesia with propofol only appears to be associated with increased bleeding and decreased surgical field visualization. Matthias Riess, M.D., Ph.D., Drake A. Gashkoff, B.S., David M. Poetker, M.D., M.A., Todd A. Loehrl, M.D., Harvey J. Woehlick, M.D., Thomas J. Ebert, M.D., Ph.D., Suneeta Gollapudy, M.D.; Anesthesiology, Clement J. Zablocki VA Medical Center, Milwaukee, WI, Anesthesiology, Otolaryngology, Medical College of Wisconsin, Milwaukee, WI.



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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**PI A3145**

**Redesigning Pre-Procedural Evaluation Testing: Utilizing a Grid to Triage Low-Acuity Patients to a Phone Appointment**

In an effort to reduce the variability and increase the percent of patients scheduled for the correct PEC appointment we piloted a PEC Orders Form with the Orthopedic Surgery Service. We asked surgeons to use this form to determine the appropriate appointment. The Orthopedic surgeons use of the Phone Program grew by 23% after 9 months. The form also improved lab ordering by listing appropriate labs to complete prior to the appointment. When used the form was effective yet cultural barriers made surgeons hesitant to use the Phone Program. The PEC Orders Form resulted in an increase in the number of patients scheduled for a PEC appointment and will be expanded to other services at the institution. **Eden Brand, M.PH., Kelsey McCarty, M.S., M.B.A., Adam Carinci, M.D., Brendan Wang, B.S., Kuan-Chung Wu, M.PH., James P Rathmell, M.D.;** Department of Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital, Boston, MA.

**PI A3146**

**B-mode and M-mode Submandibular Sonography versus Facial Dimensions in the Prediction of Difficult Intubation**

This study shows that sonographically derived hyomental distance ratios are significantly different in difficult and easy to intubate patients and may predict difficult laryngoscopy resulting in difficult intubation. By contrast antropometric linear distances and the submandibular angle were not different in both groups of patients. **Jacek A. Wojtczak, M.D., Ph.D.;** Department of Anesthesiology, University of Rochester Medical Center, Rochester, NY.

**PI A3147**

**Computer Aided-detection of Retained Surgical Needles in X-Rays**

As computer vision is superior to the human eye in the detection of defined objects - we developed computer aided-detection (CADe) software that uses pattern recognition algorithms - combining elements of artificial intelligence with digital image processing - to detect needles in XRs. If needle is detected, software inserts alert sign over the corresponding area of the image. Overall accuracy was 90%, Precision 88%, Recall 90%, F1-measure 90%, Sensitivity 89%, and specificity 97%. **Mario Moric, M.S., Vicko Gluncic, M.D., Ph.D., Srdan Kobsa, M.D., Shirley Richard, B.S., C.S.T., Gady Agam, Ph.D.;** Anesthesiology, Rush University Medical Center, Chicago, IL, New York Presbyterian Hospital / Columbia University Medical Center, New York, NY, Illinois Institute of Technology, Chicago, IL.

**PI A3148**

**A New Method to Test Concordance Between Extraglottic Airway Device Dimensions and Patient Anatomy**

Extraglottic airway devices (EADs) are sized based on weight, while external neck landmarks (ENLs) have not been included in sizing models. Patients were ideally sized for an i-Gel, LMA Unique, and LMA Supreme airway device based on manufacturer (weight-based) and clinician (height-based) sizing models. ENLs may provide markers for proper sizing of EADs. **Davide Cattano, M.D., Ph.D., Tom Van Zundert, M.Sc., Jacek A. Wojtczak, M.D., Ph.D., Chunyan Cai, Ph.D., Rashida Callender, B.S., Salma El Marjiya, M.D., Carin A. Hagberg, M.D.;** Anesthesiology, Clinical & Translational Science, University of Texas Health Science Center Houston, Houston, TX, Maastricht University Medical Centre, Maastricht, Netherlands, Anesthesiology, University of Rochester Medical Center, Rochester, NY.

**PI A3149**

**Analysis of Multiple Routes of Analgesic Administration in the Immediate Postoperative Period- A Ten Year Experience**

A study was performed comparing three routes of administration of pain medication in the immediate postoperative period namely neuraxial analgesia, oral / rectal analgesia and parenteral analgesia to study their effectiveness and side effects of nausea and vomiting. Our data showed that though all the three routes tested have significant pain relief upon discharge from the PACU the least incidence of nausea and vomiting was found in the neuraxial group with the parenteral route being the most common. Continued research in the routes of Analgesia and pain outcomes and side effects are warranted. **Nalini Vadivelu, M.D., Feng Dai, Ph.D., Xiangyu Cong, Ph.D., Gail Watrous, R.N., Qin Li, Ph.D., Susan Dabu-Bondoc, M.D.;** Department of Anesthesiology, Biostatistics, Yale University, New Haven, CT.

**PO01-2 AMBULATORY ANESTHESIA: SEDATION, PHARMACOKINETICS AND RECOVERY OUTCOMES**  
10 a.m.-12 p.m. | Hall B1-Area E

**AM A3150**

**Influence of Alprazolam Premedication on the Occurrence of Postoperative Obstructive Apnea**

Obstructive apneas can be a serious complication of anesthesia and/or premedication. Our study emphasizes that premedication with 0.5 mg of alprazolam causes an increase in obstructive apneas during at least the first two postoperative hours (three hours after the alprazolam administration). Such premedication might be dangerous in patients already predisposed to the occurrence of obstructive apneas (obese patients and/or with Obstructive Sleep Apnea Syndrome). **Eric P Deflandre, M.D., F.C.C.P., Anne-Catherine Courtois, M.D., Vincent Bonhomme, M.D., Ph.D., Robert Poirrier, M.D., Ph.D., Jean F. Bricchant, M.D., Ph.D., Pol Hans, M.D.;** Cabinet Medical ASTES & Clinique Saint-Luc de Bouge, Namur, Belgium, Universite de Liege, CHR de la Citadelle University, University Hospital of Liege, Department of Anesthesia & ICM, University, Liege, Belgium.

**AM A3151**

**A Comparison of Three Different Anesthetic Techniques During Transrectal Ultrasound Guided 24-Core Prostate Biopsy: A Prospective Randomized Trial**

Transrectal ultrasound guided prostate biopsy (TRPB) is considered a main ambulatory procedure in the histological diagnosis of prostate cancer. Recently there has been a trend towards increasing the number of cores, for which the 24-core prostate biopsy further increases the need for adequate anesthetic procedure. No standard technique has been proved to be the most effective so far. Subarachnoid anesthesia with low dose of chlorprocaine 1% for transrectal ultrasound 24-core prostate biopsy performed as ambulatory procedure resulted a viable alternative to light general anesthesia or periprostatic block. **Pasquale DeNegri, M.D., FIPP, Tiziana Tirri, M.D., Pietro Augusto Mastrangelo, M.D., Tommaso Masciandro, M.D.;** Surgical Oncology & Pain Medicine, IRCCS Centro di Riferimento Oncologico della Basilicata, Rionero in Vulture, Italy.

**AM A3152**

**The Effect of Sufentanil Administration on Remifentanil-Based Anaesthesia During Laparoscopic Gynaecological Surgery: A Double-Blind Randomised Controlled Trial**

This study assessed the effect of sufentanil administered before conclusion of remifentanil-based anaesthesia on postoperative hyperalgesia and haemodynamic stability in patients undergoing laparoscopic gynaecological surgery. Sufentanil administration before concluding remifentanil-based anaesthesia improved postoperative hyperalgesia and achieved haemodynamic stability at extubation without delaying recovery or increasing PONV during laparoscopic gynaecological surgery. **Chung-Sik Oh, M.D., Jae Yun Kim, M.D., Joo Han Lee, M.D., Jae Woo Yi, M.D., Ph.D., Nam-Sik Woo, M.D., Ph.D., Seong-Hyop Kim, M.D., Ph.D.;** Department of Anaesthesiology and Pain Medicine, Konkuk University Medical Center, Department of Anaesthesiology and Pain Medicine, Kyung Hee University Hospital at Gangdong, Seoul, Korea, Republic of.

**AM A3153**

**Reducing Cancer Care Costs by Using Time Driven Activity Based Costing in Process Mapping and Utilizing a Fast Track Process for Patients Undergoing Port-A Cath Placement Under Monitored Anesthesia Care in the Ambulatory Care Setting**

This study compares Post Anesthesia Care Unit (PACU) time for patients undergoing port-a-cath placement under Monitored Anesthesia Care (MAC) before and after a fast track TDABC initiative to determine whether interventions in improving process flow would decrease PACU time in this patient population. **Elizabeth Rebello, M.D., Alicia M. Kowalski, M.D., Farzin Goravanchi, D.O., Katy E. French-Bloom, M.D., Alexis Guzman, M.S., Mike Hernandez, M.S., Nancy Mitchell-Mollard, C.R.N.A., Spencer Kee, M.BCh.B.;** Anesthesiology and Perioperative Medicine, Biostatistics, University of Texas MD Anderson Cancer Center, Houston, TX.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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### AM A3154

#### Oxytocin Receptor Polymorphism Affects the Amount of Peripartum Hemorrhage in Vaginal Delivery

Peripartum hemorrhage is a source of major morbidity and mortality. We have identified an association between an oxytocin receptors gene polymorphisms and the degree of partum blood loss. In patients known to have this polymorphism, consideration should be made to add alternative uterotonics agents in the face of hemorrhage. **Abdullah S. Terkawi, M.D., Shehnaz Hansoti, M.D., Rabeena Tabassum, M.D., Pamela Flood, M.D., Ph.D., Anesthesiology, University of Virginia, Charlottesville, VA, Obstetric and Gynecology, King Fahad Medical City, Riyadh, Saudi Arabia, Anesthesiology, Stanford University, Palo Alto, CA .**

### AM A3155

#### Sex-Related Differences in the Effect-Site Concentration of Remifentanyl for Preventing QTc Interval Prolongation Following Intubation in Elderly Patients

During general anesthesia, tracheal intubation augment QTc interval prolongation. Female sex and age more than 65 years are common risk factors for the development of torsades de pointes in association with QTc interval prolongation. Target-controlled infusion of remifentanyl is effective in attenuating QTc interval prolongation following intubation among elderly patients and the Ce of remifentanyl is lower in females than in males. **Bo Ra Lee, M.D., Seokyoung Shin, M.D., Ph.D., So Yeon Kim, M.D., Ph.D., Department of Anesthesiology and Pain Medicine, Yonsei University College of Medicine, Seoul, Korea, Republic of.**

### AM A3156

#### Comparable Quality of Process and Recovery After Ultrasound Guided Axillary and Supraclavicular Plexus Block in Outpatients

In 140 outpatients with ultrasound guided axillary or supraclavicular plexus block for hand surgery anesthesia related process times and quality of postanesthetic recovery were evaluated. There were no differences in anesthesia preparation time and turnover time between groups. Quality of recovery was comparable as well. Thus, axillary plexus block is preferable to supraclavicular block in outpatients due to a superior risk profile. **Martin A. Eble, SrConsultant, Michael Georgieff, Chief Director, Michael G. Rockemann, Consultant; Anesthesiology, University Hospital of Ulm, Ulm, Germany.**

### AM A3157

#### Review of the Effectiveness and Complications of Continuous Peripheral Nerve Catheters in Ambulatory Setting: A Two Year Retrospective Analysis

CPNC is an effective analgesic technique in outpatient setting. It produces high patient satisfaction but it requires a dedicated staff to produce a safe outcome. It requires ability to communicate with the patients 24/7, can be potentially very labor intensive. Also it is of paramount importance that the pain service has the ability to evaluate patient at a short notice by bringing the patient back to the hospital to if needed. **Tariq M. Malik, M.D., Sehar S. Gafoor, M.D.; Anesthesia, University of Chicago, Chicago, IL.**

### AM A3158

#### Prospective Comparison of Patient State Index (PSI) Between Propofol Sedation and Intravenous Conscious Sedation During Colonoscopy

Across all stages of the procedure, patients undergoing colonoscopy with propofol based sedation are significantly deeply sedated than patients undergoing the same procedure with intravenous conscious sedation. We recommend titrating the propofol sedation appropriately, preferably based on a depth of sedation monitor. However, it remains to be seen, if the cost of such monitoring outweigh the potential benefit, especially with regards to reduction in the rates of aspiration. Additionally, consideration should be given to avoid propofol based sedation for non-essential colonoscopies. **Basavana Goudra, M.D., F.R.C.A.F.C.A.R.C.S.I Preet Mohinder Singh, M.D., Augustus Samuel, Student, Elizabeth Cifuentes, Student; Anesthesiology, University of Pennsylvania, Philadelphia, PA, Postgraduate Institute of Medical Education & Research, Chandigarh, India.**

### AM A3159

#### Patient Preference for the Pre-Anesthesia Evaluation: Telephone or Office Assessment?

Based on our post-anesthetic survey, patients prefer a telephone-based pre-anesthesia evaluation (PAE) compared to an office-based evaluation. There were no complications or cancellations noted. **Manuel J. Lozada, D.O., John TC Nguyen, M.D., Douglas F. Smith, M.D., Rene Przkora, M.D., Ph.D., Anesthesiology, University of Texas Medical Branch, Galveston, TX.**

### AM A3160

#### Old Habits Die Hard: Challenges Reducing Routine Preoperative Testing

In 2013, NYU Medical Center changed presurgical testing guidelines reducing the number of routine electrocardiograms (ECGs) and chest x-rays. This study investigates the number of preoperative ECGs and chest x-rays among men ages 40-49 scheduled for outpatient urologic surgery and whether or not these tests were indicated. The goal of this pilot study is to demonstrate the challenge of implementing new guidelines and understanding physicians' resistance to change practice. **Jonathan M. Teets, M.D., Jeanna D. Blitz, M.D.; Anesthesiology, New York University Langone Medical Center, New York, NY.**

### AM A3161

#### Sevoflurane Versus Propofol in a Pediatric Sedation Unit

In this study, we determined the incidence of sevoflurane use in children undergoing procedures in our sedation unit. We then compared the patients induced with sevoflurane with the similar patients induced with propofol. In our sedation unit, children were less likely to be induced with sevoflurane. The incidence of complications was higher with sevoflurane when compared to propofol in this group of children. **Navneet Kaur, M.D., Harpreet Singh, M.B.B.S., M.H.Aamrita Rao, B.S., Manju Nayar, M.B.B.S., Juliann Peacock, R.N., M.S., Kumar G. Belani, M.B.B.S., M.S.; Anesthesiology, University of Minnesota Amplatz Children Hospital, University of Minnesota, Minneapolis, MN.**

### AM A3162

#### Evaluation of Spontaneous Ventilation Measurement Accuracy Using a Prototype Electronic Mask Ventilator

This study evaluates the accuracy of the ventilation monitoring functions integrated into a prototype portable mask ventilator. This evaluation showed that the system accurately measured tidal volumes, respiratory rates and airway pressure in a bench simulation of spontaneous breathing. Patient monitoring capability in this system is useful for selecting CPAP levels and ensuring adequate patient ventilation during sedation. **Mike P. Fogarty, M.S., Joseph A. Orr, Ph.D., Anesthesiology, University of Utah, Salt Lake City, UT.**

### AM A3163

#### Intravenous Induction Dosing in the Elderly: Need for Improvement

Anesthetic dosing of fentanyl is not being rigorously corrected for age. Even though propofol and midazolam are corrected for age, increased frequency of hypotension in the elderly population is still observed. The results of this observational study suggest that there is Room for improvement in recommended induction doses for elderly undergoing non-cardiac surgeries. **Joseph Heng, B.S., Gladys Rodriguez, B.S., Shamsuddin Akhtar, M.D.; Department of Anesthesia, Yale University School of Medicine, New Haven, CT.**

### AM A3164

#### Anesthetic Induction Dosing in Patients Undergoing Ambulatory Gastrointestinal Procedures: Are We Overdosing the Elderly?

Retrospective review of 799 anesthesia records for ambulatory GI procedures shows that in current practices, fentanyl dosages are not lowered for age and ASA class. Though propofol doses are decreased, mean arterial pressure drop in the elderly population after induction is still significant. Practitioners are more likely to adjust for ASA class than age. Findings suggest anesthetic dose adjustments in the elderly require further modifications to yield stable hemodynamics. **Vicki Zhu Jun Bing, B.S., Joseph Heng, B.S., Shamsuddin Akhtar, M.D.; Anesthesiology, Yale School of Medicine, New Haven, CT.**



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**AM A3165**

**Toward a Safer Handoff: Preventable Barriers to High Quality Postoperative Communication**

Distracted postoperative handoff communication has been previously linked to information omission within the hospital setting. The aim of this study was to identify communication barriers within a busy, high-volume ambulatory surgery center (ASC) and the effect of distractions on handoff duration and error. **Erin W. Pukenas, M.D., Irwin Gratz, D.O., Elaine Allen, Ph.D., Amanda R. Burden, M.D., Taral Patel, M.D., Brittany Scarpato, B.S., Erin McIntosh, B.S., Edward R. Deal, D.O.; Anesthesiology, Cooper Medical School of Rowan University, Camden, NJ, Epidemiology and Biostatistics, University of California San Francisco, San Francisco, CA.**

**PO13-2 OUTCOMES AND DATABASE RESEARCH**

10 a.m.-12 p.m. | Hall B1-Area B

**FA A3166**

**Does Postoperative Acute Kidney Injury After Liver Resection Surgery Worsen Outcomes After Hospital Discharge?**

We investigated the impact of postoperative acute kidney injury (AKI) on long-term outcomes using a database of 642 patients who had undergone liver resection surgery. After propensity score matching using age, sex, and other variables, 32 pairs of AKI and non-AKI patients who were followed for at least 3 years or died within 3 years after hospital discharge were included. Kaplan-Meier analysis revealed that neither mortality rate nor the composite outcome of death and chronic renal dysfunction differed significantly between groups after hospital discharge. These results suggest that the effects of postoperative AKI on long-term outcomes may be minimal after discharge from hospital alive. **Manami Tanaka, M.D., Seiji Ishikawa, M.D., Ph.D., Fumi Maruyama, M.D., Nobuhiro Shiota, M.D., Arisa Tomozawa, M.D., Koshi Makita, M.D., Ph.D.; Anesthesiology, Tokyo Medical and Dental University, Tokyo, Japan.**

**FA A3167**

**Rheumatoid Arthritis and Perioperative Cardiovascular Complications: A Retrospective Analysis**

Patients with Rheumatoid Arthritis (RA) are known to have increased mortality primarily attributed to cardiovascular (CV) complications. However, the association between RA and perioperative CV events is not fully understood. This retrospective, control matched study analyzed almost 119,000 RA patients having non-cardiac surgery across seven U.S. States from 2009 to 2010. Results indicated that after adjusting for chronic heart disease and other potential confounders, RA patients do not have a significantly increased risk of perioperative CV events. **Amanda R. Moraska, M.D., Michael H. Doan, M.D., Natalya Makarova, M.S., Zhuo Sun, M.D., Brian D. Hesler, M.D., Alparslan Turan, M.D.; Anesthesiology Institute, Cleveland Clinic, Outcomes Research, Cleveland Clinic, Cleveland, OH.**

**FA A3168**

**Perioperative Factors Predicting Renal Failure After Partial Nephrectomy**

This is a study analyzing 2020 records of patients who underwent open, robotic and laparoscopic partial nephrectomy between 2005 and 2012 at the Cleveland Clinic. Glomerular filtration rate was used as a measurement of renal function in the postoperative period and associated with modifiable factors predicting worsening of renal function in the postoperative period. **Shobana Rajan, M.D, Rakhi Pal, M.D, Akhil K. Singh, M.D., Ashish K. Khanna, M.D., Min Yang, M.D, Jing You, M.S, Srinivasa Govindarajan, M.D, Frank Marciano Obregon, M.D, Rovnat Babazade, M.D, Alparslan Turan, M.D.; Anesthesiology, Outcomes Research, Cleveland Clinic, Cleveland, OH.**

**FA A3169**

**The Preventive Effect of Intraoperative Dexmedetomidine on Postoperative Catheter-Related Bladder Discomfort in Patients Undergoing Transurethral Bladder Tumor Resection: A Prospective Double-Blind, Randomized Study**

Catheter-related bladder discomfort (CRBD) due to an indwelling urinary catheter causes postoperative distress. Dexmedetomidine is an anaesthetic agent with an anti-muscarinic effect that is beneficial for preventing and treating CRBD. This study showed that intraoperative dexmedetomidine administration decreased the incidence and severity of CRBD and the postoperative fentanyl requirement in patients undergoing transurethral bladder tumor resection. **Hee-Pyoung Park, M.D., Ph.D., Young-Jin Lim, M.D., Ph.D., Young-Tae Jeon, M.D., Ph.D., Byung-Gun Kim, M.D.; Department of Anesthesiology and Pain Medicine, Seoul National University Hospital, Seoul, Kosovo, Republic of, Seoul National University Bundang Hospital, Seongnam, Korea, Republic of.**

**FA A3170**

**Incidence of Acute Kidney Injury After Orthotopic Liver Transplantation Using Living-Donor Versus Cadaveric Donor Graft: A Propensity Score Matched Analysis**

Retrospective review of all first time living donor liver transplanted patients and cadaveric donor liver transplanted patients performed at University of Pittsburgh Medical Center between 1st of January 2005- 31st of December 2009, a propensity matched score analysis to investigate the impact of the liver graft type on the acute kidney injury incidence post-transplantation and contributing factors. **Daniela Damian, M.D., John Kellum, M.D., Joseph Donaldson, M.S., Dan Winger, M.S., Ibtesam A. Hilmi, M.B.; Anesthesiology, Critical Care Medicine, Thomas E. Starzl Transplantation Institute, Clinical Translation Science Institute, University of Pittsburgh, Pittsburgh, PA.**

**FA A3171**

**Healthcare Disparities in the Perioperative Setting: An Analysis of the National Anesthesia Clinical Outcomes Registry**

Little research has been done on determining the role healthcare disparities play in affecting perioperative adverse outcomes. Thus the goal of this study is to investigate the association between socioeconomic status, gender and perioperative adverse. According to our study, there are healthcare disparities between different socioeconomic classes of patients, with middle income patients being the most likely to have adverse outcomes. **Iyabo O. Muse, M.D., Adrian Liau, Ph.D., Jing Song, M.D., Richard P. Dutton, M.D., M.B.A., Vilma A. Joseph, M.D.; Anesthesiology, Albert Einstein College of Medicine/Montefiore Medical Center, Bronx, NY, Anesthesiology, Montefiore Medical Center, Bronx, NY, Anesthesiology Quality Institute, Schaumburg, IL.**

**FA A3172**

**How to Assess Risk in Patients Over 80 Years Old in Cardiac Surgery?**

The aim of the study was to evaluate the predictive performance of Euroscore, creatinine variation and postoperative Troponin I in a specific population of octogenarians. **Sophie Provenchere, M.D., Aurelien Bataille, M.D., Afrida Gergess, M.D., Benoit Cousin, M.D., Dan Longrois, M.D., Ph.D., Philippe Montravers, M.D., Ph.D.; Department of Anesthesiology, Hopital Bichat, Paris, France.**

**FA A3173**

**Mortality After Early Postoperative Nonresumption of Angiotensin Receptor Blockers: A Cohort Study**

Angiotensin receptor blockers (ARBs) are commonly prescribed. However, the rates and consequences of failing to resume ARB postoperatively is unknown. In this retrospective cohort study of the Veterans Affairs Healthcare system, we analyzed 26,913 inpatient surgical admissions in patients regularly prescribed ARBs between 1999 and 2011. Nonresumption of ARB at postoperative day two was common, occurring in 10,708 (39.8%) patients. After adjusting for confounders, multivariable Cox proportional hazards modelling revealed that failure to resume ARB by postoperative day two increased 30-day mortality risk (adjusted hazard ratio 1.59, 95% CI 1.34-1.89, p<0.001). Postoperative delay in resuming ARB is common and contributes to 30-day mortality. **Susan M. Lee, M.D., F.R.C.P.C., Steve Takemoto, Ph.D., Arthur W. Wallace, M.D., Ph.D.; Anesthesia and Perioperative Care, University of California, San Francisco, San Francisco, CA.**



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### FA A3174

#### The SLUScore™: A Novel Metric Quantifying the Adverse Impact of Intraoperative Hypotensive Exposure on Postoperative Cardiac Morbidity and Mortality Following Non-cardiac Surgery

The present study indicates that the SLUScore™, a novel scoring methodology for intraoperative hypotension based on the number of certain cumulative time limits that were exceeded for exposure below a range of mean arterial blood pressure thresholds between 75 and 45 mm Hg, is increased in approximately one of three patients undergoing non-cardiac surgery. An elevated SLUScore™ portends an increased risk of cardiac morbidity (the clinical decision to test for possible troponin elevation as well as a documented diagnosis of troponin elevation >0.04) and all-cause mortality within 30 days of surgery. These findings suggest a possible role for tracking the SLUScore™ as a real time hemodynamic assessment and postoperative risk stratification tool in the OR. **Wolf H. Stapelfeldt, M.D., Peter T. Vuong, M.D., Hui Yuan, M.D., Christopher A. Paul, M.D.;** Anesthesiology & Critical Care Medicine, Saint Louis University, Saint Louis, MO.

### FA A3175

#### Contaminated Heparin and Outcomes After Cardiac Surgery: A Retrospective Propensity-Matched Cohort Study

We conducted a single center, retrospective, propensity-matched cohort study during the period of contaminated heparin (CH) and the equivalent time frame in the three preceding or the two following years (2004-2010). Perioperative data were obtained from the institutional record of the Society of Thoracic Surgeons National Database. Exposure to CH appears to have been associated with increased risk of postoperative complications and longer ICU stay. **Heiko Kaiser, M.D., Arbi Ben Abdallah, Ph.D., Bethany Tellor, PharmD, Mohammad A. Helwani, M.D., Jennifer R. Smith, PharmD, Marc R. Moon, M.D., Michael S. Avidan, M.B., B.Ch.;** Department of Anesthesiology, Department of Cardiothoracic Surgery, Washington University in Saint Louis School of Medicine, Saint Louis, MO, Department of Pharmacy, Barnes-Jewish Hospital, Saint Louis, MO.

### FA A3176

#### Perioperative Blood Pressure Variation in Hypertensive and Normotensive Patients With and Without Sedation

The goal of this study was to describe Preop to OR change in Systolic BP for Hypertensive and Normotensive patients with or without intravenous Midazolam in outpatient and inpatient surgery. **Rachel M. Kacmar, M.D., Ana Fernandez-Bustamante, M.D., Ph.D., Kenneth J. Bullard, B.S., Alison J. Brainard, M.D., Benjamin K. Scott, M.D., Karsten Bartels, M.D., Erik Nelson, M.D., Leslie C. Jameson, M.D.;** Anesthesiology, University of Colorado, Aurora, CO.

### FA A3177

#### Is Peri-Operative Fluid Therapy a Predictor of Morbidity and Mortality After Pancreaticoduodenectomy (Whipple Procedure) - A Single Center Retrospective Review

This is a retrospective review of 607 patients undergoing pancreaticoduodenectomy looking at peri-operative fluid therapy. No association was found between the volume of fluid administered and length of stay, infectious complications and surgical complications. We are planning a prospective trial to further investigate this topic. **Nicholas J. Lightfoot, M.B., Ch.B., Hamish S. Mace, M.B.Ch.B., Coimatore V. Srinivas, M.B.B.S., Pablo Serrano, M.D., Alice Wei, M.D., Stuart A. McCluskey, M.D.;** Department of Anesthesia, Department of Surgery, University of Toronto, Toronto, ON, Canada, Department of Surgery, McMaster University, Hamilton, ON, Canada.

### FA A3178

#### Impact of Anesthesia-Guided Preoperative Testing on Hospital Expenses and Surgical Adverse Events : A Before & After Retrospective Chart Review

Active involvement of the anesthesiologist in the complete preoperative evaluation significantly reduced the number of tests and labs performed while maintaining the quality of patient care and did not adversely affect surgical outcomes. **Enrico M. Camporesi, M.D., Yiu-Hei Ching, M.D., Rachel Karlnoski, Ph.D., Devin Plosker, M.PH., Abdullah Abou-Samra, B.S., Branko Miladinovic, Ph.D., Keenan Obada, B.S., Emily Alvey, B.S., Jorge Lockhart, M.D., Devanand Mangar, M.D.;** Florida Gulf-to-Bay Anesthesiology Associates LLC, University of South Florida, Urology, University of South Florida, Tampa, FL.

### FA A3179

#### Perioperative Utilization of Statins in Patients Undergoing Intermediate to High Risk Non-cardiac Surgery

In the current study we describe perioperative initiation of statins before moderate- to high-risk non-cardiac elective surgery in the United States and we explore patient characteristics among statin initiators and non-initiators. The rate of statin initiation progressively increased from 2003 to 2012, particularly among older patients with higher RCRI and undergoing major vascular surgery. Research is needed to further define the risks and benefits of initiation of statins prior to surgery. **Elisabetta Patorno, M.D., Dr.PH., Shirley Wang, Ph.D., Sebastian Schneeweiss, M.D., Sc.D., Jun Liu, M.D., M.S., Brian T. Bateman, M.D.;** Brigham and Women's Hospital, Harvard Medical School, Boston, MA.

### FA A3180

#### Establishment Of A Comprehensive Anesthesia Quality Improvement Program In The Department Of Veterans Affairs (VA)

The new VA Anesthesia QI program, inclusive of Nationally standardized data; an extensive, elderly population with significant morbidities; very high fidelity physiologic and therapeutic data collection; and centrally analyzed data, offers an unparalleled opportunity for significant clinical discoveries and patient care investigations. **William T. Schmeling, M.D., Ph.D., Gerard M. Ozanne, M.D., John T. Sum-Ping, M.D.;** Departments of Anesthesiology, Pharmacology & Toxicology, Medical College of Wisconsin; Zablocki VA Medical Center, Milwaukee, WI, Anesthesiology, UCSF; San Francisco VA Medical Center, San Francisco, CA, Anesthesiology, UT Southwestern Medical Center; Dallas VAMC, Dallas, TX.

### FA A3181

#### Perioperative Surgical Management and HCAHPS Outcomes: A Retrospective Review of 2,758 Patients

A retrospective analysis of 2,758 patient's responses to HCAHPS questions and analysis of what perioperative management with improved and decreased satisfaction. **Dermot P. Maher, M.D., M.S., Pauline Woo, B.S., Cesar Padilla, M.D., Waylan Wong, M.D., Bahman Shamloo, M.D., Howard L. Rosner, M.D., Roya Yumul, M.D., Ph.D., Xiao Zhang, Ph.D., Ronald Wender, M.D., Charles Louy, M.D., Ph.D.;** Anesthesia, Cedars-Sinai Medical Center, Los Angeles, CA.

### PO14-3 PATIENT SAFETY AND PRACTICE MANAGEMENT

10 a.m.-12 p.m. | Hall B1-Area C

### PI A3182

#### The Effect of an Immature Anesthesia Information Management System on Physiologic Data Capture

In anesthesia, accurate and complete documentation of physiologic data is of paramount importance. We recently adopted an automated anesthesia information system and sought to evaluate the effect of our AIMS on chart completion of physiologic data over time. We retrospectively reviewed anesthetic records from four community hospitals before and after the installation of an AIMS (Epic Systems, Epic Anesthesia v. 2010, v. 2012, Verona, WI). The automation of data capture with AIMS is thought to improve both the capture of and accuracy of physiologic data. We present data that suggests the completeness of data capture may be adversely affected by AIMS. **Torin D. Shear, M.D., Mark Deshur, M.D.;** Anesthesia, NorthShore University HealthSystem, Evanston, IL.

### PI A3183

#### Quality Improvement Project Using QA/QI Database Medication Errors! What Can Be Done to Decrease These Errors?

Medication errors are both prevalent and potentially life threatening in the field of anesthesiology. We utilized several techniques in order to decrease the incidence of these errors at our institution. We report this abstract explaining our interventions and the results we obtained. The data is obtained from our Quality Improvement and Patient Safety database compared among the last 4 years. **Shamantha Reddy, M.D.;** Anesthesiology, Montefiore Medical Center, Bronx, NY.



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**PI A3184**

**Implementation and Initial Results of a New Anesthesia Induction De-brief Process**

Initial results from a new anesthesia induction de-brief process shows that physicians and CRNAs consider the induction of anesthesia to be other than “smooth” a significant percentage of the time. We are using this anonymous, self-reporting process to help identify systemic problems affecting induction safety and to provide denominator data for a future study comparing induction checklist implementation methods. **Thomas D. Looke, M.D., Ph.D., Cameron Kluth, M.B.A.; Anesthesiology, US Anesthesia Partners-JLR Medical Group Division and Florida Hospital, Winter Park Research Center, Orlando, FL, College of Medicine, University of Central Florida, Orlando, FL.**



**PI A3185**

**Evaluation of Two Preoperative Oral Carbohydrate Drinks**

We propose to evaluate two different carbohydrate rich clear drinks before abdominal surgery: Nutricia PreOp and off the shelf apple juice. The choice was left to the patient. Several patients failed to be included (staff reluctance or ignorance) or they refused the drinks out of fear of trespassing against established rules. The absence of complication, the cost ratio and patient choice clearly favours apple juice but insulin resistance and postoperative outcome were not assessed. The flaws of this study only emphasize the difficulties in establishing a simple but disturbing policy of abandoning overnight fasting. **Pierre-Olivier Ludes, Resident, Bartholomeus Calon, M.D., Jean-Pierre Rameau, Resident, Serge Rohr, M.D., Ph.D., Pierre A. Diemunsch, M.D., Ph.D.; Anesthesiology-Intensive Care, Hautepierre, University Hospital of Strasbourg, Strasbourg, France, General Surgery, Hautepierre, France.**

**PI A3186**

**Vitamin D Deficiency in Anesthesia Department Caregivers at High Northern Latitude**

Over 50% of anesthesia caregivers at a high Northern latitude have inadequate vitamin D levels at the end of winter. 5% are deficient. **Kirk Hogan, M.D., J.D., Sigurbjorg J. Skarphedinsdottir, M.D., Martin I. Sigurdsson, M.D., Douglas B. Coursin, M.D., Sijan Wang, Ph.D., Qiefeng Li, Ph.D., Diane C. Krueger, Ph.D., Neil C. Binkley, M.D., Gisli H. Sigurdsson, M.D.; Anesthesiology, Biostatistics, University of WI School of Medicine and Public Health, Madison, WI, Anaesthesia and Intensive Care Medicine, Landspítali University Hospital, University of Iceland, Reykjavik, Iceland.**

**PI A3187**

**The Effectiveness of Pre-operative Warming for 10 Minutes Before Induction of Anesthesia to Prevent Redistribution Hypothermia**

The aim of this study is to examine the preventive effect of the redistribution hypothermia caused by pre-operative warming for 10 minutes before induction of anesthesia using the underbody warming blanket prospectively. For about 30 minutes from end of anesthetic induction, TT in P group was less decrease than TT in C group but there was no significant difference. And preventive effect of intraoperative hypothermia in P group was showed as same as C group. The effective prewarming using underbody blanket, for 10 minutes with 43, was not found. But it is thought that it is effective to prevent intraoperative hypothermia. **Toru Kaneda, M.D., Ph.D., Makoto Sawada, M.D., Kai Yamazaki, M.D., Toshiyasu Suzuki, M.D., Ph.D.; Department of Anesthesiology, Tokai University School of Medicine, Isehara, Japan.**

**PI A3188**

**Sevoflurane Packaging: Comparing Glass and Aluminum Bottle Durability Following a One-Meter Drop**

The type of anesthetic packaging is an important factor to promote safety in the OR environment. Sevoflurane is currently available in glass, plastic, and aluminum bottles. This study demonstrated that use of an aluminum bottle can promote safety in the OR environment since there is less potential for inadvertent anesthetic release into the OR, as compared to glass, should the bottle be dropped during handling. **Kathleen Wong, B.S., Anthony Buttitta, M.S., Gerald Phillips, M.S.; Baxter Healthcare Corporation, Round Lake, IL.**

**PI A3189**

**Is Your Anesthesia Cart Contaminated? What We Found!**

The CDC indicates that anesthesia drug carts represent mobile surfaces that can come into contact with body fluids or other soiled materials. Therefore touch contamination originating from contaminated work surfaces must be minimized and prevented if possible. Surface sampling provides facilities with a view of the effectiveness of their cleaning or disinfection procedures. We conducted surface sampling on 9 anesthesia carts and contamination was present on some of the carts. **Tricia A. Meyer, M.S., Pharm.D., Charles R. Roberson, M.D., Russell K. McAllister, M.D., Timothy M. Bittenbinder, M.D., Kevin Robinson, Pharm.D.; Anesthesiology, Baylor Scott & White Health, Temple, TX.**

**PI A3190**

**Improvement of Perioperative Surgical Site Infection Prophylaxis Compliance**

Our analysis can be of value to both hospital administrators and health care providers because we are able to provide data on both SCIP antibiotic prophylaxis compliance and of the effect of provider notification on repeat errors. In addition, we provided data on the internal cost of non-compliance errors. To our surprise, our hospital had a significant increase in revenue generated as a result of increased compliance. **Richard D. Urman, M.D., M.B.A., Tori Sutherland, M.D., M.PH., Jennifer Beloff, R.N., Luigino Nascimben, M.D., Ph.D.; Anesthesiology, Center for Clinical Excellence, Surgery, Brigham & Womens Hospital, Boston, MA.**

**PI A3191**

**Improving Continuity of Patient Care Through the Use of a Universal Handoff Tool**

Improving continuity of patient care through the use of a universal handoff tool that will serve as a vehicle to promote consistency of data shared across handoffs and increase interdisciplinary communication. **Mary Zoccoli, M.D., Daniel Castillo, M.D.; Anesthesiology, University of Florida College of Medicine, Jacksonville, FL.**



**PI A3192**

**Hearsay Medical Case Report: Case and Criteria**

The hearsay case report is presented as a novel way to describe an adverse event that may go unpublished. The traditional case report requires a willing author unafraid of legal ramifications. The hearsay report provides a disinterested analysis of the factors that led to the complications while preserving the confidentiality of the clinician. The authors have described eight criteria that must be met for the appropriate use of the hearsay. We believe the hearsay report will elucidate and edify the involved patient safety issues. In the following hearsay report, we have provided a description of a factual event without providing the details. **Patrick J. Descepolo, M.D., Yunseok Namn, M.D., Stan Lando, C.R.N.A., Steven M. Shulman, M.D., M.Sc., M.S.; Anesthesiology, UMDNJ-New Jersey Medical School, Newark, NJ, Rutgers NJMS, Newark, NJ.**



**PI A3193**

**Quality of Recovery after Anesthesia and Surgery: A Prospective Investigation Using QoR-40**

Quality of postoperative recovery after anesthesia and surgery represents an important end point in early postoperative health status and patient satisfaction. This abstract describes a prospective analysis of patient responses to the quality of recovery-40 (QoR-40) questionnaire in our urban, multicultural public health hospital. We found that length of PACU stay was the strongest variable affecting physical status dependence and patient’s perception of pain. **Apryl Martin, M.D., Bozana Alexander, M.D., Abayomi Akintorin, M.D., Nima Mottaghi, M.D., Emily Misch, M.PH.; Anesthesiology and Pain Management, John H. Stroger Jr Hospital of Cook County, Chicago, IL, Rush University Medical Center, Chicago, IL.**



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**PI A3194**

**Life Cycle Pollution Impacts of Reusable Versus Disposable Patient Warming Blankets**

A life cycle assessment was performed to compare the environmental impacts of reusable and disposable patient warming blankets and identify opportunities for improving device design, utilization and cleaning. **Katrina Smith-Mannschott, M.S. Engineering, Lichao Xia, M.S. (Eng.), Jodi D. Sherman, M.D., Matthew Eckelman, Ph.D.;** Northeastern University, Boston, MA, Anesthesia, Yale, New Haven, CT.

**PI A3195**

**Implementation and Evaluation of an Event Reporting System in an Academic Anesthesia Department**

Safety and quality in healthcare depend in part on the collection of contemporaneous data on clinical adverse events and near misses. We built a secure comprehensive clinical adverse incidents data collection system. After implementation of this system, there has been a significant increase in clinical incident data reported. **Unyime Ituk, M.B.B.S., FCARCSI, David P. Papworth, F.R.C.A., C.PPS., Thomas Smith, B.S., Michael M. Todd, M.D.;** University of Iowa, Iowa City, IA.

**PI A3196**

**Estimate of Carbon Dioxide Equivalents of Inhaled Anesthetics in the United States**

Based on average per-anesthetic CO2eq emissions at 3 US institutions, we estimated the percent of US health sector greenhouse gas emissions attributable to anesthetic gases. **Jodi D. Sherman, M.D., Robert B. Schonberger, M.D., Matthew Eckelman, Ph.D.;** Yale, New Haven, CT, Northeastern University, Boston, MA.

**PI A3197**

**Evaluating Waste Anesthetic Gas (WAG) in the Post Anesthesia Care Unit (PACU) within the Patient Breathing Zone**

The scavenging of waste anesthetic gases (WAG) is recommended by every professional organization and government agency involved with anesthesia to reduce occupational exposure to health care personnel. We hypothesize that waste anesthesia gases in the patient breathing zone and caregiver breathing zone exceed recommended levels of exposures in the post-operative period. Exhaled anesthetic gas levels in the PACU may exceed recommended levels, even for outpatient surgical patients with cases less than 2 hours. Further study of exhaled anesthetic gas levels in the PACU should be pursued. **Stephanie F. Tran, M.D., Alfonso Altamirano, M.D., Kenneth Hiller, M.D., Ana Lisa Ramirez-Chapman, M.D., Sam Gumbert, M.D., Chunyan Cai, Ph.D., George Williams, II, M.D.;** Anesthesiology, The University of Texas at Houston Medical School, Houston, TX.

**PO15-3 PEDIATRIC ANESTHESIA  
10 a.m.-12 p.m. | Hall B1-Area D**

**PD A3198**

**Dexmetomidine as a Sole Agent in Caudal Anesthesia in Pediatric Patients Undergoing Surgical and Urological Procedures**

Dexmetomidine was studied as a sole agent in caudal anesthesia in pediatric patients undergoing surgical and urological procedures, it has analgesic action that outweighs and lasts for a longer duration than bupivacaine. **Mostafa A. Eltantawy, M.D.;** Anesthesia and Intensive Care, Cairo University, Giza, Cairo, Egypt.

**PD A3199**

**Analgesia in Pediatric Laparoscopic Herniorrhaphy Surgery: A Comparison of Three Different Concentrations of Ropivacaine for TAP Block**

Lower concentration of local anesthetic for the ultrasound-guided transversus abdominis plane block in pediatric laparoscopic herniorrhaphy. **Wang Xie, Graduate Student, Ling Tan, Professor;** Department of Anesthesiology, West China Medical Center of Sichuan University, Chengdu, China.

**PD A3200**

**Point-of-Care Testing for Coagulation Function Versus Standard Laboratory Testing in Pediatric Patients Undergoing Major Orthopedic Surgery**

This study was conducted to evaluate point of care testing (CoaguChek®) of coagulation parameters compared to standard laboratory results in patients undergoing posterior spinal fusion. INR values obtained from CoaguChek® showed moderate correlation (correlation coefficient of 0.69) with reference laboratory values. Based on the results of the current study, it is suggested that the CoaguChek® device can be clinically comparable to laboratory measurements, with the advantage of results being available within 1-3 minutes. **Hiroimi Kako, M.D., Vidya T. Raman, M.D., Joseph D. Tobias, M.D.;** Department of Anesthesiology & Pain Medicine, Nationwide Children's Hospital, Columbus, OH.

**PD A3201**

**In Children, Does the Use of Synera Patch for Local Analgesia before Vascular Access Reduce Pain Associated With Propofol Injection for Anesthesia Induction?**

The study is prospective, randomized and in children. Using a Synera Patch (SP) or vapocoolant spray (VS) to place an intravenous catheter, preoperatively reduced pain associated with propofol injection for anesthesia induction. 16% more patients in the SP group experienced no or mild pain; however, the difference between the two groups was insignificant. Local anesthetics in SP or VS can penetrate deep in tissues and anesthetize the underlying tissues and decrease pain associated with propofol injection. **Samia N. Khalil, M.D., Happy Eskander, M.D., Mohammed Ali, M.D., Emad Sorial, M.D., Leanne N. Foster, M.D., Tamara N. Norwood, M.D., Sudah Balan, M.D., Jael G. Carbajal, M.D., Srikanth Sridhar, M.D., Alice Z. Chuang, Ph.D.;** Anesthesiology, The University of Texas Medical School at Houston, Houston, TX.

**PD A3202**

**Nuss Procedure: Clinical Options for Postoperative Pain Management**

Repair of pectus excavatum using Nuss procedure is a commonly performed pediatric surgery, but it is associated with severe postoperative pain. Two modalities used for pain management include thoracic epidural (TE) and patient controlled analgesia (PCA). Previous reports of their efficacy have been mixed. An alternative is continuous paravertebral blockade (PVB). PVB's efficacy has not been fully evaluated in pediatrics. A retrospective chart review was conducted comparing opioid consumption between all three modalities. Results show no difference in postoperative opioid consumption between PVB and TE. TE was superior to PCA on days 1 and 2. TE and PVB were superior to PCA on day 1. A prospective trial comparing these techniques is necessary to confirm these results. **Ralph J. Beltran, MD;** Anesthesiology, Nationwide Children's Hospital, Columbus, OH.

**PD A3203**

**Risk Communication and Consent for Paediatric Epidurals & Caudals: A Survey of Practice**

A web-based survey of member anesthesiologists of APAGBI was conducted to elicit the risks/ complications of epidural and caudal anesthesia routinely disclosed, knowledge of incidence of risks/ complications and anesthesiologists' perception of the factors affecting the process of informed consent. Complications and the corresponding incidences discussed were varied among the respondents and in 75% correlated reasonably with published literature. Parents refused an epidural/caudal less than 10% of the time and this was thought to be mostly due to previous bad personal experience and fear of nerve damage. **Sindu Balakrishnan, M.D., Jamuna Navaratnarajah, F.R.C.A., Clyde Matava, M.B.Ch.B.;** Anesthesia and Pain Medicine, Hospital for Sick Children, Toronto, ON, Canada, Anesthesia, Great Ormond Street Hospital, London, United Kingdom.



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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**PD A3204**

**Heart Rate Changes During Caudal Block In Children After Ultrasound Confirmation of Intrasacral Placement**

Heart Rate has been suggested as a predictor of Successful intra-caudal canal injection. Using ultrasound as a test for confirmatory placement, we prospectively recorded heart rate changes following local anesthetic injection. We found no clinically significant correlation between success of caudal injection and heart rate change and therefore recommend that ultrasound be used while performing these blocks. **Adam C. Adler, M.D., M.S., Donald Schwartz, M.D., Annemarie Begley, R.N., Jennifer Friderici, M.S., Neil R. Connelly, M.D.;** Anesthesiology and Pain Medicine, Epidemiology, Baystate Medical Center, Springfield, MA.

**PD A3205**

**Institutional Audit Regarding the Use of Intravenous Acetaminophen in Patients Undergoing Open Pyloromyotomy**

We undertook an institutional audit of the use of intravenous acetaminophen in patients undergoing open pyloromyotomy during 2013-2014. The use of intravenous acetaminophen was not associated with adverse effects and demonstrated low FLACC scores in the PACU when given in combination with local infiltration. **Arlyne K. Thung, M.D., Brian Schloss, M.D., Tarun Bhalla, M.D., Joseph Tobias, M.D.;** Pediatric Anesthesiology, Nationwide Children's Hospital, Columbus, OH.



**PD A3206**

**Effects of Dexmedetomidine and Fentanyl on Emergence Delirium after Sevoflurane Anesthesia in Children**

Dexmedetomidine 2 µg/kg administered as a single intravenous loading dose before anesthesia induction reduced the incidence and severity of emergence delirium, but delayed recovery compared to fentanyl 2 µg/kg in children undergoing adenotonsillectomy under sevoflurane anesthesia. Especially, fentanyl 2 µg/kg did not provide any clinically significant benefit on emergence delirium compared to normal saline. **Jung Young Yoo, M.D., Byung Gun Lim, M.D., Ph.D., Yu Jin Jeong, M.D., Sung Wook Kang, M.D., Myoung Hoon Kong, M.D., Ph.D., Mi Kyoung Lee, M.D., Ph.D., Il Ok Lee, M.D., Ph.D.;** Department of Anesthesiology and Pain Medicine, Korea University Guro Hospital, Seoul, Korea, Republic of.

**PD A3207**

**Surgery Under Regional Anesthesia in Awake Children : Interest of 3D Video Distraction**

Pilot study evaluating the feasibility of surgery under regional anesthesia in awake children watching a movie through a 3D helmet. **Sonia Delaporte Cerceau, M.D., Mickael Gasior, M.D., Nada Sabourdin, M.D., Veronique Piat, M.D., Malika Omarjee, M.D., Isabelle Constant, M.D., PH.D.;** Hopital Armand Trousseau, Paris, France.

**PD A3208**

**A Novel Ultrasound-Guided Extrathoracic Sub-Paraspinal Block Utilizing Multi-Perforated Soaker Catheters for Control of Perioperative Pain: A Cadaveric Study and a Prospective Randomized Pilot Project in Nuss Patients**

Anatomic basis for a novel ultrasound-guided sub-paraspinal block utilizing soaker catheters was evaluated in a cadaveric study. It demonstrated multilevel dye spread along the intercostal nerve path with a potential paravertebral route along the dorsal ramus canal of the thoracic nerve. Next, the technique's effectiveness was compared against PCA in a randomized group of Nuss patients. Results suggested decrease in the post-operative opioid requirement and better functional status in the treatment group. **Robert B. Bryskin, M.D., Daniel K. Robie, M.D., F.A.C.S., Frederick M. Mansfield, M.D., Eugene B. Freid, M.D., Siam Sukumvanich, M.D.;** Anesthesiology, Pediatric Surgery, Nemours Childrens Clinic, Jacksonville, FL, Anesthesiology, JLR Medical Group, Orlando, FL, Mayo School of Graduate Education, Jacksonville, FL.

**PD A3209**

**A Retrospective Review of the PRAN (Pediatric Regional Anesthesia Network) Database for Regional Anesthetics Performed in the Neonatal Population**

Regional anesthesia in neonates is safe with a low rate of complications as shown by the analysis of the data regarding the regional anesthetic performed on the neonates obtained from PRAN database. We advocate for the increased use of regional anesthetic techniques in the neonates, based on the safety profile and the increasing proficiency amongst providers. These techniques can be used in neonates to effectively provide perioperative analgesia and possibly reduce exposure to opioids and volatile anesthetic agents. **Anita S. Joselyn, M.D., David P. Martin, M.D., Bruno Bissonnette, M.D., Joseph Tobias, M.D., Tarun Bhalla, M.D.;** Anesthesiology, Nationwide Childrens Hospital, Columbus, OH.

**PD A3210**

**Impact of Regional Anesthesia on the Recovery of Children Undergoing Outpatient Shoulder Arthroscopy and ACL Repair**

We retrospectively reviewed all cases of shoulder arthroscopy and arthroscopic ACL repair performed at our pediatric outpatient surgical center between December 2010 and September 2012. We identified 46 (8 GA vs. 38 GA/PNB) patients undergoing shoulder arthroscopy and 81 (28 GA vs. 53 GA/PNB) patients undergoing arthroscopic ACL repair. Our results show a clear economic advantage of RA in patients undergoing shoulder arthroscopy, but the immediate economic benefits for patients undergoing arthroscopic ACL repair are less clear. **Renee M. Heng, M.D., Robert B. Bryskin, M.D., Rebekah Wheatley, M.D.;** Pediatric Anesthesiology, Anesthesiology, Nemours Children's Clinic, Jacksonville, FL.

**PD A3211**

**Multimodal Versus Single Agent Analgesia for Pediatric Myringotomy and Pressure Equalization Tube Insertion**

The aim of this study is to compare analgesic efficacy and discharge efficiency of ketorolac as a single agent, fentanyl as a single agent, and ketorolac and fentanyl combined in children undergoing pediatric myringotomy and pressure equalization tube placement. In this retrospective evaluation of 3,290 cases over an eleven month period, the combination of intraoperative ketorolac and fentanyl was associated with significantly lower pain scores and a lower frequency of oxycodone administration in the PACU. This multimodal analgesic regimen was not associated with longer times to discharge readiness. **Yue M. Li, M.D., Paul A. Stricker, M.D., Ellen C. Jantzen, M.D., Ronald Litman, D.O., Scott D. Cook-Sather, M.D., Lynne G. Maxwell, M.D.;** The Department of Anesthesiology and Critical Care Medicine, The Children's Hospital of Philadelphia, Philadelphia, PA.



**PD A3212**

**A Qualitative Study of Ethnic Disparities in Children's Postoperative Pain Management**

Hispanic/Latino parents of low SES identified barriers to management of children's postoperative pain relating to the parent-child dyad, family, health care providers, and the healthcare system. Reducing ethnic disparities in children's pain management will involve addressing these barriers through development of tailored interventions. **Sheeva Zolghadr, B.S., Robert S. Stevenson, B.A., Suzanne L. Strom, M.D., Michelle A. Fortier, Ph.D., Zeev N. Kain, M.D., M.B.A.;** University of California, Irvine, Orange, CA, University of California Medical Center Irvine, Orange, CA.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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### PD A3213

#### Pre-op Tylenol May Increase Emergence Agitation in Children Undergoing PE Tubes: a Randomized Controlled Trial

Emergence agitation (EA) occurs in up to 67% of patients undergoing sevoflurane anesthesia for bilateral myringotomy tube (BMT) placement. The goal of this study is to find a practical, non-invasive way to reduce emergence agitation in children without significant side effects. We hypothesize that when acetaminophen PO is given 60-120 minutes prior to emergence, therapeutic concentrations can be reached and decrease emergence agitation in pediatric patients undergoing myringotomy tube placement. Unexpectedly, our interim data analysis reveals that there may be worse PAED scores, implying that pre-op Tylenol PO may actually increase emergence agitation. Wendy H. Ren, M.D., Michelle L. Keese, M.D., Christine Trieu, M.D., Michelle M. Smith, M.D., Sarah Zacharia, M.S., Alisha West, M.D., Nina Shapiro, M.D., Swati N. Patel, M.D.; Anesthesiology, Pediatric Otolaryngology, UCLA, Los Angeles, CA.

### PO17-1 RESPIRATION-CLINICAL AND BASIC SCIENCE

10 a.m.-12 p.m. | Hall B1-Area A

### FA A3214

#### Post-operative Non-invasive Ventilation in Obese Patients: A Review and Meta-analysis

The use of non-invasive positive-pressure ventilation after immediate extubation may play an important role in postoperative management of morbidly obese patients who are treated with abdominal surgery. Michele Carron, M.D.; Department of Medicine, Anaesthesiology and Intensive Care, University of Padova, Padova, Italy.

### FA A3215

#### Capsaicin Reduces Hypoxia/Reoxygenation Induced Apoptosis in Rat Alveolar Type II Cell Line (RLE-6TN)

Our previous studies have testified that capsaicin can reduce lung ischemia reperfusion injury(LIRI) by activating transient receptor potential vanilloid 1(TRPV1) expressing on sensory nerves in vivo. Apoptosis of alveolar epithelial cells often occur in LIRI. It is not known whether the protective effect of capsaicin on lung injury is related to apoptotic inhibition of alveolar epithelial cells. This study investigated the effect of capsaicin on hypoxia/reoxygenation induced apoptosis in rat RLE-6TN cell line (alveolar type II cells). Treatment with capsaicin reduced hypoxia/reoxygenation-induced apoptosis of RLE-6TN cells and decreased the mRNA expressions of caspase 3 and caspase 9. The results suggest that capsaicin suppresses the apoptosis probably via the inhibition of mitochondrial death pathway. Rurong Wang, M.D., Yi Xu, M.D., Xuehan Li, M.D.; Anesthesiology, West China Hospital, Chengdu, China.

### FA A3216

#### Obstructive Sleep Apnea Syndrome and Airway Resistance following Robotic Radical Prostatectomy

Robotic prostatectomies are performed in steep Trendelenburg position. This position can lead to edema of the upper airway and compromise lung function. In particular, patients with OSAS might be at risk. Therefore, 18 patients with OSAS, underwent spirometric measurements. Postoperatively, airway resistance increased following robotic prostatectomy. On the one hand, upper airway resistance increased and improved to preoperative conditions within 24 hs. On the other hand FEV1 and VC were reduced and recovered only partially up to the 5. day. Harold T. Groeben, M.D., Wiebke Köhne, M.D., Violeta Brunkhorst, M.D., Andre Börgers, M.D., Michael Musch, M.D., Darko Kröpfl, M.D.; Klinik für Anästhesiologie, Klinik für Urologie, Kliniken Essen-Mitte, Essen, Germany.

### FA A3217

#### Flumazenil With Pre-administered Picrotoxin, Not by Itself, Nor With Bicuculline, Caused Marked Excitation in the Diazepam-induced Hypoglossal Nerve Inhibition in Anesthetized Rabbits

We investigated how picrotoxin and bicuculline, non- and competitive GABA antagonist; and Bz antagonist flumazenil affect diazepam-induced hypoglossal inhibition. Flumazenil with pre-injected picrotoxin induced marked excitation going up to 50 % over the control. Shinichi Nakamura, M.D., Ph.D., Masahiko Suzuki, Ph.D., Masaaki Nishida, M.D., Ph.D., Kimie Terayama, M.D., Kazuhisa Terao, M.D., Tsutomu Mieda, M.D., Takeru Arai, M.D., Ph.D., Hiroshi Nagasaka, M.D., Ph.D., Nobuyuki Matsumoto, M.D., Ph.D., Akira Kitamura, M.D., Ph.D.; Anesthesia, JA Kumagaya General Hospital, Kumagaya, Japan, Pharmacology, Saitama Medical University, Hidaka, Japan, Children's Hospital of Michigan, Rochester Hills, MI, Hanyu General Hospital, Hanyu, Japan, SMU International Medical Center, Hidaka, Japan, Dokkyo Koshigaya General Hospital, Koshigaya, Japan, Saitama Medical University, Moroyama, Japan.

### FA A3218

#### Adaptive Support Ventilation (ASV) Can Give Appropriate Ventilation to Patients with Various Respiratory Function After Cardiovascular Surgery

In an adaptive support ventilation (ASV), a physician adjusts only target minute volume. Our retrospective clinical study aims to find the validity of ventilation set by ASV in patient after cardiac surgery. Method : 76 patients ventilated with ASV after cardiovascular surgery in our hospital were classified into four groups according to preoperative respiratory function. The tidal volume (VT) which was automatically recorded during ventilation with ASV was compared among each groups. Result : The averages values of VT were within the range about 7.9-8.8 ml/kg and no significant difference was found between groups. Conclusions: The ASV seems appropriate in patients with various respiratory dysfunction. Yuiko Sashinami, M.D., Tatsuya Fuchigami, M.D., Ph.D., Yuiko Madanbashi, M.D., Koji Teruya, M.D., Manabu Kakinohana, M.D., Kazuhiro Sugahara, M.D., Ph.D.; Anesthesiology and ICM, University of the Ryukyus Faculty of Medicine, Okinawa, Japan.

### FA A3219

#### Effects of Positive End-Expiratory Pressure on Lung Compliance During Robot-Assisted Laparoscopic Radical Prostatectomy

We tried investigating the effects of positive end-expiratory pressure (PEEP) on lung compliance during robot-assisted laparoscopic radical prostatectomy (RALP). All patients underwent RALP in the Trendelenburg position with a pneumoperitoneum (RALPO), and were maintained on 5 cm H2O PEEP for 2 h after RALPO (RALP5). Patients were divided into two group with and without an additional recruitment maneuver, respectively. Esophageal pressure was used for lung compliance (Lc) and chest wall compliance (Cc). As a result, we found that Lc did not significantly change by PEEP, but Lc increased by the addition of a recruitment maneuver. PEEP increased the PaO2, it did not affect Lc. Naosuke Hori, M.D., Daizoh Satoh, M.D., Ph.D., Osamu Kudo, M.D., Izumi Kawagoe, M.D., Ph.D., Eiichi Inada, M.D., Ph.D.; Department of Anesthesiology and Pain Medicine, Juntendo University School of Medicine, Tokyo, Japan.

### FA A3220

#### Effects of Desflurane on the cAMP Concentration of the Sensitized Airway Smooth Muscle

Desflurane could increase the cAMP levels of the sensitized airway smooth muscle. The cAMP-mediated airway smooth muscle relaxation might be one mechanisms of the bronchodilator effect of desflurane. Jing Zhou, M.D., Ph.D., Sohshi Iwasaki, M.D., Ph.D., Ping Zhao, M.D., Ph.D., Michiaki Yamakage, M.D., Ph.D.; Shengjing Hospital, China Medical University, Shenyang, China, Sapporo Medical University, Sapporo, Japan.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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**FA A3221**

**Influence of Transtracheal Small Lumen Ventilation During Obstructed Upper Airway on the Lung Function in Pigs**

The present study investigates the effects of small lumen ventilation (SLV) using needle tracheotomy in porcine model of obstructed upper airway. SLV enables sufficient gas exchange but also may provoke serious pulmonary injury. Alexander Ziebart, Resident, Rainer Thomas, Resident, Jens Kamuf, Resident, Andreas Garcia-Bardon, Resident, Arno Schad, Consultant, Bastian Duenges, Consultant, Matthias David, Senior, Erik K. Hartmann, Resident; Department of Anaesthesiology, Institute of Pathology, Medical Center of the Johannes Gutenberg-University, Mainz, Germany.



**FA A3222**

**Obesity, Acute Respiratory Distress Syndrome and Acute Lung Injury: What about Plateau Pressure?**

During mechanical ventilation, plateau pressure is commonly monitored. A value less than 30 cmH2O is widely accepted as secure. Body mass index affects plateau pressure and the threshold should be adjusted accordingly. We describe the relationship between Body Mass Index and Plateau Pressure. Sebastian R. Gatica, M.D., Myrna I. Morales-Franqui, M.D., Hector M. Torres, M.D., Hector F. Casiano-Pagan, M.D., B.S.; Anesthesiology, University of Puerto Rico, San Juan, PR.

**FA A3223**

**A Rat Model of Phrenic Motor Inhibition After Upper Abdominal Surgery**

In this study, we characterized phrenic motor output and respiratory phenotypes in a rat model of upper abdominal surgery to evaluate its relevance to human pathophysiology. Upper abdominal surgery modified several parameters of phrenic motor neural activity in rats, suggesting inhibition of phrenic motor output. Characterization of respiratory phenotypes, including phrenic motor activity, in the rodent model of upper abdominal surgery will provide a foundation for future studies that aim to understand the mechanisms producing respiratory dysfunction by surgical injury. Sinyoung Kang, M.D., Ph.D., Won Seok Chae, M.D., Timothy Brennan, M.D., Ph.D.; University of Iowa Hospitals and Clinics Dept of Anesthesia, Iowa City, IA, University of Iowa, Iowa City, IA.

**FA A3224**

**Anesthetic Management of Patients Undergoing Right Lung Surgery After Left Upper Lobectomy; Selection of Tubes for One-lung Ventilation (OLV) and Oxygenation During OLV**

Anesthesia in patients undergoing right lung surgery after left upper lobectomy (LULobectomy) requires special caution, since kinking of the left main bronchus can hamper correct placement of the left-sided double-lumen tube, and one lung ventilation depending only on the remaining left lower lobe can impair oxygenation. Izumi Kawagoe, M.D., Masakazu Hayashida, M.D., Kenji Suzuki, M.D., Yoshitaka Kitamura, M.D., Shiaki Oh, M.D., Daizoh Satoh, M.D., Eiichi Inada, M.D.; Juntendo University, Tokyo, Japan.

**FA A3225**

**Effect of Position Change on Tidal Volumes During Pressure-Controlled Ventilation**

During pressure-controlled ventilation, head-up tilt position improves tidal volume in obese patients in proportion to body mass index but not in non-obese patients. The decrease ratio of tidal volume during head-down tilt position is correlated with the body mass index. Hisanori Yogo, M.D., Takao Shimajiri, M.D., Taiichi Shinzato, M.D., Taizo Fujimura, M.D., Miyoka Yamakoshi, M.D., Shiroh Isono, M.D., Ph.D.; Tomishiro Central Hospital, Tomigusuku, Japan, Graduate School of Medicine, Chiba University, Chiba, Japan.

**FA A3226**

**Submental Negative Pressure Application Improves Collapsibility of the Passive Pharyngeal Airway**

This is the first study testing and demonstrating that application of negative external pressure to the submental region improves collapsibility of the passive pharynx in anesthetized adult persons. The positive responses were only observed in non-obese persons, not in obese persons. Shinichiro Kato, M.D., Shiroh Isono, M.D., Megumi Amemiya, M.D., Shin Sato, M.D., Aya Ikeda, M.D., Junko Okazaki, M.D., Yumi Sato, M.D., Teruhiko Ishikawa, M.D.; Anesthesiology, Kimitsu Chuo Hospital, Chiba, Japan, Chiba University Graduate School, Chiba, Japan, Anesthesiology, Chiba University Hospital, Chiba, Japan.

**FA A3227**

**The Interaction Between WISP1/Integrin and TLR Pathway in Inflammation**

The present study demonstrated the WISP1-integrin ligation modulated TLR agonist in macrophages inflammatory reaction. WISP1-Integrin signaling synergizes TLRs activation triggered cytokine secretion. On the other hand, TLRs signaling up-regulate integrins expression which may activate WISP1 pathway and forms a positive loop for cytokine release. Quan Li, M.D., Zhixia Chen, M.D., Guoqiang Chen, M.D., Li ming Zhang, M.D., Timothy R. Billiar, M.D.; Anesthesiology, Shanghai East Hospital, Tongji University School of Medicine, Shanghai, China, Shanghai Tenth People's Hospital, Tongji University School of Medicine, Shanghai, China, University of Pittsburgh School of Medicine, Pittsburgh, PA.

**FA A3228**

**Comparison of the Alveolar Recruiting Effect Between Non-invasive Mechanical Ventilation and Optiflow®**

Non-invasive mechanical ventilation (NIV) and nasal-high flow therapy delivered by Optiflow® system are 2 current modalities of ventilator support when postoperative acute respiratory failure (PARF) occurs after cardiac or thoracic surgery. The alveolar recruiting effect of NIV compared to Optiflow® is higher but the difference did not reach the statistical significance in an ultrasound assessment study of the lung aeration before and after 1 hour of ventilatory support. Guillaume Besch, Sr., M.D., Yoann Barrande, M.D., Benoit Barrucand, M.D., David Ferreira, M.D., Emmanuel Samain, M.D., Ph.D., François Stéphan, M.D., Ph.D., Sébastien Pili-Floury, M.D., Ph.D.; Anesthesia and Intensive Care, CHRU Besançon, Besançon, France, Marie Lannelongue Hospital, Le Plessis, France.

**FA A3229**

**Up-regulations of RhoA and CPI-17 in Lungs with Ischemia-reperfusion Injury in Rat**

RhoA and CPI-17 are involved in rat lung ischemia-reperfusion injury. Motohiko Hanazaki, M.D., Ph.D., Hiroshi Katayama, M.D., Ph.D., Hideki Nakatsuka, M.D., Ph.D., Yoshihisa Fujita, M.D., Ph.D., Yoshihiko Chiba, Ph.D.; Anesthesiology and ICM, Department of Biology, Kawasaki Medical School, Okayama, Japan, Hoshi University, Tokyo, Japan.

**P004-3 CLINICAL CIRCULATION: PHYSIOLOGY/PHARMACOLOGY 1-3 p.m. | Hall B1-Area E**

**CA A3230**

**Dexamethasone Can NOT Prevent the Mesenteric Traction Syndrome, But It May Modify the Hemodynamic Instability**

We tried validating whether dexamethasone for the prophylaxis of PONV could prevent the mesenteric traction syndrome (MTS). To achieve this purpose, we measured the systemic vascular resistance index continuously with a FloTrac™ sensor. As a result, we found that 6.6mg of dexamethasone could NOT prevent MTS and even PONV neither. However, it might modify the hemodynamic instability induced with MTS dose dependently. Motoshi Takada, M.D., Ph.D., Tomohiro Ohsaki, M.D., Yuki Uematsu, M.D., Chieko Taruishi, M.D., Tomoko Sudani, M.D., Akira Suzuki, M.D., Ph.D., Hiroki Iida, M.D., Ph.D., Daiyukai Gen Hosp Anes Dept, Ichinomiya, Japan, Gifu Graduate School of Medicine, Department of Anesthesiology and Pain Medicine, Gifu, Japan.

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**CA A3231****Effects of Vascular Occlusion on Hemodynamics and Supply-Demand Balance of Oxygen During Major Hepatobiliary Surgery**

In this prospective, observational study, we found significant decrease of CI, CVP and increase of SVV after the secession of Pringle maneuver. Our findings suggest that the change of venous return caused by declamping is responsible to the results. Yoshifumi Kotake, M.D., Ph.D., Hiroki Kimura, M.D., Daisuke Toyoda, M.D., Shigeo Shinoda, M.D., Yuichi Maki, M.D., Keiko Tomichi, M.D., Jun Onodera, M.D.; Anesthesiology, Toho University Ohashi Medical Center, Anesthesia, Toho University Medical Center, Ohashi Hospital, Meguro-ku, Tokyo, Japan.

**CA A3232****Correlations Between Dose of Adrenergic Receptor Antagonists and Predictors in Pheochromocytoma Resection**

A short acting alpha- and/or beta-blocker are administered to regulate hemodynamics during resection of pheochromocytoma, However, the correlations between dose of these drugs during resection of pheochromocytoma and preoperative predictors are still unclear. In this study, we investigated these correlations retrospectively. Thirty-four patients were enrolled in this study. Levels of urinary catecholamine metabolites more than 3 times of the normal upper limit are risk factors for hemodynamic instability during resection of pheochromocytoma, though the correlations between levels of urinary catecholamine metabolites and dose of alpha and/or beta blockers required for regulating hemodynamics are low. Yuki Sugiyama, M.D., Susumu Ide, M.D., Satoshi Tanaka, M.D., Mikito Kawamata, M.D.; Anesthesiology and Resuscitology, Shinshu University School of Medicine, Matsumoto, Japan.

**CA A3233****The Association Between Ocular Blood Flow Measured by Laser Speckle Flowgraphy During Aortic Arch Surgery With Selective Cerebral Perfusion and Postoperative Cerebral Complication**

Ocular circulation measured by laser speckle flowgraphy is applicable for aortic arch surgery using selective cerebral perfusion. However, the result of this preliminary study cannot conclude the association between ocular circulation and cerebral complication. Hironobu Hayashi, M.D., Masahiro Okamoto, M.D., Hideaki Kawanishi, Graduate, Toyoaki Matsuura, M.D., Masahiko Kawaguchi, M.D.; Anesthesiology, Nara Medical University, Ophthalmology, Nara Medical University, Kashihara, Nara, Japan.

**CA A3234****Effects of Hydroxyethyl Starch 130/0.4 (6%) on Microcirculation and Central Venous Oxygen Saturation in a Hemorrhagic Shock**

We studied the effects of hydroxyethyl starch (HES) on the microcirculation and central venous oxygen saturation (ScvO2) in a rabbit model of hemorrhagic shock. An ear chamber was used to examine blood vessels by intravital microscopy. Shock was induced by removing nearly half of the circulating blood volume. After fluid infusion, the recovery of arteriolar diameter, blood flow velocity, and blood flow rate was significantly better in the HES group than in the lactated Ringer's solution (LR) group (P<0.005). ScvO2 after completing infusion was significantly greater in the HES group than in the LR group (P<0.005). Intravenous infusion of HES thus effectively maintains the micro and macro circulation in hemorrhagic shock. Makiko Komori, M.D., Goro Kaneko, M.D., Yoriko Sone, M.D., Mitsuharu Kodaka, M.D., Keiko Nishiyama, M.D., Yasuko Tomizawa, M.D.; Anesthesiology, Medical Center East, Tokyo Women's Medical University, Tokyo, Japan.

**CA A3235****Medication Utilization Evaluation of Intraoperative Albumin Use**

A P and T committee undertook a medication utilization review of intra-op albumin use. 35 of 195 cases met published recommendations. 51 were for neurosurgery (including spine) procedures where starches were avoided, 5 for free flaps where vasopressor use was restricted, 7 were bowel cases with limitation of crystalloids and 4 were burn cases. The remaining 89 (56%) did not have an apparent indication for colloid apart from hypotension/hypovolemia. More than half of these had < 1l crystalloid or minimal/no vasopressor use prior to albumin. This description of albumin use in a large academic institution shows use beyond current recommendations. Evan G. Pivalizza, M.D., Jigna G. Patel, Pharm D, Carlos A. Artime, M.D., Semhar J. Ghebremichael, M.D., Katherine C. Normand, M.D.; Anesthesiology, University of Texas, Pharmacy, Memorial Hermann Hospital, Houston, TX.

**CA A3236****Extravascular Lung Water and Pulmonary Vascular Permeability Index Measured at the End of Surgery Are Predictors of Prolonged Mechanical Ventilation in Patients Undergoing Liver Transplantation**

We've studied the usefulness of hemodynamic status measured by termodilution transpulmonary at the end of orthotopic liver transplantation to predict prolonged mechanical ventilation after this surgery. We've seen that high pulmonary capillary permeability index at the end of surgery, reflecting injury of capillary permeability, is related with bad postoperative outcome. Ignacio Garutti, SrPh.D., M.D., Luis Olmedilla, Ph.D., M.D., Javier Sanz, Ph.D., Itziar Tranchet, Ph.D., Jose M. Perez-Peña, Ph.D., M.D., Almudena Vilchez, Ph.D., Anesthesia Department, Hospital Gregorio Marañón Madrid, Madrid, Spain.

**CA A3237****The Interaction of Opioid with TCI-propofol on QT Interval During Anesthetic Induction**

The effect of the interaction between propofol and opioids on QTc interval during anesthetic induction remains still unknown. The aim of this study is to compare the effects on QTc interval among two doses of remifentanyl (RF) and fentanyl (F) during anesthetic induction using target controlled infusion (TCI) of propofol. In all groups, QTc interval shortened after anesthetic induction using TCI-propofol. Both fentanyl and remifentanyl could prevent the prolongation of QTc interval associated with tracheal intubation. In group RFO.25, suppression of hemodynamics were less than that other groups in TCI propofol anesthetic induction. Hironori Ishizaki, M.D., Ph.D., Yoshiaki Terao, M.D., Ph.D., Chicaco Tsuji, M.D., Satoshi Egashira, M.D., Makoto Fukusaki, M.D., Ph.D., Tetsuya Hara, M.D., Ph.D., Anesthesiology, Nagasaki Rosai Hospital, Sasebo, Japan, Anesthesiology, Nagasaki University School of Medicine, Nagasaki, Japan.

**CA A3238****Modified Ultrafiltration in Pediatric Cardiac Surgery Does Not Always Improve Whole Blood Coagulation**

Whole blood coagulation was examined using ROTEM before and after modified ultrafiltration (MUF) in pediatric cardiac surgery. MUF was effective for hemoconcentration because hemoglobin and fibrinogen levels increased after MUF. However, platelet count decreased significantly after MUF. ROTEM study indicated decreased clot firmness after MUF. MUF may attenuate whole blood coagulation in pediatric cardiac surgery. Nobuyuki Katori, M.D., Masaaki Sato, M.D., Kimiaki Ai, M.D., Hiroshi Morisaki, M.D., Ph.D., Anesthesiology, Keio University, Tokyo, Japan.

**CA A3239****The mechanism of Increased Oxygen Consumption after Liver Transplantation**

The mechanism of increased oxygen consumption after reperfusion is unknown; however, this increased oxygen consumption might not be associated with oxidative stress, but instead with endothelial cell injury. Takashi Matsusaki, M.D., Ph.D., Mari Shibata, M.D., Ryuji Kaku, M.D., Hiroshi Morimatsu, M.D.; Okayama University Hospital, Okayama, Japan.

**CA A3240****Desflurane Preserves Blood Pressure During Anesthetic Induction Better Than Does Aevoflurane Due to Differential Effects on Autonomic Nervous System Evaluated by Heart Rate Variability**

Differential effects of desflurane and sevoflurane on the autonomic nervous system (ANS) might be involved in the differential hemodynamic status. According to analysis of heart rate variability, which is noninvasive and widely used to measure ANS activity, desflurane activates sympathetic activity and attenuates parasympathetic activity. These effects of desflurane preserve mean blood pressure at approximately 15 mmHg during anesthetic induction. Shunsuke Tachibana, M.D., Daisuke Maruyama, M.D., Naoyuki Hirata, M.D., Ph.D., Michiaki Yamakage, M.D., Ph.D.; Sapporo Medical University, Sapporo, Japan.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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**CA A3241**

**Photoplethysmographic Delineation of Arterial and Venous Volume Responses to Release of Lower Body Negative Pressure (LBNP)**

Newly developed means of comparing the AC & DC components of the PPG independent of signal attenuation enabled delineation of the arterial and venous changes during recovery of the lower body negative pressure (LBNP). Vicki Zhu Jun Bing, B.S., I-Hsun Liang, M.D., Siqin Nie, M.D., Aymen A. Alian, M.B.,B.Ch, M.D., Kirk H. Shelley, M.D., Ph.D., Nina Stachenfeld, Ph.D., David G. Silverman, M.D.; Anesthesiology, The John B. Pierce Laboratory – Physiology, Yale University School of Medicine, New Haven, CT, Anesthesiology, First Affiliated Hospital of Guangzhou University of Chinese Medicine, Guangzhou, China.

**CA A3242**

**Swimming-Induced Pulmonary Edema (SIPE) Is Due to Augmented Immersion-Related Preload and Reduced LV Compliance**

The pathophysiology of immersion pulmonary edema (swimming-induced pulmonary edema, SIPE), which occurs in healthy swimmers or divers is unknown, is unknown but probably caused by high pulmonary vascular pressures. In this study 13 healthy SIPE-susceptible individuals and 40 controls were studied using trans-thoracic echocardiography in the dry and immersed in 20°C water at rest and during moderate exercise. The results suggest that SIPE is a form of hemodynamic pulmonary edema, caused by abnormal LV diastolic properties. Richard E. Moon, M.D., Stefanie D. Martina, B.S., John J. Freiburger, M.D., Michael J. Natoli, B.S., Eric A. Schinazi, Alicia Armour, Jose Rivera, Joseph A. Kisslo, M.D.; Anesthesiology, Medicine, Duke University Medical Center, Durham, NC.

**CA A3243**

**Analysis of Muller, Valsalva, and Incentive Spirometry Breathing Patterns on Peripheral Venous Pressure**

This investigation documents the impact of different breathing patterns (Muller maneuver, Valsalva and Incentive Spirometry) on the peripheral venous pressure (PVP) waveform (as measured via transducer from a hand catheter). The findings suggest a potentially valuable role for PVP in the assessment of volume changes. Lila R. Baaklini, M.D., Aymen A. Alian, M.B.,B.Ch, M.D., Lee P. Hingula, M.D., Adam J. Shelley, M.S., Kirk H. Shelley, M.D., Ph.D., David G. Silverman, M.D.; Anesthesiology, Yale University School of Medicine, New Haven, CT.

**CA A3244**

**Stroke Volume Variation and Stroke Volume Index: Are Both Valid in Open Chest Surgery With One-Lung Ventilation?**

A prospective study to analyse the changes that one lung ventilation can produce over the parameters recommended for hemodynamic optimization: stroke volume variation and systolic volume index. Patricia Piñeiro, M.D., Ignacio Garutti, M.D., Francisco De La Gala, Ph.D., Almudena Reyes Fierro, M.D., Javier Casanova, M.D., Ph.D., María Lema, M.D., Gloria Hernández, M.D., Marcos Alvarez, M.D., Luis Olmedilla, M.D., Ph.D., María Teresa López Gil, M.D., Ph.D., Anesthesiology, Hospital General Universitario Gregorio Marañón, Madrid, Spain.

**PO06-2 CRITICAL CARE  
1-3 p.m. | Hall B1-Area D**

**CC A3245**

**Effects of Dexmedetomidine in Critical Patients With Severe Acute Heart Failure**

In the present study, the sedation of dexmedetomidine (DEX) maintained cardiac index and venous oxygen saturation, and decreased heart rate and pulmonary arterial pressure in critical 36 patients with severe acute heart failure (AHF). These findings suggest that the sedation of DEX has beneficial effects in critical patients with severe AHF. Takumi Taniguchi, M.D., Ph.D., Akihide Kurita, M.D., Ph.D., Takashi Yamamoto, M.D.; Anesthesiology and Intensive Care Medicine, Intensive Care Unit, Kanazawa University, Kanazawa, Japan.

**CC A3246**

**Relationship Between Hyponatremia, Delta-Na and Complications in Patients Undergoing Liver Transplantation (LT)**

Hyponatremia occurs in 11.5% of patients undergoing LT. Hyponatremia is associated with increased mortality, lower survival and higher probability of pontine myelinolysis. Rafael P. Leal-Villalpando, M.D., Anabel Ascencio, M.D., Jorge Zamudio-Bautista, M.D., Alan G. Contreras, M.D., Graciela Castro-Narro, M.D., Mario Vilatoba-Chapa, M.D.; Anesthesiology, Instituto Nacional de la Nutrición Salvador Zubiran, Mexico City, Mexico, Anesthesiology, Surgery, Gastroenterology, INCMNSZ, Vasco de Quiroga 1, Col Secc XVI, Delg Tlalpan, Mexico.

**CC A3247**

**A Case of Persistent Severe Lactic Acidosis and Hypoglycemia**

This case report illustrates a case of persistent severe lactic acidosis and hypoglycemia secondary to Burkitt type lymphoma. Pathophysiology of this process is discussed along with the varying etiologies of lactic acidosis. Finally, the variability in presentation, diagnosis and treatment of Burkitt lymphoma are covered. Aaron B. Dahl, M.D., Eyad Almasri, M.D., Haifaa Abdulhaq, M.D.; Anesthesiology, Virginia Mason, Seattle, WA, Pulmonary/Critical Care Medicine, Hematology/Oncology, UCSF Fresno, Fresno, CA .

**CC A3248**

**Incidence of Hyperfibrinolysis Following Reperfusion of the Graft in Liver Transplant**

This is a retrospective review to assess the incidence of hyperfibrinolysis following reperfusion of the newly transplanted liver, along with differences between DCD vs BDD livers. Excessive hemorrhage may accompany hyperfibrinolysis when it occurs and amounts of blood product transfusion and inversely correlates with survival. DCD livers are more prone to reperfusion injury and delayed return of function which may account for the higher incidence of hyperfibrinolysis in that group compared to BDD livers. Laura L. Hammel, M.D.; Anesthesiology and Critical Care, University of Wisconsin Hospitals and Clinics, Madison, WI.

**CC A3249**

**Outcomes of Patients Supported by ECMO for Refractory Cardiogenic Shock and Cardiac Arrest: A Single Center 2 Years Experience**

Despite current advances in medicine, cardiogenic shock and cardiac arrest remain the leading cause of death. In these cases, ECMO appears to be a promising alternative treatment. Clement Delmas, M.D., M.S., Simon Sztajnic, M.D., Jean Marie Conil, M.D., Ph.D., Pierre Cougot, M.D., Bernard Georges, M.D., Ph.D., Béatrice Riu, M.D., Bertrand Marcheix, M.D., Ph.D., Etienne Grunenwald, M.D., Michel Galinier, M.D., Ph.D., Olivier Fourcade, M.D., Ph.D.; Réanimation polyvalente, CHU Toulouse, Rangueil, Service de Chirurgie Cardiaque, CHU Toulouse, Service de Cardiologie, CHU Toulouse, Pôle Anesthésie - Réanimation, CHU Toulouse, Toulouse, France.

**CC A3250**

**Temporal Changes in the Annual Rate of Postoperative Acute Respiratory Distress Syndrome**

In this investigation, we evaluated the annual rate of postoperative ARDS over a five-year interval among patients undergoing high-risk aortic vascular and non-cardiac thoracic surgery. The findings of this single-center study suggest that the rate of postoperative ARDS is on the decline. Despite this falling incidence, the impact of ARDS on patient important outcomes remains substantial. Puneeta Waghlikar, M.B.B.S., Fared Khawaja, M.B.B.S., Shihab Sugeir, M.D., Jonathan Fox, M.D., Juan Pulido, M.D., Michael J. Brown, M.D., Gregory Wilson, RRT, Melissa Passe, RRT, Daryl Kor, M.D.; Anesthesiology, Mayo Clinic, Rochester, MN.

**CC A3251**

**Preliminary Evaluation of an In-Hospital Non-Invasive Continuous Blood Glucose Monitor After Major Surgery**

Preliminary data on a novel non-invasive glucose sensor showed a bias of 9 mg/dL for a wide range of glucose levels. Marc C. Torjman, Ph.D., David J. Fish, M.D., Robyn Tarpley, M.S., Ashley Shapiro-DePalmo, B.A., Brittany Scarpato, B.S., Erin McIntosh, B.S., Ludmil V. Mitrev, M.D., Muhammad Muntazar, M.D.; Anesthesiology, Cooper University Hospital, Cooper Medical School of Rowan University, Camden, PA, Anesthesiology, Cooper University Hospital, Cooper Medical School of Rowan University, Camden, NJ.



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## CC A3252

### Stearoyllysophosphatidylcholine Prevents LPS-induced HMGB1 Release Through AMPK Activation

“Previous study showed that stearoyllysophosphatidylcholine(LPC), a major component of oxidized low-density lipoprotein, confers protection against lethal experimental partly by inhibiting endotoxin-induced release of HMGB1 in macrophages. In the present study, we investigated whether LPC could inhibit LPS-induced High-mobility group box 1(HMGB1) release through AMP activated protein kinase (AMPK) activation. Methods:Thioglycollate-induced mice peritoneal macrophages or RAW 264.7 cells were used in this experiment. Western blot analysis, ELISA for measurement of extracellular HMGB1, siRNA knock down of AMPK $\alpha$ 1, or confocal microscopy for imaging of cellular translocation of HMGB1 were used. **Soo Young Cho, M.D., Hong Beom Bae, M.D., Ph.D., Seong Wook Jeong, M.D., Ph.D., Seong Tae Jeong, M.D., Ph.D., Chonnam National University Medical School, Gwangju, Korea, Republic of.**

## CC A3253

### Effects of Continuous Octreotide Infusion on Intraoperative Transfusion Requirements During Orthotopic Liver Transplantation

In this limited retrospective review, we found that a continuous octreotide infusion did not significantly reduce the need for intraoperative transfusion of packed red blood cells during Orthotopic Liver Transplantation. **Scott Byram, M.D., Alok Gupta, M.D., Steven B. Edelman, M.D., Michael R. Ander, M.D., Brock D. Andreatta, M.D.; Loyola University Medical Center, Maywood, IL .**

## CC A3254

### WNT1 Inducible Signaling Pathway Protein 1 (WISP1) Production Is Not Dependent on Activation of Wnt/ $\beta$ -catenin Pathway in Response to Mechanical Stretch in Mice

Our study demonstrated that the production of WISP1 from lung airway epithelium does not support the activation of canonical Wnt/ $\beta$ -catenin pathway whereas the activation of non-canonical Wnt signaling pathway (Wnt5a-JNK pathway) seems involving in WISP1 production in VILI suggesting the potential important role of non-canonical Wnt signaling pathway in lung injury. Significance: Mechanistic investigation of WISP1 production will provide novel insight in understanding the molecular basis of WISP1 in VILI and thereby explore its potential as a diagnostic biomarker and therapeutic target to minimize VILI in humans. **Li-Ming Zhang, M.D.; Anesthesiology, University of Pittsburgh, Pittsburgh, PA.**

## CC A3255

### Observational Study of In-Hospital Cardiac Arrests Outcomes in Octogenarians

Four years study of all intra-hospital cardiac arrests in our institution in order to assess incidence and prognosis. We focus our analysis on octogenarians. More than 300 cardiac arrests were followed up to determine survival factors. **Philippe Burtin, M.D., Gautier Buzançais, M.D., Constantin Halchini, M.D., Christelle Charpentier, M.D., Patrick Courant, M.D., Michel Barral, M.D.; Anesthésie Réanimation, Clinique du Millénaire, Montpellier, France.**

## CC A3256

### Experimental Haemorrhagic Shock Coagulopathy and the Effect of Fibrinogen Administration

The administration of fibrinogen concentrate in experimental dilutional coagulopathy has shown promising results. In this study, we investigate the effect of pre transfusion loading with 100 mg/kg of fibrinogen. **Eric Noll, M.D., Michele Diana, M.D., Lelia Grunebaum, M.D., Julien Pottecher, M.D., Ph.D., Bernard Geny, M.D., Ph.D., Pierre Diemunsch, M.D., Ph.D., CHU Strasbourg, IRCAD, Laboratoire Hemostase CHU Hautepierre, Anesthesia & Intensive Care, CHU Hautepierre, EA 02, Strasbourg Medical Faculty, Strasbourg, France.**

## CC A3257

### Sonographic Imaging of Endotracheal Tubes and Supraglottic Airways

Real-time laryngo-tracheal ultrasonography may confirm correct placement of tracheal tubes or supraglottic airways in an emergency setting and low flow states but is limited by ultrasound scattering and artifacts generated in air-tissue interfaces of the cuffs. This study demonstrates that the replacement of air in cuffs with saline or saline with contrast agents enabled their detection and the visualization of the surrounding structures or tissues. **Jacek A. Wojtczak, M.D., Ph.D., Davide Cattano, M.D., Ph.D., Department of Anesthesiology, University of Rochester Medical Center, Rochester, NY, University of Texas Health Science Center Houston, Houston, TX .**

## CC A3258

### Protective Effects of Aspirin-triggered Resolvin D1 on Hepatic Ischemia-Reperfusion Injury

Using a model of hepatic ischemia-reperfusion injury(IRI), we found that aspirin-triggered resolvin D1(AT-RvD1) 1  $\mu$ g/kg reduce liver IRI. And AT-RvD1 also significantly decreased levels of peripheral pro-inflammatory cytokines, including interleukin (IL)-1 $\beta$ , IL-6, and tumor necrosis factor- $\beta$ . This suggests that AT-RvD1 pretreatment can be hepatoprotective against IR injury in rats. **Tao Zhang, MMed, Li-Ting Kuang, MMed, Wen-Qi Huang, MMed, Lu Yang, MMed; Department of Anesthesiology, The First Affiliated Hospital, Sun Yat-sen University, Guangzhou, China.**

## CC A3259

### Toll-like Receptors and Complement Factor B Interact to Orchestrate Acute Kidney Injury During Polymicrobial Sepsis

Toll-like receptors (TLRs) and complements are two important components of the host innate immunity. TLR3/4 activation induces complement factor B (cFB) production, a key component of the complement alternative pathway (AP), and leads to AP activation in renal tubular cell. cFB deficiency reduces tubular cell necrosis and preserves sodium transporter in the kidney. We conclude that cFB plays an important role in sepsis-induced acute kidney injury. **Dan Li, M.D., Lin Zou, M.D., Ph.D., Yan Feng, M.D., Ph.D., Yu Gong, Ph.D., Jiayan Cai, B.S., Wei Chao, M.D., Ph.D., Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital, Harvard Medical School, Boston, MA .**

## CC A3260

### Cardiac Complement Factor B Is Up-Regulated in Polymicrobial Sepsis via a TLR3-Dependent Mechanism

During sepsis, necrosis tissues or cells release large amounts of RNA. In current study, we found that RNA -TLR3 signaling lead to cFB upregulation in the heart, indicating a possible role of TLR3-cFB signaling in septic cardiac dysfunction. **Lin Zou, M.D., Ph.D., Yan Feng, M.D., Ph.D., Dan Li, M.D., Jiayan Cai, B.S., Wei Chao, M.D., Ph.D., Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital, Harvard Medical School, Boston, MA.**

## PO07-1 DRUG DISPOSITION, METABOLISM AND ELIMINATION 1-3 p.m. | Hall B1-Area A

## FA A3261

### TACR1 Gene Polymorphism Is Associated With Gender Difference in Postoperative Nausea and Vomiting

Postoperative nausea and vomiting (PONV) is a frequent complication after general anesthesia. Female gender is known to be a strong risk factor for PONV. Recently, neurokinin 1 (NK1) receptors has been shown to be involved in PONV. In the present study, we found a novel SNP, rs3755468, in the TACR1 gene that is associated with PONV. The mutation of rs3755468-SNP reduced the incidence and severity of PONV in female patients. These findings may help to elucidate mechanisms underlying the gender difference. **Tomo Hayase, M.D., Shigekazu Sugino, M.D., Ph.D., Shun-suke Tachibana, M.D., Michiaki Yamakage, M.D., Ph.D.; Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan.**



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**FA A3262****Impact of Closed-loop Propofol-Remifentanyl Anesthesia on Postoperative Nausea and Vomiting in Obese Adult Patients Undergoing Laparoscopic Bariatric Surgery**

The impact of closed-loop Propofol-Remifentanyl anesthesia on Postoperative Nausea and Vomiting in Obese Adult Patients undergoing Laparoscopic Bariatric Surgery was evaluated in a randomized controlled trial. **Ngai LIU, M.D., Ph.D., Alain Charneau, M.D., Jacques Floriant Letourneux, M.D., Philippe Leger, M.D., Pascale Lemedioni, M.D., Marc Fischler, M.D.;** Anesthesia, Hôpital Foch, Suresnes, France, Anesthesia and General Surgery, Baie des Citrons, Nouméa, New Caledonia.

**FA A3263****Train of Four Ratios Cannot Reflect Muscle Strength in Severe Myasthenia Gravis: An In Vitro Study in a Rat Model of Experimental Autoimmune Myasthenia Gravis**

We investigated train of four ratios (TOFR) on rocuronium-induced muscle relaxation of phrenic nerve-hemidiaphragm preparations dissected from a rat model experimental autoimmune myasthenia gravis (MG). With increase in the severity of MG, TOFR was significantly larger on rocuronium-induced muscle relaxation in a rat model of experimental autoimmune myasthenia gravis. This result suggests that muscle strength might be overestimated using TOFR as an indicator of recovery from neuromuscular blockade in severe MG patients. **Kazunobu Takahashi, M.D., Tomohisa Niiya, M.D., Ph.D., Eichi Narimatsu, M.D., Ph.D., Michiaki Yamakage, M.D., Ph.D.;** Department of Anesthesiology, Department of Traumatology and Critical Care Medicine, Sapporo Medical University School of Medicine, Sapporo, Japan.

**FA A3264****Effects of A118G  $\mu$  Opioid Receptor Polymorphism on Morphine-mediated Modulation of Ca<sup>2+</sup> Channels in Sensory Neurons Isolated From Cocaine Exposed A118G Mice**

A118G polymorphism causes alteration of the mu opioid receptor's morphine pharmacology. Although the experimental administration of cocaine did not show a significant difference in the same group, the impaired analgesic response with morphine may explain why carriers of this receptor variant have an increased susceptibility to opioid addiction. **Saifeldin A. Mahmoud, M.D., Ph.D., Victor Ruiz-Velasco, Ph.D.;** Anesthesiology Department, Hershey Medical Center, Penn State University, Hershey, PA.

**FA A3265****Combining Pressure Pain Threshold and Narcotrend Index to Determine Sufentanil-induced Analgesia in Surgery Patients**

Preoperative determining the effects of opioid analgesics would facilitate the choice of more effective postoperative pain treatment plans. It is necessary to establish a convenient, rapid and comprehensive approach to predict the effects of opioid analgesics. This study demonstrated that a novel detecting method combining PPT and NTI could conveniently, comprehensively, and quickly determine the analgesic and sedative effect of sufentanil in the operation Room before the induction of anesthesia. **Guangyou Duan, M.D., Shanna Guo, M.D., Huiming Zhan, M.Sc., Dongmei Qi, M.Sc., Yuhao Zhang, M.D., Xianwei Zhang, M.D.;** Department of Anesthesiology, Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China.

**FA A3266****Postoperative Pain Was Successfully Treated with 8 mcg/kg of Transitional Fentanyl Under High Dose Remifentanyl Induced Hyperalgesia**

The increased amount of transitional fentanyl (8 mcg/kg), not only less postoperative fentanyl consumption and the decreased VAS values were obtained, but also the extubation was possible under relative high estimated effect-site concentrations of fentanyl, suggesting high dose remifentanyl induced OIH. High dose remifentanyl anesthesia is useful for postoperative managements when anesthesiologists administer 8 mcg/kg transitional fentanyl. **Kyotaro Koshika, D.D.S., Ph.D., Miki Manabu, D.D.S., Jun Kawaguchi, D.D.S., Ph.D., Takashi Ouchi, M.D., Ph.D., Ryohei Serita, M.D., Ph.D., Toshiya Koitabashi, M.D., Ph.D.;** Tokyo Dental College Ichikawa General Hospital, Ichikawa, Japan, Japan Self Defense Forces Hospital Yokosuka, Yokosuka, Japan.

**FA A3267****Dose-Effect and Time-Effect of Isoflurane on Human Sperm Motility in Vitro**

Clinical concentration of isoflurane (1.4%~5.6%) can significantly improve human sperm motility in vitro. **Jie Chen, Master;** Department of Anesthesiology, Drum Tower Hospital, Medical College of Nanjing University, Nanjing, China.

**FA A3268****Randomized Double-Blind Multicenter Study of Oral Oxycodone versus Morphine for Postoperative Pain**

Oral oxycodone 10 mg every 6 hours was non-inferior to oral morphine 20 mg every 6 hours for postoperative pain control at 24 hours and both drugs had a similar safety profile. Adverse events were 29.91% in both groups. The mean consumption ratio between morphine and oxycodone was 38.74 to 18.90 mg for those with VAS < 70 mm (roughly 2:1) and 60 to 23.75 mg for those with VAS 70 mm and higher (about 2.5:1). **Xinmin Wu, M.D., Xue Zhanggang, M.D., Tian Ming, M.D., Dong Hailong, M.D., Ai Dengbin, M.D., Yao Chen, M.D.;** Anaesthesiology, Peking University First Hospital, Beijing, China, Zhongshan Hospital Fudan University, Shanghai, China, Capital Medical University, Beijing Friendship Hospital, Beijing, China, Xijing Hospital, First Affiliated Hospital th Military Medical University, Shaanxi, China, Qingdao Municipal Hospital, Shandong, China, Peking University Clinical Research Institute, Beijing, China.

**FA A3269****Comparison Between Two Syringes Changeovers Techniques: Quick-change Versus Smart-pump**

This study aims to compare in vitro two syringes changeovers techniques to determine those permitting to minimize the variations of noradrenaline delivery: the Quick-change and the Smart-pump techniques. Relays induce disturbances in drug delivery. The automated relay is associated with a better control of the amounts of administered noradrenaline than the manual technique. **Stéphanie Genay, Ph.D. Student, Sébastien Lédé, Nurse, Frédéric Feutry, Ph.D. Student, Christine Barthélémy, Pharm.D., Gilles Lebuffe, M.D., Bertrand Décaudin, Professor of Pharmacy, Pascal Odou, Professor of Pharmacy;** Department of Biopharmacy, Galenic and Hospital Pharmacy, University of Lille, Lille, France, CHRU De Lille, Lille Cedex, France.

**FA A3270****Preservation of Renal and Hepatic Function Despite Elevated Plasma Fluorides in Long-term Sevoflurane Sedation in ICU**

We conducted a clinical trial to assess safety in ICU patient in terms of renal and hepatic function despite plasma fluorides elevation in long-term sevoflurane sedation in ICU patient. In this abstract we present preliminary data that seem that long-term sedation with sevoflurane could be a safe alternative to intravenous midazolam. **Jaume Puig, M.D., Ana Rodríguez, Pharm.D., Estefanía Gracia, M.D., Andrea Gutiérrez, M.D., Irene León, M.D., Ph.D., Carlos Ferrando, M.D., Ph.D., Marina B. Soro, M.D., Ph.D., Arturo Carratala, Ph.D., Javier F. Belda Nacher, M.D., Ph.D.;** Anesthesiology and Intensive Care, Hospital Clínico Universitario, Valencia, Spain, Clinical Biochemistry Laboratory, Hospital Clínico Universitario, Valencia, Spain.

**FA A3271****Fetal/Maternal Ratio: What Does It Mean? A Study of Propofol Fetal Exposure in Fetal-maternal Sheep Model**

The fetal/maternal ratio of propofol concentration did not reflected fetal drug exposure. This ratio was significantly increased after stopping drug administration due to slower drug elimination in the fetus. It was useful for estimate fetal concentration from maternal concentration but it must be interpreted with caution. **Pornswan Ngamprasertwong, M.D., Min Dong, Ph.D., Jing Niu, M.D., Raja Venkatasubramanian, Ph.D., Fukuda Tsuyoshi, Ph.D., Alexander Vinks, Ph.D., Senthilkumar Sadhasivam, M.D.;** Anesthesia, Clinical Pharmacology, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, Anesthesia, Shanghai Children's Medical Center, Shanghai, China.



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OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain

### FA A3272

#### Assessment of Deposition of Atomized Solution via a Prototype LMA MADgic Laryngo-tracheal Mucosal Atomization Catheter for Use Through a Fiberoptic Bronchoscope

Effectiveness assessed using dispersal area and total medication deposition in the trachea, on the hypopharynx and vocal fold representations show the prototype atomization catheter to provide a greater area of drug deposition than direct injection via the bronchoscope in our in vitro model. **Goeto Dantes, Applied Physiology and Kinesiology, Nik Gravenstein, M.D.; Health and Human Performance, University of Florida, Gainesville, FL.**

### PO09-1 EXPERIMENTAL CIRCULATION

1-3 p.m. | Hall B1-Area C

### CA A3273

#### Effects of Epinephrine Exposure on Angiogenesis-Related Gene Expressions in Cultured Rat Cardiomyocytes

We used cultured cardiomyocytes to study the effects of epinephrine on the angiogenesis-related gene expressions. Results are epinephrine-induced upregulation of ANGPT2 and downregulation of Angiopoietin-2, NRG1, and SMOC2. The results suggest epinephrine exposure may inhibit angiogenic process, potentially devastating especially in ischemic myocardium. Whether these changes lead to the clinically adverse outcomes is not clear. **Henry Liu, M.D., Ming Chen, M.D., Ling Yu, M.D., Marcia B. Henry, Ph.D., Lisa Sangkum, M.D., Jiao Liu, M.D., Charles J. Fox, M.D., Alan D. Kaye, M.D., Ph.D., Frank A. Rosinia, M.D.; Tulane University Medical Center, Louisiana State University School of Medicine, New Orleans, LA, Hubei Women & Children's Hospital, Wuhan, China.**

### CA A3274

#### Phosphatidylinositol 3-Kinase Inhibition Augments a Repressing Effect of Sevoflurane on Vasoconstriction

In the rat large and small conduit arteries, PI3K inhibition augments a repressing effect of sevoflurane on phenylephrine-induced contraction. The escalating vasodilator effect of this volatile anesthetic appears independent on intracellular Ca<sup>2+</sup>. **Hiroyuki Kinoshita, M.D., Ph.D., Yoshitaka Yasuda, M.D., Emi Nakamura, M.D., Guo-Gang Feng, M.D., Ph.D., Jiazheng Jiang, M.D., Noboru Hatakeyama, M.D., Ph.D., Yoshihiro Fujiwara, M.D., Ph.D., M.B.A., ; Anesthesiology, Pharmacology, Aichi Medical University School of Medicine, Nagakute, Japan.**

### CA A3275

#### Albumin Reduces Levels of Superoxide Resulting in Restoration of Dilation Via K<sup>+</sup> Channels in the Human Artery

Human serum albumin in the concentration below one tenth than the physiological range reduces superoxide production via NADPH oxidase activation triggered by high glucose in human vascular smooth muscle cells. **Yoshitaka Yasuda, M.D., Hiroyuki Kinoshita, M.D., Ph.D., Jiazhen Jiang, M.D., Jiazheng Li, M.D., Guo-Gang Feng, M.D., Takahiko Akahori, M.D., Toshiharu Azma, M.D., Ph.D., Yoshihiro Fujiwara, M.D., Ph.D.; Aichi Medical University School of Medicine, Nagakute, Japan, Anesthesiology & Pain Medicine, Kohnodai Hospital, National Center for Global Health and Medicine, Ichikawa, Japan.**

### CC A3276

#### Lipid Emulsion Attenuates Toxic Dose Calcium Channel Blocker-Induced Vasodilation

Intralipid<sup>®</sup> attenuated toxic dose calcium channel blocker-induced vasodilation, and this effect appears partially associated with the lipid solubility of calcium channel blockers. **Ju-Tae Sohn, M.D., Seong-Ho Ok, M.D., Jongsun Yu, M.D., Heon-Keun Lee, M.D.; Department of Anesthesiology and Pain Medicine, Gyeongsang National University Hospital, Jinju, Gyeongsang National University School of Medicine, Jinju, Korea, Republic of.**

### CC A3277

#### The Effects of HOE642 LPD Solution on the Apoptosis of Donor Lung From a Modified Lung Transplantation Model of Rabbits

We conclude that isolated single lung transplantation can be performed in rabbits using extracorporeal circulation. This model provides stable and reliable function of the isolated lung for up to 2h. The potential protective mechanism provided by the new organ preservation solution might be the alleviation of the intracellular calcium overload and the inhibition of apoptosis via both intrinsic and extrinsic pathways. In addition, the new organ preservation solution could also decrease the expression of p38MAPK/ERK-p90RSK-NHE1 pathway and CaMKII, which might be the molecular mechanism of the inhibition of apoptosis. **Deshui Yu, M.D., Tianqing Gong, M.D., Wenqin Zhou, M.D., Bin Liu, M.D.; West China Hospital of Sichuan University, Chengdu, China.**

### CC A3278

#### Resuscitation with Washed Old Blood Decreases Hyperkalemic Cardiac Arrest in Hemorrhagic Shock

Transfusion-associated hyperkalemia (TAH) is a life-threatening complication of red blood cells (RBC) transfusion. Rapid transfusion of old blood in hemorrhagic shock increases serum K to critical levels. Washing RBC before transfusion decreases TAH and hypocalcemia, reducing transfusion-associated cardiac arrest. **Joel A. Rocha Filho, M.D., Ph.D., Estela Regina R. Figueira, M.D., Ph.D., Matheus F. Vane, M.D., Alessandro R. Martins, D.V.M., Fernando C. Silva, M.D., Alan S. Ramalho, M.D., Marcio Ab Moreira, D.V.M., Maria Jose C. Carmona, M.D., Ph.D., Jose Otavio C. Auler, M.D., Ph.D., Luiz Augusto C. D'Albuquerque, M.D., Ph.D.; Anesthesiology, Gastroenterology, University of São Paulo, Sao Paulo, Brazil.**

### CC A3279

#### mRNA Expression Profiles in Response to Diazoxide Postconditioning Hypoxia Reoxygenation Injury in Rat Myocardial Cell

The present study evaluated mRNA expression profiles in response to Diazoxide Postconditioning hypoxia reoxygenation injury in rat myocardial cell. **Wen-ting Sun, M.Med., Song Cao, M.Med., Li Zhao, M.Med., Xingkui Liu, M.Med., Tian Yu, M.Med.; Zunyi Medical College, Zunyi City, China.**

### CC A3280

#### A Novel Pre-Clinical Combined Pulmonary Fibrosis and Pulmonary Hypertension Model in Rats

A novel pre-clinical combined model of pulmonary fibrosis and pulmonary hypertension has been developed that will allow further pre-clinical testing of therapies aimed at treating these refractory conditions. **Soban Umar, M.D., Ph.D., Alex Centala, B.S., Andrea Iorga, B.Sc., Salil Sharma, Ph.D., Rajeev Sagggar, M.D., Rajan Sagggar, M.D., Mansoureh Eghbali, Ph.D.; Anesthesiology, UCLA Medical Center, Los Angeles, CA.**

### CC A3281

#### Echocardiographic Findings During Apnoeic Cardiac Arrest Resemble Pulmonary Embolism

Cardiac ultrasound findings in apnoea theoretically resemble those of acute pulmonary embolism. This porcine study elucidated this potential problem of differential diagnostics. **Peter Juhl-Olsen, M.D., Ph.D., Anders Sørensen, B.M., Kristian Wemmelund, B.M., Erik Sloth, M.D., Ph.D.; Aarhus University Hospital, Aarhus, Denmark.**

### CC A3282

#### Analysis of Muller, Valsalva, and Incentive Spirometry Breathing Patterns on the Finger Photoplethysmograph (PPG)

This investigation documents that different breathing patterns (Muller maneuver, Valsalva and Incentive Spirometry) will affect finger plethysmographic (PPG) waveform through changes in preload and/or afterload of the heart. This may indicate that these respiratory maneuvers might be a useful tool in the assessment of fluid responsiveness in spontaneously breathing subjects. **Lee P. Hingula, M.D., I-Hsun Liang, M.D., Siqin Nie, M.D., Adam J. Shelley, M.S., Kirk H. Shelley, M.D., Ph.D., David G. Silverman, M.D., Aymen A. Alian, M.B., B.Ch., M.D.; Anesthesiology, Yale University School of Medicine, New Haven, CT, Anesthesiology, First Affiliated Hospital of Guangzhou University of Chinese Medicine, Guangzhou, China.**



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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**CC A3283**

**MaxiK Channel Protein Partners in Human Coronary Artery**  
 LC/MS/MS analysis identified intracellular proteins that form complexes with MaxiK channels including the mitochondrial ADP/ATP translocase releasing new views to MaxiK channel function. **Ligia Toro, Ph.D., Min Li, Ph.D., Zhu Zhang, Ph.D., Jure Marijic, M.D., Enrico Stefani, M.D., Ph.D.;** Anesthesiology, Division of Molecular Medicine, UCLA, Los Angeles, CA.

**CC A3284**

**Stimulation of Angiogenesis Protects the Hearts in Pregnancy Against Myocardial Ischemia/Reperfusion Injury**  
 Stimulation of angiogenesis could be a novel therapy for treatment of cardiac I/R injury in pregnancy. **Jingyuan Li, M.D., Ph.D., Zoltan Pierre Arany, M.D., Ph.D., Mansoureh Eghbali, Ph.D.;** UCLA, Los Angeles, CA, Beth Israel Deaconess Medical Center, Boston, MA.

**CC A3285**

**Hypertonic Saline Solution Preconditioning Decreases Oxidative Stress in Cold Liver Ischemia Reperfusion Injury**  
 In this experimental study liver hypothermia decreased AST and ALT, increasing liver tolerance to IR injury, and decreased TNF-alpha, reducing the inflammatory response. HTS preconditioning in cold liver ischemia decreased oxidative stress reducing liver IR injury. **Estela R. Figueira, M.D., Ph.D., Joel A. Rocha Filho, M.D., Ph.D., Ana Maria M. Coelho, Ph.D., Giolana Nunes, M.D., Cinthia Lanchotte, B.Sc., Eleazar Chaib, M.D., Ph.D., Ivan Ceconello, M.D., Ph.D., Luiz Augusto C. D'Albuquerque, M.D., Ph.D.;** Gastroenterology, Anesthesiology, University of São Paulo, Sao Paulo, Brazil.

**CC A3286**

**Sildenafil-induced Cardioprotection Is Mediated via Mitochondrial Large-conductance Calcium-sensitive Potassium Channels**  
 Activation of mBKCa channels is a crucial step in cardioprotection induced by Sildenafil preconditioning. **Friederike Behmenburg, M.D., David Mally, Student, Marianne de Schmidt, Resident, Andre Heinen, M.D., Markus Hollmann, M.D., Ph.D., Ragnar Huhn, M.D., Ph.D.;** Anesthesiology, University Hospital Duesseldorf, Department of Cardiovascular Physiology, Heinrich-Heine-University Duesseldorf, Duesseldorf, Germany, Anesthesiology, University of Amsterdam / AMC, Hlz, Netherlands.

**CC A3287**

**MicroRNA miR-129 Reverses Cardiac Fibrosis in Angiotensin-II-Infused Mice**  
 Estrogen regulated microRNA miR129 reverses cardiac fibrosis in the model of fibrosis with Angiotensin II infusion. **Salil Sharma, Ph.D., Andrea Iorga, B.Sc., Alex Centala, Jingyaun Li, Ph.D., Mansoureh Eghbali, Ph.D.;** Anesthesiology, University of California, Los Angeles, Los Angeles, CA.

**CC A3288**

**A Comparison of N-acetylcysteine (NAC) and 2-Acetylcyclopentanone (2-ACP) Cytoprotection in a Rodent Model of Ischemia Reperfusion**  
 This study suggests that 2-Acetyl Cyclopentanone has superior cytoprotective abilities compared to N-Acetyl Cysteine in ischemia reperfusion injury, thus illustrating the potential therapeutic utility of 1,3 dicarbonyl compounds. **Amaresh Vydyanathan, M.B.B.S., M.S., Boleslav Kosharsky, M.D., Naum Shaparin, M.D., Richard M. Lopachin, Ph.D.;** Anesthesiology and Pain Medicine, Montefiore Medical Center/AECOM, Anesthesiology, Albert Einstein College of Medicine/Montefiore Medical Center, New York, NY.

**PO16-3 REGIONAL ANESTHESIA AND ACUTE PAIN: BASIC SCIENCES**

1-3 p.m. | Hall B1-Area B

**RA A3289**

**Intrathecal Levobupivacaine Produces Concentration-dependent Neurotoxicity in Rats**  
 Despite reversible sensory and motor block, delayed (one week) concentration-dependent histological changes were found in rats received intrathecal levobupivacaine in clinical-used concentrations. **Jian-hua Hu, M.D., Yong Wan, M.D.;** Anesthesiology, The Affiliated Hospital of North Sichuan Medical College, Nanchong, Sichuan Province, China.

**RA A3290**

**Acute Gene Upregulation After Total Knee Replacement**  
 RNA expression from whole blood samples shows that acute knee pain at 48 hours post Total Knee Replacement surgery is associated with upregulation of inflammatory mediators in leukocytes. **Asokumar Buvanendran, M.D., Hyung-Suk Kim, Ph.D., Mario Moric, Ph.D., Youping Deng, Ph.D., Yan Li, M.S., Kenneth J. Tuman, M.D., Jeffrey S. Kroin, Ph.D.;** Anesthesiology, Bioinformatics, Rush University Medical Center, Chicago, IL, Pain Research, National Institute of Nursing Research, Bethesda, MD.

**RA A3291**

**Direct Inhibitory Effect of Lidocaine on Various Breast Cancer Cells Proliferation and Migration**  
 Retrospective studies have suggested a protective effect of regional anesthesia against relapse risk after cancer surgery. We evaluated the effects of lidocaine on various breast cancer lines in vitro by performing viability and migration assays. Lidocaine at clinically relevant concentrations decreased viability and inhibited migration of breast cancer cells lines. Our results are compatible with a role for lidocaine infiltration in breast cancer surgery. **Thiên-Nga Chamaroux-Tran, M.D., Antoine Charton, M.D., Julien Pottecher, M.D., Ph.D., Marie-Christine Rio, Ph.D., Bernard Gény, M.D., Ph.D., Carole Mathelin, M.D., Ph.D., Pierre Diemunsch, M.D., Ph.D.;** Département d'anesthésie-réanimation, Département de sénologie, CHU d'Haute-pierre, Strasbourg, France, IGBMC, Illkirch, France, Département de Physiologie, NHC, Strasbourg, France.



**RA A3292**

**Detailed Anatomy Study of the Adductor Canal and Femoral Triangle in a Fresh Cadaver**  
 The purpose of this study is to describe the detailed anatomy of the AC and its transition from the FT in fresh, softly embalmed cadavers. Several well-defined compartments separate structures within the AC. Since the nerve to the VM is separated from the SN by a clear fascia, injection at the level of the distal FT rather than at the level of the AC with low volume will preserve VM motor function while providing an extended block of the saphenous plexus. **Hemra Cil, M.D., David M. Horn, H.S., Brion Benninger, M.D., M.Sc., Jean-Louis E. Horn, M.D.;** Anesthesiology and Reanimation, Hacettepe University Hospital, Ankara, Turkey, Western University, College of Osteopathic Medicine of the Pacific - Northwest, Lebanon, OR, Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine, Stanford, CA.

**RA A3293**

**The Effect of Jazz on Postoperative Pain and Stress in Patients Undergoing Elective Hysterectomy**  
 Overall, our results showed that patients respond not only to music but also to silence in the PACU. Using music and/or noise reduction could decrease opioid administration, promote relaxation, and improve patient satisfaction. **Flower Austin, D.O., Lorenzo Rafer, B.A., Sonia Vaida, M.D., Jansie Prozesky, M.B., Ch.B., Jessica Frey, B.S., Christie L. Mulvey, B.A.;** Anesthesia, Penn State Milton S. Hershey Medical Center, Hershey, PA.



**RA A3294**

**Development of a Painless Injection Device Applying Pressure, Vibration, and Temperature**  
 It is known that needle pain can be decreased by applying pressure, vibration, and cooling or warming to the skin, in accord with the gate control theory of pain. Studies to date do not quantify these parameters. This study measures and quantifies these parameters in healthy adult volunteers. **William P. McKay, M.D., Jayden Cowan, B.Sc., Roman Gusztak, M.A., M.D., Timothy Bolton, Andrew Frost, Andrew Wang, Brendan Kushneriuk, B.Sc., Matthew Kushneriuk, B.Sc., Daniel X. Chen, Ph.D.;** Anesthesia, Mechanical Engineering, University of Saskatchewan, Saskatoon, SK, Canada.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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### RA A3295

#### Electro-acupuncture Stimulation of Ximen (PC4) and Neiguan (PC6) for the Thoracic Esophagectomy Postoperative Analgesia

Intraoperative EAS could be a useful adjunctive to manage the severe pain from thoracotomy. The underline mechanism may be related to the activation of endogenous opioid inhibitory system and anti-inflammatory. Yanhu Xie, M.D., Xiaqing Chai, M.D., Chuanyao Tong, M.D., Yuelan Wang, M.D., Yanchun Gao, M.D., Jun Ma, M.D.; Anesthesiology, Anhui Provincial Hospital Affiliated to Anhui Medical University, Hefei, China, Wake Forest University Medical Center Dept. of Anesthesiology, Winston Salem, NC, Anesthesiology, Qian Fushan Hospital Affiliated to Shandong University, Jinan, Shandong, China.

### RA A3296

#### Intrathecal Administered High-Dose Baclofen Does Not Induce Neurotoxic Changes in Rats

High-dose intrathecal baclofen does not induce histological or neurofunctional abnormalities in rats. Tamie Takenami, Instructor, Yoshihiro Nara, D.V.M., Hirotugu Okamoto, M.D.; Anesthesiology, Kitasato University School of Medicine, Sagami-hara, Japan.

### RA A3297

#### Nefopam vs. Ketorolac Combined in Oxycodone Patient-controlled Analgesia After Gynecologic Surgery

Nefopam showed a similar efficacy with ketorolac in patient-controlled analgesia. Nefopam decreased the incidence of postoperative nausea especially before 6 hours after the operation. Nefopam may be useful analgesic drug for PCA with opioid in gynecologic surgery. Further evaluation about accurate equivalent dose of ketorolac and pharmacokinetics of bolus administration is needed. Boo Young Hwang, M.D., Jae-Young Kwon, M.D.; Department of Anesthesia and Pain Medicine, Pusan National University Hospital, Busan, Korea, Republic of.

### RA A3298

#### Epidural Anesthesia Does Not Increase Rate of Blood Transfusions in Patients Undergoing Pancreatic Cancer Surgery

The aim of this single institution review is to investigate whether epidural use in patients undergoing pancreatic cancer surgery affects the rate of blood transfusion as compared to patients receiving intraoperative IV narcotics and postoperative IVPCA. Five hundred forty seven patients with epidural analgesia were compared to 41 patients in the IV PCA arm. Patients in the IVPCA arm did have a statistically significant increase in perioperative blood product transfusions. Ifeyinwa C. Ifeanyi, M.D., Jose M. Soliz, M.D., Juan P. Cata, M.D., Priya Sahai, M.B.B.S., Lei Feng, M.S., Jun Yu, M.S., Matthew Katz, M.D., Vijaya N. Gottumukkala, M.B., B.S.; Anesthesiology and Perioperative Medicine, Biostatistics, Surgical Oncology, UT MD Anderson Cancer Center, Houston, TX.

### RA A3299

#### Can Ketamine Compliment Liver Donor Analgesia?

Perioperative ketamine may provide superior analgesia compared to PCA opioids alone during liver donation surgery, and may also be opioid sparing. Yili Huang, D.O., Stephen Thorp, M.D., Thomas Halaszynski, D.M.D., M.D., M.B.A., Dai Feng, Ph.D., Qin Li, Ph.D., Stephen Luczycki, M.D., Horvath Balazs, M.D.; Anesthesiology, Yale-New Haven Hospital, New Haven, CT.

### RA A3300

#### Effect of Antidepressants on Morphine Antinociception in Mice Acute Pain Model

The present study demonstrates that the antidepressants imipramine and maprotiline, but not fluoxetine, potentiate antinociception of morphine in acute pain model. No significant gender differences were observed in mice tail-flick test. This result provides useful information for combined use of antidepressant with strong opioid drugs in clinical practice. Future studies can help to clarify the mechanism by which antidepressants potentiate the antinociception of opioids in acute pain. Future studies using larger numbers of laboratory animals can help to further elucidate the gender responses. Xiaoli Dai, M.D., Tangeng Ma, M.D., Ph.D., Ike I. Eriator, M.D., M.B., B.S., M.P.H., Claude Brunson, M.D.; Anesthesiology, Cancer Institute, UMMC, Jackson, MS.

### RA A3301

#### IONSYS® (Iontophoretic Transdermal Fentanyl) for Post-op Pain Improved Mobilization Compared with Morphine IV PCA

IONSYS (a patient-controlled, on-demand, Iontophoretic Transdermal Fentanyl system) and IV PCA have demonstrated equivalent pain control in several studies. The current study aimed to evaluate the superiority of IONSYS over morphine IV PCA with regard to the postoperative ability to mobilize in patients who had undergone orthopedic (unilateral primary total hip arthroplasty) or major abdominal (abdominal hysterectomy) surgery. IONSYS was effective and well tolerated in the management of acute moderate to severe post-operative pain with better ability to mobilize, nursing ease-of-care ratings and patient global assessments of pain control than morphine IV PCA. Richard Langford, F.R.C.A., FFPMRCA, Kuang-Yi Chang, M.D., Ph.D.; Pain and Anaesthesia Research Centre, St Bartholomew's Hospital, London, United Kingdom.

### RA A3302

#### A Phase 3 Integrated Analysis of Onset of Analgesia for the Sufentanil Sublingual Microtablet System (Zalviso) Compared to IV Patient-Controlled Analgesia with Morphine

Zalviso (sufentanil sublingual microtablet system) is a patient-activated analgesia system that is preprogrammed and non-invasive. Phase 3 studies demonstrate rapid onset of action compared to intravenous patient-controlled morphine following major orthopedic or abdominal surgery. Pamela P. Palmer, M.D., Ph.D., Harold S. Minkowitz, M.D., Tong-Joo Gan, M.D.; AcetRx Pharmaceuticals, Redwood City, CA, Memorial Hermann Memorial City Medical Center, Houston, TX, Duke University Medical Center, Durham, NC.

### RA A3303

#### An Assessment of Intrathecal Morphine Analgesia on Somatosensory Evoked Potentials in the Perioperative Period: An Analysis of 150 Cases

Intraoperative monitoring using somatosensory-evoked potentials (SSEPs) plays an important role in reducing iatrogenic neurologic deficits during corrective pediatric idiopathic procedures for scoliosis. In order to investigate the electrophysiological effects of spinally injected morphine solution, SSEP was utilized to detect the change of activity of spinal and cortical neurons after a single shot of intrathecal morphine. Results may help physicians to do the spinal analgesia at the beginning of the procedure. This latter would be able to decrease opioids needs during surgery with no monitoring impairment. Xavier Alacoque, M.D.; Anesthesia & Perioperative Care, Toulouse University Hospital, Toulouse, France.

### RA A3304

#### Prophylactic Ondansetron for the Prevention of Intrathecal Fentanyl- or Sufentanil-mediated Pruritis: A Meta-Analysis

The role of prophylactic 5HT3-receptor antagonists in preventing pruritis induced by spinal opiates remains controversial. The purpose of this meta-analysis was to investigate the effect of prophylactic ondansetron in reducing the incidence of intrathecal fentanyl- and sufentanil-mediated pruritis. Meghan E. Prin, M.D., Vivek Moitra, M.D., Jean Guglielminotti, M.D., Guohua Li, M.B.; Department of Anesthesiology, Columbia University, New York, NY.



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## ORAL PRESENTATIONS

### OR02-2 ANESTHETIC ACTION AND BIOCHEMISTRY: EMERGING ANESTHETICS AND ANALGESICS

8-9:30 a.m. | Room 245

#### FA A4000

##### The Ultra-Short Acting Neuromuscular Blocker CW 1759-50 Has Very High Autonomic Safety in the Isoflurane-Anesthetized Cat

The ultra-short acting neuromuscular blocker CW 1759-50 has a dose ratio for autonomic safety in the cat that is higher than those reported for most other neuromuscular blocking drugs. This means that CW 1759-50 is unlikely to cause circulatory changes in humans as a result of these mechanisms. John J. Savarese, M.D., Hiroshi Sunaga, M.D., Matthew R. Belmont, M.D., Paul M. Heerdt, M.D., Ph.D., Erin Jeannotte, LATG; Anesthesiology, Weill Cornell Medical College, New York, NY, Jikei University School of Medicine, Minatoku, Japan, Animal Resources Facility, Albany Medical Center, Albany, NY.

#### FA A4001

##### Dexmedetomidine Infusion for Lumbar Spinal Fusion Does Not Reduce Length of Stay

Spinal surgery is performed six times more often in the US than other countries at a cost of \$40B, contributing substantially to the annual cost of health care. For other surgical procedures, especially abdominal surgery, infused lidocaine reduces inflammation with a commensurate reduction in length of hospital stay. Because of its anti-inflammatory properties, dexmedetomidine, an alpha-2 agonist, was studied for its potential to reduce the LOS after lumbar spinal fusion. James L. Blair, D.O., Joseph S. Cheng, M.D., M.S., Xue Han, M.P.H., Jonathan S. Schildcrout, Ph.D., Elizabeth Card, M.S.N., FNP-BC, Pratik P. Pandharipande, M.D.; Anesthesiology, Neurosurgery, Biostatistics, Vanderbilt University Medical Center, Nashville, TN.

#### FA A4002

##### Phase 1c Trial Comparing the Anaesthetic Properties of Phaxan™ and Propofol

Phaxan, a new aqueous formulation of alphaxalone, was compared with propofol for quality and safety as an intravenous anaesthetic. Phaxan caused fast onset and recovery from anaesthesia equal with propofol but with significantly less cardiovascular and respiratory depression. There was no pain on injection, nausea or involuntary movement in Phaxan treated subjects. The results support the development of Phaxan as a safer non-lipid replacement for propofol. Colin S. Goodchild, M.A., M.B., BChir, Ph.D., F.R.C.A FANZCA FFPMANZCA, John Monagle, M.B.B.S., F.A.N.Z.C.A., Lyndon Siu, M.B.B.S., F.A.N.Z.C.A. Jodie Worrell, R.N. Juliet M. Serrao, M.B.B.S., Ph.D., F.R.C.A.; Monash Institute of Medical Research, Anaesthesia and Pain Medicine, Monash Health, Drawbridge Pharmaceuticals Pty Ltd, Melbourne, Victoria, Australia.

#### FA A4003

##### The Ultra-Short Acting Neuromuscular Blocker CW 1759-50 Has Approximately 5 Times the Safety of Rapacurium at M2 and M3 Receptors in the Guinea Pig Airway

The ultra-short acting NMBA CW 1759-50 was compared with rapacurium for activity at M2 and M3 muscarinic receptors in the airway of the anesthetized guinea pig. 1759-50 was 5 x safer than rapacurium with respect to M2 muscarinic receptor blockade and M3 muscarinic receptor allosteric potentiation, suggesting that 1759-50 will be unlikely to cause bronchospasm by this mechanism during tracheal intubation in humans. John J. Savarese, M.D., Yi Zhang, M.D., Paul M. Heerdt, M.D., Ph.D., Charles W. Emala, M.D.; Anesthesiology, Weill Cornell Medical College, New York, NY, Anesthesiology, Columbia University Medical Center, New York, NY.

#### FA A4004

##### Evaluation of Pain Reducing Properties of the Beta Receptor Antagonist Esmolol. A Study of Healthy Volunteers

In this study we evaluated in an experimental setting if the beta receptor antagonist esmolol possesses pain reducing properties. Peripheral pain was induced with cold water pain test. Fourteen volunteers were included and the pain reaction for cold water was evaluated and compared during infusion of placebo, esmolol and remifentanyl. We were not able to detect any pain reducing effect of esmolol in the doses administered in this study. Fredrik Ander, M.D., Magnus Wattwil, M.D., Ph.D., Alex de Leon, M.D., Ph.D., Rebecca Ahlstrand, M.D., Ph.D., Anesthesiology and Intensive Care, Örebro University Hospital, Örebro, Sweden.

#### FA A4005

##### The Rescue Effect of Lipid Emulsion in Bupivacaine-induced Cardiotoxicity Is Blocked by 5-Hydroxydecanoate, a Mitochondrial Selective KATP Antagonist

The rescue action of intralipid in bupivacaine-induced cardiotoxicity is mediated at least in part by mitochondrial KATP channels as pretreatment with a selective mitochondrial KATP channel blocker 5-Hydroxydecanoate prevents the rescue action of intralipid. Parisa Partownavid, M.D., Salil Sharma, Ph.D., Siamak Rahman, M.D., Mansoureh Eghbali, Ph.D., UCLA, Los Angeles, CA .

### OR06-2 CRITICAL CARE

8-9:30 a.m. | Room 244

#### CC A4006

##### Comparison Between Thrombelastography and Thromboelastometry in Liver Transplantation

TEG® and ROTEM® were comparable in measurement of coagulation parameters in adult liver transplantation; however, ROTEM® had a favorable correspondence with PTT and was more sensitive in identification of lysis. Tetsuro Sakai, M.D., Ph.D., Ezeldeen Abuelkasem, M.D., M.S.C., Raymond M. Planinsic, M.D., Kenichi A. Tanaka, M.D., M.S.C., Department of Anesthesiology, University of Pittsburgh School of Medicine, Pittsburgh, PA.

#### CC A4007

##### Urinary Neutrophil Gelatinase-associated Lipocalin (NGAL) Is a Marker of Acute Kidney Injury in Patients Undergoing General Surgery

We measured urinary NGAL, a renal biomarker in a general surgical population early after surgery in 510 patients. Urinary NGAL, unlike serum creatinine was significantly higher in patients with intrinsic acute kidney injury compared to patient with prerenal azotemia. Urinary NGAL may be a useful screening tool for AKI and prerenal azotemia in the recovery Room. Gebhard Wagener, M.D., Valeria I. Au, M.D.; Anesthesiology, Columbia University, New York, NY .

#### CC A4008

##### Pediatric Delirium in Infants and Young Children: Validation of the PreSchool Confusion Assessment Method for the Intensive Care Unit (psCAM-ICU)

Delirium is common and associated with worse outcomes in critically ill adults. The epidemiology of delirium among critically ill infants and children has been understudied due to limited availability of validated tools. The psCAM-ICU is a new, highly valid instrument for delirium diagnosis in critically ill infants and young children. Heidi A.b. Smith, M.D., M.S.C., Christina Goben, M.D., Molly Gangopadhyay, M.D., Mary Hamilton Chestnut, N.P. Jennifer Thompson, M.P.H., Natalie Jacobowski, M.D., Michael T. Rutherford, M.D., D. Catherine Fuchs, M.D., Pratik Pandharipande, M.D.; Anesthesiology, Pediatrics, Psychiatry, Vanderbilt University, Nashville, TN.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain

**CC A4009****Effects of Esmolol on Analgesia/Nociception Index (ANI) in a Porcine Model of Septic Shock**

In this porcine model of septic shock, no effect of esmolol on ANI was observed despite a significant decrease in HR. The use of vasopressors and inotropic agents may probably explain this result. The ANI does not seem to present variations in the animal when using esmolol during septic shock resuscitation. Emmanuel Boselli, M.D., Ph.D., Matthias Jacquet-Lagréze, M.D., Bernard Allaouchiche, M.D., Ph.D., Jeanne-Marie Bonnet-Garin, V.M.D., Ph.D., Christian Paquet, V.M.D., Ph.D., Jean-Yves Ayoub, V.M.D., Ph.D., Damien Restagno, V.M.D., Ph.D., Jérôme Étienne, Ph.D., Olivier Dauwalder, Ph.D., Stéphane Junot, V.M.D., Ph.D., Anesthesiology and Intensive Care, Anesthesiology and Intensive Care, Édouard Herriot Hospital, HCL, Lyon, France, VetAgro Sup – Campus Vétérinaire de Lyon, Hémostase, Inflammation et Sepsis, Marcy l'Étoile, France, Centre de Biologie et de Pathologie Est, HCL, Université Claude Bernard Lyon I, Université de Lyon, Lyon, France.

**CC A4010****Accuracy of Midline Shift and Third Ventricle Measures by Transcranial Sonography Compared to Computed Tomography**

We aimed to assess the accuracy of Transcranial duplex sonographic (TDS) measures of the midlineshift (MLS) and the diameter of the third ventricle (DV3) compared to the computed tomography (CT) reference, in 126 neuro intensive care patients. DV3 and MLS assessment by TDS seems well correlated to CT measures despite a lower spatial resolution of TDS, after Bland-Altman analysis. This technique should be considered to propose a systematic bedside sonographic monitoring for those patients. Sebastien Grousson, M.D., Edmundo Pereira de Souza Neto, M.D., Ph.D., Neuro Critical Care Unit, Hopital Pierre Wertheimer, Hospices Civils de Lyon, Bron, France, Anesthesiology, Centre Hospitalier de Montauban, Montauban, France.

**OR13-4 OUTCOMES AND DATABASE RESEARCH - AIRWAY & SLEEP APNEA**

10-11:30 a.m. | Room 245

**FA A4011****Validation of STOP BANG Questionnaire in Detecting Difficult Airway, Laryngoscopy and Intubation - A Prospective Study**

This is a prospective study that aims to evaluate the association between STOP-Bang scores and the probability of an intraoperative difficult airway management. The recruited subjects were categorized into two groups based on the STOP BANG score, higher ( $\geq 4$ ) and lower ( $<4$ ) risk. Our study showed that a high STOP-BANG score ( $\geq 4$ ) is not associated with difficult ventilation, difficult laryngoscopy or difficult intubation. Of the individual variables of STOP-BANG, only blood pressure showed a statistically significant association with difficult ventilation. Kang Wei Edwin Lim, M.B.B.S., Pamela Chia, B.MedSudhakar Subramani, M.D., D.N.BM.MedStephanie Fook-Chong, M.S.C., Ruban Poopalalingam, M.B.B.S., M.Med.; Anesthesia, Health Services Research and Biostatistics, Singapore General Hospital, Singapore, Singapore, University of Iowa Hospitals & Clinics, Iowa City, IA.

**FA A4012****Effects of CPAP on Apnea Hypopnea Index & Length of Hospital Stay in OSA Patients Undergoing Surgery: A Meta-analysis**

Perioperative CPAP significantly reduces perioperative AHI and may decrease the length of stay in OSA patients undergoing surgery. Mahesh Nagappa, M.D., D.N.BM.NAMS, Babak Mokhlesi, M.D., Jean Wong, M.D., FRCPC, David T. Wong, M.D., Kaw Roop, M.D., Frances F. Chung, M.D.; Toronto Western Hospital, Toronto, ON, Canada, Department of Medicine, University of Chicago, Chicago, IL, Department of Hospital Medicine and Department of Outcomes Research (Anesthesiology), Cleveland Clinic, Cleveland, OH .

**FA A4013****Comparative Approaches to the Unanticipated Difficult Airway: Results from the Multi-Centered Perioperative Outcomes Group**

In this multicentered observational study, video laryngoscopy was associated with a higher rescue success rate than alternate laryngoscopy techniques. Michael F. Aziz, M.D., Amy W. Chu, B.S., David Healy, M.D., Amy Shanks, M.S., Leslie C. Jameson, M.D., William C. Paganelli, M.D., Ph.D., Daniel A. Biggs, M.D., M.S.C., Janavi Rao, M.D., Ansgar Brambrink, M.D., Ph.D., Sachin Kheterpal, M.D., M.B.A., Anesthesiology & Perioperative Medicine, Oregon Health & Science University, Portland, OR, Icahn School of Medicine at Mount Sinai, New York, NY, University of Michigan, Ann Arbor, MI, University of Michigan, Ypsilanti, MI, University of Colorado Health Sciences Center, Aurora, CO, University of Vermont, Shelburne, VT, University of Oklahoma, Oklahoma City, OK, Anesthesiology, Washington University, St. Louis, MO.

**FA A4014****Assessment of Correct Endotracheal Intubation and Airspace Disease via Ultrasound during Major Fluid Shift Surgery**

The efficacy of using point-of-care ultrasound to correctly identify endotracheal tube location was assessed in comparison to auscultation by a blinded, randomized study of perioperative patients. Initial results suggest that point-of-care ultrasound may be more effective than auscultation alone in differentiating mainstem v. tracheal intubations. A secondary study outcome to evaluate airspace disease markers in major fluid shift surgery via POCUS was initiated, but cannot yet be statistically analyzed. Esther Banh, B.S., Ethan Frank, -, Russell K. Taylor, M.D., Patrick B. Hu, M.D., Kimberly M. Gimenez, M.D., Maxime Cannesson, M.D., Ph.D., Davinder S. Ramsingh, M.D.; Anesthesiology & Perioperative Care, University of California, Irvine, Orange, CA .

**FA A4015****Airway Injuries Associated with General Anesthesia: A Closed Claims Update**

Airway injuries represented 9-11% of general anesthesia malpractice claims each decade from 1980-2011. Perforations of the pharynx or esophagus accounted for 46% of 116 airway injury claims in 2000-2011, with 17% of these resulting in death. Greater than half of perforations were associated with equipment (57%) and the remainder with difficult intubation (43%). Joseph Charles Herring, B.S., Karen L. Posner, Ph.D., Karen B. Domino, M.D., M.P.H., School of Medicine, University of Washington, Bothell, WA, Anesthesiology & Pain Medicine, University of Washington, Seattle, WA.

**FA A4016****Virtual Neck Circumference Measurements Can Be Used for Preoperative STOP-BANG Assessment**

Telemedicine, in conjunction with the STOP-BANG criteria for neck circumference, may provide the opportunity to determine patients at risk for OSA and postoperative complications in a convenient and cost-effective manner. The use of a virtual neck circumference estimate derived from a simple photograph appears to be a reliable replacement for the traditional neck circumference measurement taken with a tape measure in preoperative assessments. Calvin Gruss, M.S., Jesse M. Ehrenfeld, M.D., Russ Kunic, FNP-BC, Jonathan P. Wanderer, M.D.; Anesthesiology, Vanderbilt University, Nashville, TN.

**OR09-2 EXPERIMENTAL CIRCULATION**

1-2:30 p.m. | Room 244

**CA A4017****BKCa Channels Contribute to Vasoconstriction of Hemoglobin-Based Oxygen Carriers**

BKCa channel may contribute to HBOC-induced vasoactivity and hypertension. Yusheng Yao, M.D., Tao Li, Ph.D., Jin Liu, M.D.; Department of Anesthesiology and Translational Neuroscience Center, West China Hospital, Sichuan University, West China Hospital, Sichuan University, Chengdu, China.



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## CA A4018

### Predictors of Mortality in 142 Cases Who Received Extracorporeal Membrane Oxygenation for Cardiac or Pulmonary Indications

Confounding factors such as increased blood product utilization, increased lactic acid accumulation, co-morbidities and patient demographics are not reliable predictors of ECMO outcome. Mortality on ECMO is likely related to severity of underlying pathology rather than comorbidities. **Enrico M. Camporesi, M.D., Stephanie Socias, M.D., Hesham R. Omar, M.D., Yiu-Hei Ching, M.D., Christiano Calderia, M.D., Devanand Mangar, M.D.;** Florida Gulf-to-Bay Anesthesiology Associates LLC, Florida Advanced Cardiothoracic Surgery Tampa, FL, Mercy Medical Center, Clinton, IA.

## CA A4019

### Ultrafast Whole Body Cooling Induced by Total Liquid Ventilation Mitigates Shock After Aortic Cross Clamping

Ultrafast whole body cooling induced by total liquid ventilation mitigates shock and attenuates organ dysfunctions after ischemia/reperfusion induced by aortic cross clamping. The protection depends upon how early hypothermia is applied and persists after rewarming. **Nicolas Mongardon, M.D., M.S.C., Matthias Kohlhauser, D.V.M.M.S.C., Fanny Lidouren, B.Sc., Hervé Walti, M.D., Ph.D., Philippe Micheau, Ph.D., Alain Cariou, M.D., Ph.D., Gilles Dhonneur, M.D., Ph.D., Bijan Ghaleh, Ph.D., Ph.D., Alain Berdeaux, M.D., Ph.D., Renaud Tissier, D.V.M., M.S.C.,** Departement of Anesthesiology and Surgical Critical Care, Henri Mondor Hospital, INSERM U, Université Paris-Est Créteil, Créteil, France, Sherbrooke University, Sherbrooke, QC, Canada, Medical Intensive Care Unit, Cochin Hospital, Paris, France.

## CA A4020

### Analysis of the Modulation of Infra-Red Finger Photoplethysmographic Waveform During Incentive Spirometry

The use of incentive spirometry provided a respiratory intervention that significantly increased the signal magnitude of a non-autocentered and non-dynamically amplified PPG and the pressure of peripheral venous waveform recorded via a transduced peripheral catheter. **Aymen A. Alian, M.D., Adam J. Shelley, M.S., Lee P. Hingula, M.D., Lila R. Baaklini, M.D., David G. Silverman, M.D., Kirk H. Shelley, M.D., Ph.D.,** Anesthesiology, Yale University School of Medicine, New Haven, CT.

## CA A4021

### Endothelial Microparticles Alter the Mediator of Flow-Induced Dilation

Endothelial microparticles (EMPs) produced from plasminogen-activator inhibitor 1, alter the mediator of flow-induced vasodilation in human arterioles from nitric oxide to hydrogen peroxide. EMPs may have a critical signaling role in the human microcirculation. **Julie K. Freed, M.D., Ph.D., Joseph C. Hockenberry, Sushma Kaul, John C. Densmore, M.D., David D. Gutterman, M.D.;** Anesthesiology, Pediatric Surgery, Medical College of Wisconsin, Milwaukee, WI.

## CA A4022

### Comparison of Aggressive-Warming and Conventional Warming on Post-Induction Core Temperature and Thermoregulatory Response Under General Anesthesia

Aggressive-warming started while induction of anesthesia with forced-air was not effective the prevent of shivering, however, VAS scale for thermal comfort was significantly higher postoperatively. This result might be reconcerned the thermoregulatory management as effective treatment for preventing shivering, and consequently to be reduction of risk for postoperative hypothermia. **Yoshie Taniguchi, Assistant Professor, Isao Utsumi, Attending Anesthist, Atsuko Tanaka, Resident;** Department of Anesthesiology, The Jikei University School of Medicine, Tokyo, Japan.

## POSTER DISCUSSIONS

### PD16-2 REGIONAL ANESTHESIA AND ACUTE PAIN

8-9:30 a.m. | Room 243

## RA A4023

### Ultrasound Guided Rectus Sheath Block: Thiel-embalmed Human Cadaveric Study for Spread of Injectate

The volume of injectate needed to achieve ultrasound-guided rectus sheath block (RSB) was examined in Thiel-embalmed cadavers. The cadavers were divided into 3 groups with different injection volumes (5, 10 and 15 mL). Color dye was injected and the cadavers were dissected. The RSB was determined to be effective at certain dermatome by observing the nerve colored with the dye. Five mL was sufficient for successful dye injection for T9-T10 nerves. More than 10 mL could be necessary to obtain effects for wider dermatomes. **Takeshi Murouchi, M.D., Soshi Iwasaki, M.D., Ph.D., Michiaki Yamakage, M.D., Ph.D.,** Department of Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan.

## RA A4024

### Prospective Randomized Double Blind, Placebo-Controlled Study to Compare the Effects of Intravenous Versus Oral Acetaminophen on Post-operative Clinical Outcomes After Ambulatory Lumbar Discectomy

This IRB approved Prospective Randomized Double-blinded, Placebo-Controlled study compared measurable clinical outcomes in patients receiving intravenous versus oral acetaminophen for ambulatory lumbar discectomies. **Marc D. Fisicaro, M.D., John T. Wenzel, M.D., Kishor Gandhi, M.D., M.P.H., Jaime L. Baratta, M.D., Elird Bojaxhi, M.D., David H. Beausang, M.D., Eric S. Schwenk, M.D.;** Anesthesiology, Thomas Jefferson University, Philadelphia, PA.

## RA A4025

### A Comparison of Traditional In-plane Interscalene Continuous Block to a Novel Out-of-Plane Approach: A Prospective, Randomized, Double-Blind Trial

In this randomized, prospective, double-blind study, a novel out-of-plane approach to continuous interscalene blocks provided non-inferior analgesia and opioid consumption, as well as catheter stability, compared to the traditional in-plane technique. **Eric S. Schwenk, M.D., Jaeyoon Chung, M.D., Kishor Gandhi, M.D., M.P.H., Jaime L. Baratta, M.D., David Beausang, M.D., Elird Bojaxhi, M.D., Bernadette Grady, R.N.;** Anesthesiology, Nursing, Thomas Jefferson University Hospital, Philadelphia, PA.

## RA A4026

### The Effect of Intraoperative Dexmedetomidine on Postoperative Opiate Consumption and Analgesia in Major Deformity Spine Surgery-Interim Analysis

This prospective randomized double blind study evaluated the effect of intraoperative dexmedetomidine on postoperative opiate consumption and VRS scores. The study found no difference between dexmedetomidine and placebo on opiate use or pain scores. The dexmedetomidine group had a lower intraoperative heart rate. **Bhiken I. Naik, M.B.B.ChEdward C. Nemergut, M.D., Ali Kazemi, M.D., Janavi Rao, M.D., Sarah Cederholm, M.D., Marcel E. Durieux, M.D., Ph.D.,** Anesthesiology, University of Virginia, Charlottesville, VA .

## RA A4027

### Pharmacokinetic and Analgesic Properties of Inhaled Remifentanyl

Patients could benefit from an inhaled opioid for pain management in a clinical setting. We investigated the bioavailability and efficacy of inhaled remifentanyl in rats. We concluded that rapid profound analgesia was achieved, and remifentanyl and metabolites were measurable in rat blood following pulmonary exposure to remifentanyl. **Derek J. Sakata, M.D., Tatjana Bevans, C.R.N.A., M.S.N., Cassandra Deering-Rice, Ph.D., Laura Springhetti, C.R.N.A., M.S., Chris Reilly, Ph.D.,** Department of Anesthesiology, Department of Pharmacology, University of Utah, Salt Lake City, UT.



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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**RA A4028**

**In-Hospital Cardiopulmonary Arrest: Demographics, Comorbidities, Opioids, and Economic Cost**

Data from over twelve million in-patient discharges showed an increased risk of ICA in males, the elderly, non-whites, patients with comorbidities, and patients on opioids with or without sedatives. In-patients on opioids with ICA have poor clinical outcomes and present a high economic burden. **Frank J. Overdyk, MSEE, M.D., David Palilla, M.D., JieJing Qiu, Ph.D., Hung-Lun Chien, Ph.D., Neil Morrison, B.S.c., Jonathan Bloom, M.D., Tong J. Gan, M.D.;** Anesthesiology, Hofstra North Shore LJ, New Hyde Park, NY, Covidien Healthcare Economics and Outcome Research, Boulder, CO, Harrier Consultancy, Lancaster, United Kingdom, Podometrics IncCambridge, MA, Duke University, Durham, NC .

**RA A4029**

**Inhibition of GTP Cyclohydrolase and Tetrahydrobiopterin Synthesis Reduce Stress-Induced Hyperalgesia in Rats**

BH4 is critical for neuropathic and inflammatory pain. However, the role of BH4 in stress-induced hyperalgesia (SIH) is still unknown. This present in vivo study is conducted to address this issue. The rats were acutely stressed by immobilization for 1h or chronic stressed by immobilization for 6h daily in a period of 1week. The active enantiomer of BH4 or GCH1 inhibitor were intrathecally injected in chronic stressed rats 15 min before every immobilization. Both acute and chronic immobilization stress can induce hyperalgesia. The effect of chronic immobilization stress is more pronounced than acute stress. BH4 and GCH1 are involved in the pathogenesis of SIH at the spinal level, probably by HPA axis. SIH can be reduced by inhibition of BH4 synthesis. **Hui Xu, M.D., Pei Lu, M.D.;** Anesthesiology, Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China.

**RA A4030**

**Lumbar Plexus Block - Comparison of Nerve Stimulation vs. Ultrasound Guidance**

This prospective controlled randomized trial evaluates ultrasound guidance versus nerve stimulation for lumbar plexus block performance in patients undergoing total hip arthroplasty Complete femoral nerve sensory block was surprisingly low in both groups, nerve stimulation resulted in higher completion rates for obturator and lateral femoral cutaneous block. No difference was observed for performance time, block duration, and postoperative pain scores. **Joni Maga, M.D., Treniece N. Eubanks, M.D., Nicole D. Martin, M.D., Juan F. Gutierrez, M.D., Ralf Gebhard, M.D.;** Anesthesiology, University of Miami, Miami, FL .

**PD04-1 CLINICAL CIRCULATION: ECHO  
10-11:30 a.m. | Room 243**

**CA A4031**

**Focused Cardiac Ultrasound to Track Pulmonary Hemodynamic Changes in Patients With OSA Following Total Joint Arthroplasty**

Up to 25% of pts undergoing total joint arthroplasty (TJA) have OSA, however, little is known about their incidence of pulmonary HTN (pHTN) or the progression of pulmonary arterial pressures (PAP) after TJA. We measured the systolic systemic arterial pressure (sSAP) and systolic PAP (sPAP) non-invasively in 10 OSA at 4 points: in holding, PACU, POD1 and 2. The sSAP trended down until POD1, while the sPAP remained stable, resulting in the ratio of sSAP:sPAP to decrease by 25%. The OSA pts did not have preexisting pHTN; however, the sPAP:sSAP ratio suggests that cement/bone marrow emboli may induce delayed right heart strain and increase the risk for complications. **Stephen Haskins, M.D., Jemiel A. Nejim, M.D., Thomas C. Danninger, M.D., Marcus C. DiLallo, B.S., Sean C. Garvin, M.D., Stavros G. Memtsoudis, M.D., Ph.D.,** Anesthesiology, Hospital for Special Surgery, New York, NY.

**CA A4032**

**Effects of Epinephrine and Levosimendan on the Left Ventricle Myocardial Performance Index in On-pump CABG**

A double blind randomized research about left ventricle myocardial performance index in on-pump CABG. Was compared Epinephrine and Levosimendan during the CPB weaning and the outcomes in 30 days. Patients treated with epinephrine had a lower LVMPI in the immediate post-CPB period, showing an efficient weaning from CPB in patients undergoing on-pump CABG with no difference in 30 days outcomes between the two groups. **Marcello F. Salgado, Jr., M.S., Marselha Barral, Ph.D., Louis Barrucand, Ph.D., Ismar L. Cavalcanti, M.D., Nubia Verçosa, Ph.D.,** Anesthesia, Federal University of Rio de Janeiro, Echocardiography, SUPREMA, Juiz de Fora, Brazil, Federal University of Rio de Janeiro, Federal University Fluminense, Rio De Janeiro, Brazil.

**CA A4033**

**Immediate Effects of Aortic Valve Replacement on Left and Right Ventricular Function**



The immediate effect of replacement of a stenotic aortic valve on myocardial function is unclear. Our goal was to assess the effect of aortic valve replacement (AVR) on intraoperative left and right ventricular mechanics using echocardiographic measures of myocardial deformation, specifically myocardial strain and strain rate. Following AVR, left ventricular (LV) ejection fraction, cardiac output, and strain rate increased, documenting improved LV function. In contrast, right ventricular (RV) function, measured by RV strain. **Abraham Sonny, M.D., Akhil K. Singh, M.D., Dongsheng Yang, M.S., James Thomas, M.D., Daniel Sessler, M.D., Andra Dunc**Cleveland Clinic, Cleveland, OH, Cardiothoracic Anesthesiology, Cleveland Clinic, Cleveland, OH.

**CA A4034**

**The Hemodynamic Response to Trendelenburg Position Is Not Affected by Left Ventricular Loading Conditions**



Trendelenburg position is commonly used to treat hypotension; however evidence supporting its effectiveness is mixed, perhaps related to heterogeneous study populations with widely varying myocardial loading conditions. Our goal was thus to determine whether the effect of Trendelenburg position on cardiac output in cardiac surgical patients depends upon ventricular loading conditions, specifically in the presence or absence of a stenotic aortic valve. We found that Trendelenburg position did not consistently increase cardiac output irrespective of varying preload, afterload, or contractility. **Abraham Sonny, M.D., Jing You, M.S., Daniel Sessler, M.D., Andra Duncan, M.D.;** Anesthesiology Institute, Outcomes Research, Cardiothoracic Anesthesiology, Cleveland Clinic, Cleveland, OH .

**CA A4035**

**Impact of Tidal Volume on the Accuracy of Pulse Pressure Variation for Predicting Fluid Responsiveness**

It is commonly accepted that a contraindication to using pulse pressure variation (PPV) for goal directed fluid optimization is an intraoperative patient with a tidal volume (mL/kg) less than 8. This study, using a database of over 400 intraoperative patients before and after a fluid challenge, determined that the validity of this assumption is only partly true. PPV can be used in this patient population but adjustments in the threshold value (and concordant gray zone) must be made. **Brenton S. Alexander, B.S., Maxime Cannesson, M.D., Ph.D., Yannick Le Manach, M.D.;** Anesthesiology, University of California, Irvine, Irvine, CA, Anesthesia & Clinical Epidemiology and Biostatistics, Michael DeGroot School of Medicine Faculty of Health Sciences, Hamilton, ON, Canada.

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## CA A4036

### Regional Variability in Left Ventricular Outflow Tract Shape: A Three-Dimensional Transesophageal Echocardiography Study

The cross sectional area of the left ventricular outflow tract (LVOT) is used in multiple continuity-equation derived calculations. Current methods for LVOT area estimation with 2-Dimensional echocardiography assume a circular shape of LVOT. Using 3-dimensional transesophageal echocardiography we found that the shape of the LVOT varies depending on the region, being more elliptical proximally and round distally. **Anam Pal, M.D., Mario Montealegre-Gallegos, M.D., Jacob A. Clark, M.D., Khurram Owais, M.D., Robina Matyal, M.D., Thomas Huang, B.A., Jeffrey B. Hubbard, M.D., Vwaire Orhurhu, B.A., M.P.H., Feroze Mahmood, M.D.;** Beth Israel Deaconess Medical Center, Harvard School of Public Health, Boston, MA .

## CA A4037

### Validation of a Novel Technique for Cross-Sectional Visualization and Evaluation of Pulmonary Valve During Transesophageal Echocardiography

Perioperative assessment of pulmonic valve can be challenging. XPlane imaging with vertical tilt allows 2 high-resolution images of the PV to be displayed simultaneously in real time. This allows cross-sectional as well long axis visualization of the valve. In this study, we validate a simple method to achieve this. **Sanjay Dwarakanath, M.B.B.S., Manuel R. Castresana, M.D., Amanda Behr, M.AC.M.I.F.A.M.I., Mary E. Arthur, M.D.;** Anesthesiology and Perioperative Medicine, Medical Illustration, Georgia Regents University, Anesthesiology and Perioperative Medicine, Georgia Health Sciences University, Augusta, GA.

## CA A4038

### Three Dimensional Strain Imaging Identifies Regional Alterations in Dynamic Left Ventricular Function After Cardiac Surgery

The aim of this study was to evaluate the segmental changes in LV function after cardiac surgery, using 3D transthoracic echocardiography (TTE) based speckle tracking strain imaging. This prospective study demonstrates that there is a clear anatomical difference in the effects of cardiopulmonary bypass on ventricular function, with functional changes following a basal to apical pattern. The larger reduction in apical function after CPB may be due to differential anatomical perfusion and protection during cardiac surgery. **Kimberly J. Howard-Quijano, M.D., Vanessa G. Henke, M.D., Wei Zhou, Ph.D., Kate Lee, B.S., Jennifer Scovotti, M.A Aman Mahajan, M.D., Ph.D., Anesthesiology, University of California at Los Angeles, University of Southern California, University of California at Los Angeles, Los Angeles, CA.**

## PD10-1 EXPERIMENTAL NEUROSCIENCES: NEUROTOXICITY 10-11:30 a.m. | Room 243

## NA A4039

### Midazolam Produces a Persistent Increase in Hippocampal Tau Phosphorylation and a Decrease In Cortical Tau Solubility In Mice

Acute midazolam administration increases hippocampal tau phosphorylation in C57BL/6 and hTau mice, the latter strain solely expressing non-mutant human tau. This increased tau phosphorylation is accompanied by a decrease in cortical soluble tau in the hTau mice. **Robert A. Whittington, M.D., László Virág, M.S.,** Columbia University Medical Center, New York, NY, Department of Anesthesiology, Columbia University Medical Center, New York, NY.

## NA A4040

### Anesthetic Toxicity: RhoGTPases, Growth Cone Collapse, and Axonal Transport

Propofol exposure in developing neurons results in increased RhoA signaling, growth cone collapse and impaired retrograde axonal transport of QD-BDNF. Propofol mediated growth cone collapse and impaired axonal transport are attenuated by RhoA inhibition. These findings expand our knowledge of anesthetic mediated neurotoxicity in developing neurons and identify novel targets for therapeutic intervention in the event that toxicity is demonstrated in humans. **Matthew L. Pearn, M.D., Celine DerMardirossian, Ph.D., Mitsuyoshi Kodama, M.D., Chengbiao Wu, Ph.D., Piyush M. Patel, M.D., Brian P. Head, Ph.D.,** Anesthesiology, Scripps Research Institute, Veteran Affairs Medical Center, Neurosciences, University of California, San Diego, Anesthesiology, Veteran Affairs Medical Center, San Diego, CA.

## NA A4041

### Long Term Effects of Single or Multiple Neonatal Sevoflurane Exposures on Rat Hippocampal Ultrastructure

Repeated neonatal exposure to general anesthetics (GA) is associated with greater long-term reductions in hippocampal synaptic density and presynaptic mitochondrial trafficking than a single exposure. Furthermore, brief but repeated exposures resulted in greater synaptic loss relative to a single prolonged exposure. These findings provide a histological correlate for human population-based research and suggest that mitochondria play an etiological role in GA-induced neurodegeneration. **Levana Amrock, B.S., Mathew Starner, B.A., Kathy L. Murphy, M.D., Mark G. Baxter, Ph.D., Neuroscience and Anesthesiology, Icahn School of Medicine at Mount Sinai, New York, NY, Biomedical Services, University of Oxford, Oxford, United Kingdom,**



## NA A4042

### Dexmedetomidine Attenuates Neuroinflammation in Fetal Rats Exposed to Propofol in Utero

Previous evidence suggests that dexmedetomidine (Dex) exerts neuroprotective properties in several setting of neuronal injury. In this study, we found that propofol anesthesia administered to pregnant rats on gestational day 20 caused an increase in the IL-6, TNF $\alpha$ , cleaved caspase-3 levels in the brain of fetal rat, increase the amount of IBA1 positive cells in the cortex and thalamus regions of fetal rats. These damages can be attenuated by coadministration of Dex. **Jing Li, Ph.D., Ming Xiong, M.D., Ph.D., Wanhong Zuo, Ph.D., Jiang H. Ye, M.D., Johan E. Reyes, M.D., Sergey Pisklavkov, M.D., Vasanti A. Tilak, M.D., Alex Y. Bekker, M.D., Ph.D.,** Anesthesiology, NJMS-Rutgers, Newark, NJ .

## NA A4043

### Toward a Mechanism Underlying the Effects of Neonatal Sevoflurane on Neuropsychiatric-like Behavioral Changes

Besides learning and memory-related behavioral changes, our lab demonstrated that neonatal exposure to sevoflurane impacts repetitive behaviors and social interaction during adolescent period. These behaviors have been shown to be impaired in mouse models of neuropsychological disorders, such as Autism Spectrum Disorder. We have identified mTOR and PKMzeta as potential molecular targets underlying the observed behavioral changes. **Daisy Lin, Ph.D., Jinyang Liu, M.S., James E. Cottrell, M.D., Ira S. Kass, Ph.D.,** Anesthesiology and Pharmacology & Physiology, Downstate Medical Center, State Univ of New York Downstate Medical Center, Brooklyn, NY.

## NA A4044

### In Utero Exposure to Anesthetics Impacts Neuronal Migration in Developing Cerebral Cortex of Rat Embryos in a Dose Dependent Manner

To provide definitive clinical relevance of anesthetics neurotoxicity we examined the effects of anesthetics on neuronal positioning within the developing embryonic cerebral cortex. Histological analysis showed lower percentages of BrdU labeled cells in upper cortical layers and larger percentages in deeper cortical layers and subjacent white matter in the pups in utero exposed to anesthetics ( $p < 0.05$ ). This abnormal dispersion progressively deviated from the baseline with the increased exposure time. **Mario Moric, M.S., Vicko Gluncic, M.D., Ph.D., Yaping Chu, Ph.D., Jeffrey S. Kroin, Ph.D., Jinyuan Li, M.D., Ph.D., Veronika Hanko, M.S., Kenneth J. Tuman, M.D.;** Anesthesiology, Neurological Sciences, Rush University Medical Center, Northwestern University, Chicago, IL .

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain

**NA A4045****Increased Duration of in Utero Anesthetics Exposure Progressively Impacts Postnatal Spatio-visual Learning and Somatosensory Development in Rats**

This study examines the behavior of the offspring of pregnant rats exposed to either propofol or isoflurane on gestation day 17 (E17) which corresponds to the peak of cortical and hippocampal neurogenesis. We hypothesized that this exposure timing will consequently have effect on learning and memory development but not on coordination or motor skills. **Mario Moric, M.S., Vicko Gluncic, M.D., Jeffrey S. Kroin, Ph.D., Persons L. Amanda, Ph.D., Kenneth J. Tuman, M.D.;** Anesthesiology, Rush University Medical Center, Chicago, IL.

**NA A4046****Lithium Protects Against Isoflurane-induced Neurotoxicity in Infant Non-Human Primates**

6-day-old rhesus macaques received isoflurane anesthesia for 5hrs (ISO), ISO plus Lithium (Li), or no drug. Co-administration of Li during ISO anesthesia almost completely prevented acute neuroapoptosis, and significantly reduced acute oligodendroglia apoptosis that was observed in the absence of Li. **Ansgar Brambrink, M.D., Ph.D., Stephen A. Johnson, M.S., Gregory A. Dissen, Ph.D., Lauren D. Martin, V.M.D., Lauren E. Kristich, R.A., Kevin K. Noguchi, Ph.D., John W. Olney, M.D., Ph.D.,** Oregon Health & Science University, Oregon National Primate Research Center, Portland, OR, Psychiatry, Washington University School of Medicine, St. Louis, MO.

**PD15-3 PEDIATRIC ANESTHESIA: GENERAL  
10-11:30 a.m. | Room 244****PD A4047****Anesthesia for Ophthalmic Arterial Chemosurgery for Retinoblastoma: Five Year Experience With Severe Intra-operative Respiratory Compliance Changes**

Ophthalmic arterial chemosurgery (OAC) for retinoblastoma is associated with serious respiratory reactions. We investigated severe respiratory compliance changes (SRCC) and short term outcomes in OAC. Of 122 children, 63% had SRCC during at least one OAC. Overall, SRCC occurred in 29.2% of OAC. SRCC at the initial OAC was poorly predictive its occurrence on subsequent OAC. SRCC was managed with IV epinephrine. There was no long-term morbidity associated with SRCC. **Meredith Kato, M.D., Nicole E. Green, B.S., Kelli O'Connell, B.A., Sean Till, B.A., Daniel J. Kramer, expected AB 2015, Mashael Al-Khelaifi, M.D., Jung Hee Han, M.D., Kane O. Pryor, M.B., B.S., Yves Pierre Gobin, M.D., Alex Proekt, M.D., Ph.D.,** Anesthesiology, Radiology in Neurological Surgery and Neurology, Weill Cornell Medical College, New York Presbyterian Hospital, New York, NY.

**PD A4048****Intranasal Dexmedetomidine Premedication Reduces the Minimum Alveolar Concentration of Sevoflurane for Laryngeal Mask Airway Intubation in Children**

Intranasal premedication dexmedetomidine produces a dose-dependent decrease the MAC of sevoflurane for LMA intubation in children. **Yusheng Yao, M.D., Jin Liu, M.D.;** Department of Anesthesiology and Translational Neuroscience Center, West China School Of Medicine, West China Hospital, Sichuan University, Chengdu, China.

**PD A4049****Nitrous Oxide Reduces Explicit Memory in Children**

We sought to determine the effects of three concentrations of nitrous oxide, 0, 30% and 60%, on explicit recall in unpremedicated children, scheduled for elective surgery. The primary hypothesis was that 60% nitrous oxide reduces recall of verbal, visual and olfactory interventions compared with 0% nitrous oxide. **Lu'ay Nubani, Resident, Rafeek Hegazy, M.D., Jerrold Lerman, M.D., Aruna Rao, D.D.S., Abdulrahman El-Galled, M.D., Lara Eisa, M.D., Christopher Heard, M.B.Ch.B.;** Anesthesia Department, Children's Hospital of Buffalo, Buffalo, NY.

**PD A4050****TAP Block Vs. Caudal for Lower Abdominal Surgery in Children: A Double-Blinded Randomized Controlled Trial**

TAP block was compared with caudal block for postoperative lower abdominal pain in children using a double-blinded randomized controlled trial in ureteral reimplantation surgery. Our results showed that the TAP block group had lower cumulative narcotic requirement and episodes of emesis at 24 hours, though initial PACU pain scores were lower in the caudal group due to the coverage of viscerally mediated bladder spasm associated discomfort. **Bevan P. Londergan, M.D., Robert B. Bryskin, M.D., Renee Heng, M.D., Rebekah Wheatley, M.D., Marjorie A. Lewis, M.D., Erica Mercer, M.D., Mark Barraza, M.D., Gang Ye, Ph.D.,** Anesthesiology, Nemours Children's Clinic, Jacksonville, FL, Nemours Children's Clinic, Orlando, FL.

**PD A4051****EEndotracheal Tube and Cricoid Ring Cross-Sectional Area: Comparison in the Pediatric Population**

Conclusion:Cricoid CSA values can serve as a reference in the pediatric population for selecting the appropriate ETT size by correlating it with the CSA of the ETT. These data can be to evaluate the mathematical formulae used to determine the size of the ETT to be used and evaluate if other calculations will provide a better estimate. **Tariq Wani, M.D., Khalid Sofi, M.D., Bruno Bissonnette, M.D., Joseph Tobias, M.D.;** Anesthesia and Pain Medicine, Nationwide Children's Hospital, Columbus, OH, Anesthesiology, Sheri-Kashmir Institute of Medical Sciences, Srinagar, India.

**PD A4052****Direct Airflow Monitoring Ineffective After Adenotonsillectomy in Children With Obstructive Sleep Apnea Syndrome**

Current modalities for monitoring ventilation in children after adenotonsillectomy are inadequate. Evaluation of airflow monitoring, despite being the gold standard for diagnosing airway obstruction, is not a practical or well-tolerated monitor in the post-operative setting. **Nicholas Dalesio, M.D., James R. Benke, B.S., Christopher M. Donohue, B.S., Steven Greenberg, M.S., Stacey L. Ishman, M.D., M.P.H., FAAP, Ankita Saxena, B.S., Alan R. Schwartz, M.D.;** Anesthesiology and CCM, Department of Otolaryngology/Head and Neck Surgery, Pulmonary/Critical Care, Johns Hopkins University, Baltimore, MD, UC Otolaryngology/ Head and Neck Surgery, Cincinnati Children's Hospital Center, Cincinnati, OH.

**PD A4053****A Retrospective Comparison of Ropivacaine and Chloroprocaine Continuous Epidural Analgesia for Management of Post Thoracotomy Pain in Infants**

The use of chloroprocaine for continuous epidural infusion in infants following thoracotomy for lung resection shows equivalent efficacy when compared to ropivacaine with a trend toward reduced opioid consumption in the first 48 hours following surgery. This may be associated with a greater margin of safety and further studies are needed to investigate these findings. **Wallis T. Muhly, M.D., Preeti George, M.D., Lynne G. Maxwell, M.D., Harshad G. Gurnaney, M.B.B.S., M.P.H., Alexander Capuco, B.S., Francis W. Kraemer, M.D., Arjunan Ganesh, M.B.B.S.,** Anesthesiology and Critical Care Medicine, The Children's Hospital of Philadelphia, Philadelphia, PA.

**PD A4054****Capnography Fails as a Continuous Respiratory Monitor in Pediatric Patients Treated with IVPCA Opioids**

Children treated with IV PCA did not tolerate continuous monitoring of respiration using capnography. Until better, kid friendly monitors are available, guidelines and recommendations geared to adult patients cannot be extended to children. **Myron Yaster, M.D., Karen M. Miller, B.A., Andrew Y. Kim, B.S., Elizabeth White, R.NConstance L. Monitto, M.D., Sapna R. Kudchadkar, M.D., James Fackler, M.D.;** Anesthesiology, Critical Care Medicine, and Pediatrics, The Johns Hopkins University of Medicine, Baltimore, MD.

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**PD17-1 RESPIRATION-UPPER AIRWAY AND SLEEP APNEA**  
1-2:30 p.m. | Room 245

**FA A4055**

**Development and Validation of the DES-OSA Score: a Morphological Preoperative Obstructive Sleep Apnea Prediction Score**

Obstructive Sleep Apnea (OSA) significantly increases the perioperative risk. We define a simple, morphological and predictive score, aimed at detecting OSA patients. This score include four weighted parameters: Neck Circumference, Body Mass Index, Mallampati Score and Distance between Thyroid and Chin. The PK for an AHI > 30 was 0.868 (95% CI: 0.81-0.92). The area under the curve was 0.83 (95% CI:0.735-0.926). Sensitivity and Specificity, expressed in %, were 73.1 and 78.9 for a score >5. Eric P. Deflandre, M.D., F.C.C.P. Vincent Bonhomme, M.D., Ph.D., Stephanie Degey, M.H.S. Robert Poirrier, M.D., Ph.D., Jean F. Brichant, M.D., Ph.D., Pol Hans, M.D.; Cabinet Medical ASTES & Clinique Saint-Luc de Bouge, Namur, Belgium, CHR de la Citadelle University, University Hospital of Liege, Department of Anesthesia & ICM, Liege, Belgium, Cabinet Medical Astes, Jambes, Belgium.

**FA A4056**

**Comparison of The STOP-Bang and The Modified Neck Circumference Obstructive Sleep Apnea Screening Questionnaires**

This study was designed to determine the degree of correlation between the STOP-Bang and the (Modified Neck Circumference) MNC questionnaires in measuring OSA risk. The strong correlation between the 2 questionnaires demonstrated in this study and the authors' successful experience with the MNC questionnaire justify the conduction of a randomized controlled trial to test the validity of the MNC questionnaire. Medhat S. Hannallah, M.D., F.F.A.R.C.S. Yonette Exeter, C.R.N.P., Lauren Scher, M.S., Ghofran Habib, M.D., George Hwang, M.D., Ling Cai, Ph.D., M.A.; Anesthesiology, Medstar Georgetown University Hospital, Georgetown University School of Medicine, Washington, D.C.

**FA A4057**

**The Stop-Bang Questionnaire as a Predictor of Hypoxia in Non-Cardiac Surgery Patients: A Prospective Cohort Analysis**

A large prospective cohort analysis derived from the VISION study that looks at the predictability of post-operative hypoxia after non-cardiac surgery using the STOP BANG questionnaire for obstructive sleep apnea. A secondary outcome included derivation of a subset of STOP BANG questions that would be better predictors of post-operative hypoxia. Ashish K. Khanna, M.D., FCCP, Zhuo Sun, M.D., Amanda Naylor, B.A., Jing You, M.S., Brian D. Hesler, M.D., Andrea M. Kurz, M.D., Philip J. Devereaux, M.D., Ph.D., Daniel I. Sessler, M.D., Leif Saager, M.D.; Anesthesiology Institute & Outcomes Research, Cleveland Clinic, Cleveland, OH, Mc Master University, Hamilton, ON, Canada.

**FA A4058**

**Re-Modeling The STOP-Bang Score: Can the Sensitivity and Specificity be Improved? An Explorative Study**

Two new STOP-Bang score models were tested based on different score weights or the addition of metabolic syndrome. Both models improve the ability to identify patients with OSA. However, compared to the original, the difference is not clinically significant, and their discriminating ability for OSA severity was similar. Sara L. Ewing, B.S., Carolyn D'Ambrosio, M.D., Lori Lyn Price, M.A.S., Iwona Bonney, Ph.D., Roman Schumann, M.D.; Tufts University School of Medicine, Tufts Medical Center, Boston, MA.

**FA A4059**

**Randomized Comparison of Propofol and Sevoflurane Anesthesia in Sleep Apnea Patients**

Remifentanyl based anesthesia regimens with either sevoflurane or propofol are not associated with increased nocturnal airway obstruction or oxygen desaturation episodes. Philipp Faßbender, M.D., Silja Buergener, Medical Student, Ali Haddad, M.D., Marie-Therese Silvanus, M.D., Jürgen Peters, M.D.; Klinik für Anästhesiologie und Intensivmedizin, Universität Duisburg-Essen und Universitätsklinikum Essen, Essen, Germany.

**FA A4060**

**AHI, ODI and Oxygenation Parameters from the Polysomnogram: Useful for OSA Severity?**

The AHI and ODI have disparate correlations with two distinct polysomnography derived oxygenation parameters. This may be one explanation for the poor correlation of AHI based OSA severity with perioperative outcomes. A new OSA severity model may need to include oxygenation parameters to better suit perioperative risk stratification of patients with OSA. Sara L. Ewing, B.S., Lori Lyn Price, M.A.S., Carolyn D'Ambrosio, M.D., Roman Schumann, M.D.; Tufts University School of Medicine, Tufts Medical Center, Boston, MA.

**FA A4061**

**Relationship of White Blood Cell and Obstructive Sleep Apnea**

White Blood Cell Count were associated with Obstructive Sleep Apnea. Tze Ping Tan, M.B.B.S., FANZCA, Peter Liao, M.D., Yi Liang Yang, M.D., Atul Malhotra, M.D., Frances F. Chung, M.D.; Department of Anesthesia, Toronto Western Hospital, Toronto, ON, Canada, Pulmonary and Critical Medicine, University of California San Diego, San Diego, CA.

**FA A4062**

**Does a Semi-Upright Position During Sleep Prevent Postoperative Worsening of Apnea Hypopnea Index in Patients With Obstructive Sleep Apnea (OSA)?**

In this proof-of-concept, randomized controlled trial patients with obstructive sleep apnea (AHI > 5) undergoing non-cardiac surgeries were randomized into a semi-sitting position (45 degrees incline, n=25) or supine position (n=21). The primary outcome was change in postoperative AHI from baseline. Based on an intention-to-treat analysis, no significant difference was observed in AHI or ODI postoperatively, between two groups. This proof-of-concept trial demonstrated feasibility of use of semi-sitting position amongst OSA patients postoperatively. However, larger trials with sufficient power may be needed to recommend semi-sitting position postoperatively. Mandeep Singh, M.B.B.S., M.D., M.S.C., FRCPC, Azadeh Yadollahi, Ph.D., Pu Laio, M.D., Yiliang Yang, M.D., Weimin Kang, M.D., RPSGT, Shadman Islam, B.S.c., Candidate, Colin Shapiro, FRCPC, Frances Chung, FRCPC; University Health Network, University of Toronto, Toronto, ON, Canada.

**PD06-1 CRITICAL CARE**  
3-4:30 p.m. | Room 243

**CC A4063**

**Identifying Predictors of Delayed Mobilization Following Implementation of an Early Mobilization Initiative in the Intensive Care Unit**

Early mobilization of critically ill patients may lead to improved short and long-term outcomes. This retrospective chart review examines clinical and demographic factors associated with delays to mobilization in the ICU following implementation of an early mobilization initiative. The initiative succeeded in increasing the proportion of patients mobilized, however delirium and sedative medication infusions were independently associated with delays in physical therapy referral and mobilization. Melissa Vogel song, M.D., Heidi J. Engel, PT.D.P.T., Kathleen D. Liu, M.D., Ph.D., Michael A. Gropper, M.D., Ph.D., Anesthesia and Perioperative Care, Physical Therapy, Medicine, UCSF, San Francisco, CA.

**CC A4064**

**Investigation of Clinical Variables in Unexpected Readmission to the Intensive Care Unit**

We investigated readmissions to the ICU. The incidence of unexpected ICU readmission was 8.1%, and the main reason for readmission was respiratory failure (50.0%). Patients who were readmitted to the ICU were significantly older and had a higher hospital mortality rate. It is important to detect early changes in vital signs of patients in general wards and to improve the severity of illness scoring system at the time of their ICU discharge. Masayuki Akatsuka, M.D., Shuji Yamamoto, M.D., Ph.D., Hiromichi Ichinose, M.D., Michiaki Yamakage, M.D., Ph.D., Anesthesiology, Obihiro-Kosei General Hospital, Obihiro, Japan, Anesthesiology, Sapporo Medical University, Sapporo, Japan.



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**CC A4065****Estrogen Administered After Cardiac Arrest & Cardiopulmonary Resuscitation (CA/CPR) is Renoprotective**

Acute kidney injury is a common and serious perioperative complication. We found that estradiol ameliorates renal injury when administered after cardiac arrest and cardiopulmonary resuscitation, a model of perioperative whole-body ischemia. Mizuko Ikeda, M.D., Katie Schenning, M.D., Sharon Anderson, M.D., Michael Hutchens, M.D.; Oregon Health and Science University, Portland, OR.

**CC A4066****Microvesicles Derived from Human Bone Marrow Mesenchymal Stem Cells Restored Alveolar Fluid Clearance in Marginal Donor Human Lungs Not Used for Clinical Transplantation**

Utilization of lung transplantation for patients with advanced lung diseases have been limited in part because of the lack of availability of optimal donor lungs. We previously demonstrated that administration of human mesenchymal stem cells (MSC) in an ex vivo perfused human lung may be a mechanism to rehabilitate marginal lungs, potentially increasing the donor pool size. In this study, we hypothesized that microvesicles, small anuclear plasma membrane bound fragments constitutively released from MSC, which retain the phenotype of the parent cell, may be a good alternative to the stem cells as a therapeutic due to its availability and lack of need for expertise to process the sample. Jae W. Lee, M.D., Stephane Gennai, M.D., Antoine Monsel, M.D., Qi Hao, Ph.D., Jia Liu, M.D., Michael Matthay, M.D.; Anesthesiology, UCSF Medical Center, San Francisco, CA.

**CC A4067****Optimization of Pressure-Support Ventilation Based on the Analysis of the Electromyographic Signal of the Diaphragm**

Comparison of the number of asynchrony during two phases of ventilation in patient with difficult weaning. A first one where the settings were optimized by analyzing the curves of the ventilator. And a second one using the analysis of the electromyographic signal of the diaphragm (EAdi). We find a decrease of number of asynchrony per minute (2.6 vs 1.8,  $p < 0.05$ ) and the index of asynchrony (10.1 vs 5.9,  $p < 0.05$ ) during the optimization phase based on the analysis of EAdi signal. This decrease is mainly due to the lower percentage of microasynchrony (inspiratory delays and late cycling). Maxime Grigoli, M.D., Laure Crognier, M.D., Jean-Marie Conil, M.D., Antoine Rouget, M.D., Marie Virtos, M.D., Pierre Cougot, M.D., Olivier Fourcade, M.D., Ph.D., Bernard Georges, M.D.; Anesthesia and Intensive Care, Centre Hospitalier Universitaire de Toulouse, Toulouse, France.

**CC A4068****Low Urine Output is Associated with Kidney Injury and Synergistically with Creatinine to Predict Death**

Low urine output predicts rise in creatinine after cardiac surgery. If the creatinine levels rise, then low urine output is also an independent risk factor for short term mortality. Milo C. Engoren, M.D., Michael Maile, M.D., M.S., Michael Heung, M.D., Elizabeth Jewell, M.S., Christie M. Young, M.D., Jonathan Haft, M.D.; Anesthesiology, University of Michigan, Ann Arbor, MI, Beaumont Health System, Royal Oak, MI.

**CC A4069****Postmortem CT Findings of Complications Resulting From Cardiopulmonary Resuscitation**

This retrospective study was conducted to evaluate the injuries related to CPR and its factors using PMCT. 223 patients were enrolled to the study. The images of CT revealed that 156 patients (69.96%) had rib fractures. Among the patients, rib fractures were associated with higher age (78.0 vs. 66.0,  $p < 0.01$ ), longer duration of CPR (41 min vs. 33 min,  $p < 0.01$ ), and lower rate of ROSC (26.3% vs. 55.3%,  $p < 0.01$ ). Five cases of pericardial cavity hematoma and two cases of bilateral pneumothorax were observed in only patients with rib fractures. Yuta Kashiwagi, M.D., Kenji Yamamoto, M.D., Ikuomi Mikuni, M.D., Daisuke Kawata, M.D., Akihito Tanpo, M.D., Naohiro Kokita, M.D., Satoshi Fujita, M.D., Tomoki Sasakawa, M.D., Hiroshi Iwasaki, M.D.; Department of Emergency Medicine, Anesthesiology and Critical Care, Asahikawa Medical University, Hokkaido, Japan.

**CC A4070****Innate Immune Toll-like Receptor 4 is Essential to Preserving Cardiac Function and Survival in Low Grade Polymicrobial Sepsis**

In current study, we demonstrate that the innate immune receptor TLR4 is essential to preserving cardiac function and survival in a mouse model of low grade polymicrobial sepsis. The study explored the possible cellular and molecular underlying mechanisms. Lin Zou, M.D., Ph.D., Ming Zhang, M.D., Ph.D., Yan Feng, M.D., Ph.D., Yu-Jung Chen, Ph.D., Fumito Ichinose, M.D., Ph.D., Wei Chao, M.D., Ph.D., Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital, Harvard Medical School, Boston, MA.

**PD08-4 EQUIPMENT, MONITORING AND ENGINEERING TECHNOLOGY: ADVANCES IN NONINVASIVE MONITORING 3-4:30 p.m. | Room 245****FA A4071****Capnography With a New Colorimetric Detector and a Smartphone**

The properties of a new colorimetric CO<sub>2</sub> detector were investigated in a laboratory by simulating a wide range of clinical conditions. A standard sampling IR monitor was used as reference. The colors of the detector were encoded by a smartphone and converted into capnograms. The accuracy and the precision were found to be comparable to that of the IR monitor. The detector is disposable but can be used for at least 7 days. The performance of the new detector and the potentially low cost of smartphone capnography should make this technology attractive for both established and new applications. Andras Gedeon, D.ScHanna Kuutmann, M.S.C., Emelie Rosén, M.S.C., Lars-Gösta Hellström, D.Sc.; R&D, Seebreath AB, School of Technology and Health, TH Royal Institute of Technology, Karolinska Institute, Stockholm, Sweden.

**FA A4072****Improved Performance of the New Vigileo-FloTrac System (Version 4.00) for Tracking Cardiac Output Changes**

The trending ability of the new fourth-generation Vigileo-FloTrac system (Version 4.00, Edwards Lifesciences, Irvine, CA, USA) after increased vasomotor tones was greatly improved as compared with the previous versions. However, the discrepancy of the new system in cardiac output measurement for patients with low or high systemic vascular resistance was not clinically acceptable as in previous versions. For clinical application in critically ill patients, this vasomotor tone-dependent disagreement must be decreased. Koichi Suehiro, M.D., Ph.D., Katsuki Tanaka, M.D., Ph.D., Tomoharu Funao, M.D., Ph.D., Tadashi Matsuura, M.D., Ph.D., Tokuhiko Yamada, M.D., Ph.D., Takashi Mori, M.D., Ph.D., Kiyonobu Nishikawa, M.D., Ph.D., Department of Anesthesiology, Osaka City University Graduate School of Medicine, Osaka City, Japan.

**FA A4073****Shunt Stream Capnography Using a Colorimetric Detector and a Smartphone Attached to a Resuscitator**

A colorimetric CO<sub>2</sub> detector was placed in a gas flow arranged between the inspiratory/expiratory sides of a self-inflating manual resuscitator. The detector colors were encoded and converted into capnograms by a smartphone. In a laboratory study the end-tidal CO<sub>2</sub> values tracked the reference values, obtained from a sampling IR monitor, well. This proposed method of monitoring manual ventilation requires no gas sampling, adds no dead space or resistance, is less subject to interference from liquids and has potentially a low cost. Andras Gedeon, D.ScHanna Kuutmann, M.S.C., Emelie Rosén, M.S.C., Lars Gösta Hellström, D.Sc.; R&D, Seebreath AB, School of Technology and Health, KTH Royal Institute of Technology, Stockholm, Sweden.

**FA A4074****Comparison of Invasive vs. Noninvasive CVP Monitoring in Patients Undergoing Major Intra-Abdominal Surgery**

The NeuMeDx NICVP device appears accurate and was able to replace the invasive CVP in our study population. Irwin Gratz, D.OEdward R. Deal, D.OFrancis Spitz, M.D., Smith Jean, Ph.D., Elaine Allen, Ph.D., Jasjit S. Sehdev, M.D.; Anesthesiology, Surgery, Cooper Medical School at Rowan University/Cooper University Hospital, Camden, NJ, Epidemiology & Biostatistics, University of California, San Francisco, San Francisco, CA.



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### FA A4075

#### Continuous Contactless Respiratory Rate Monitoring Using Radar: A Clinical Validation Study

Altered respiratory rate (RR) is one of the first symptoms of several diseases and conditions that require timely intervention to prevent further deterioration. To facilitate continuous RR monitoring a contactless, non-invasive, RR monitor was developed using (FMCW) radar technology. In this diagnostic cross-sectional study, FMCW radar was able to accurately measure RR in mechanically ventilated postoperative surgical patients during recovery on the PACU, but the accuracy decreased during spontaneous breathing. Kim van Loon, M.D., Martine Breteler, B.S., cBas van Zaane, M.D., Ph.D., Sander Kossen, M.S.C., Leo Van Wolfswinkel, M.D., Ph.D., Linda Peelen, Ph.D., Cor J. Kalkman, M.D., Ph.D., Anesthesiology, Julius Center for Health Sciences and Primary Care, University Medical Center Utrecht, Utrecht, Netherlands, TNO laboratories, The Hague, Netherlands.

### FA A4076

#### Continuous Non-invasive Blood Pressure Monitoring by CNAP® During Carotid Endarterectomy

There was a poor agreement between Continuous non-invasive BP monitoring provided by the CNAP system and the standard invasive methods during carotid endarterectomy surgery. Valentina Assenzo, M.D., Thi Mum Huynh, M.D., Jona Joachim, M.D., Romain Pirracchio, M.D., Ph.D., Bernard Cholley, M.D.; Department of Anesthesiology and Critical Care Medicine, Hopital Européen George Pompidou, Paris, France.

### FA A4077

#### Non-Invasive Respiratory Volume Monitoring vs. Capnography at Various Respiratory Rates in Non-Intubated Subjects

EtCO2 measurements can be inaccurate, with variations in sensor positioning, changes in breathing pattern and dilution from flow of supplemental oxygen. This study compared capnography to a non-invasive respiratory volume monitor (RVM) in subjects in a controlled environment without supplemental oxygen. EtCO2 measurements lacked the fidelity to adequately capture rapid changes in ventilation regardless of whether the EtCO2 sampling was done with an in-line sensor, simulating a properly-seated face mask capturing all of the expired air, or with an oral/nasal cannula. In a steady state, the RVM correlated very well with the EtCO2 measurements, but during transient periods provided timelier reporting of ventilatory changes. Gary J. Mullen, M.D., Mufaddal Jafferji, B.S., Diane Ladd, D.N.P.; Vidant Medical Center, Greenville, NC, Respiratory Motion, Inc/Waltham, MA, West Virginia University, Morgantown, WV.

### FA A4078

#### Comparison Between Changes in Pulse Oximeter Perfusion Index and Laser Doppler Flowmetry during Spinal Surgery in a Non-Human Primate Model for Cauda Equina Injury and Repair

In this pilot study, we assessed microcirculatory flow in 8 monkeys undergoing spinal surgery. Our purpose in this analysis was to compare the pulse oximeter to laser Doppler flowmetry. Trend analysis was performed on the %ΔPI to reliably detect %ΔLDF using a polar plot method over time and indicates some agreement overall between %ΔPI and %ΔLDF. Christine K. Lee, B.S., Xuan Hoang, B.S., Jaime Nieto, M.D., Marcus Ohlsson, M.D., Ph.D., Kari L. Christe, D.V.M., Joseph B. Rinehart, M.D., Leif Havton, M.D., Ph.D., Maxime Cannesson, M.D., Ph.D., Department of Anesthesiology and Perioperative Care, Neurology; Reeve-Irvine Research Center University of California, Irvine, Irvine, CA, Department of Neuroradiology, Karolinska Hospital, Stockholm, Sweden, California National Primate Research Center, University of California, Davis, Davis, CA.

### PD12-2 OBSTETRIC ANESTHESIA: LABOR ANALGESIA, OUTCOMES, HEMORRHAGE AND MISCELLANEOUS 3-4:30 p.m. | Room 244

### OB A4079

#### Multidisciplinary Team Performance and Checklist Usage During Simulated Obstetric Hemorrhage: A Prospective Study

A prospective study assessing the impact of multidisciplinary team checklist training on the usage of a checklist as well as on team performance during a simulated obstetric hemorrhage. Alexander Butwick, M.B.B.S., Gillian Hilton, M.BCh.BFR.C.A Sara Goldhaber-Fiebert, M.D., Kay Daniels, M.D., Brendan Carvalho, M.D., Steven S. Lipman, M.D.; Department of Anesthesia, Obstetrics and Gynecology, Stanford University School of Medicine, Stanford, CA.

### OB A4080

#### Obstetric Outcomes Data from the Anesthesia Quality Institute National Clinical Outcomes Registry

Obstetric Outcomes from the Anesthesia Quality Institute's National Clinical Outcomes Registry (NACOR). Samir R. Jani, M.D., M.P.H., Richard P. Dutton, M.D., M.B.A., Dominique Y. Moffitt, M.D., Richard D. Urman, M.D., M.B.A., Department of Anesthesia, Critical Care, and Pain Medicine, Beth Israel Deaconess, Boston, MA, Anesthesiology Quality Institute AQI, Schaumburg, IL, Anesthesiology, Brigham & Women's Hospital, Boston, MA.

### OB A4081

#### Outcomes Among Super Obese Parturients: A 3 Year Retrospective Review

In this retrospective study over a 3 year period, the authors compared outcomes in super obese parturients vs. obese and non-obese cohorts. The super obese have significantly more comorbidities, and peripartum and neonatal morbidity. These outcomes serve as a warning to anesthesiologists and may be modifiable with changes in clinical practice management. Jennifer E. Hofer, M.D., Barbara M. Scavone, M.D.; Anesthesia and Critical Care, The University of Chicago Medicine, Chicago, IL, University of Chicago, Chicago, IL .

### OB A4082

#### Effect of Vitamin D Levels on Intrapartum Epidural Consumption

Vitamin D deficiency has been associated with depression and pain. We compared the intrapartum epidural consumption between women with higher and lower vitamin D levels. Women with lower vitamin D levels had a significantly higher epidural consumption. This finding is important given the high prevalence of vitamin D deficiency in pregnant women. Steven Ropers, M.D., Quy Tran, M.D., Andrew W. Geller, M.D., Amy Lamb, M.S., N.C.N.M., Ph.D., Calvin Hobel, M.D., Mark I. Zakowski, M.D.; Anesthesiology, Section of Obstetric Anesthesiology, Cedars-Sinai Medical Center, Los Angeles, CA.

### OB A4083

#### Effect of Maternal Fever on Epidural Drug Consumption During Labor

Maternal fever during labor is associated with prolonged epidural analgesia but the etiology is unclear. We compared intrapartum epidural drug consumption in those patients who developed fevers to those without fever with similar durations of labor. Maternal fever was associated with significant higher epidural drug consumption rates. This finding supports the theory linking fever, inflammatory markers, and pain. Andrew W. Geller, M.D., Mark I. Zakowski, M.D.; Anesthesiology, Section of Obstetric Anesthesiology, Cedars-Sinai Medical Center, Los Angeles, CA .



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain

**OB A4084****Analysis of High Scores in Obstetric-Early Warning Scoring Systems  
Tool: Maternal Safety Improvement Initiative**

We implemented Early Warning Scoring system and Rapid Response Teams for obstetric patients in antepartum and post partum units. Analysis of high scores during 2011 and 2012 revealed that these patients have significant morbidity and increased length of stay. **Rishimani S. Adsumelli, MBBS, FFARCS, Beata M. Evans, M.D., Valerie S. Wong, B.S., Antonietta Lynch, R.N.C.; Anesthesiology, Division of Nursing, Stony Brook Medicine, Stony Brook, NY.**

**OB A4085****Early Decrease of Hemoglobin and Calculated Blood Loss During the Management of Post-Partum Hemorrhage**

The purpose of this study was to investigate the relationship between hemoglobin early changes (delta Hb H0) and total blood loss calculated at Day 1 postpartum (CBL), during post partum hemorrhage (PPH). There was a good correlation between early decrease of Hb and severity of PPH. A delta Hb H0 of more than 2 g/dL had a good predictability for CBL > 1500 mL with sensitivity: 82%, specificity: 75%, PPV: 82% and NPV: 74%. The estimated delta Hb H0 at the beginning of the treatment of PPH may help in early diagnosis of severe PPH and contribute to its more rapid and appropriate management. **Nicolas Louvet, M.D., Agnès Rigouzzo, M.D., Julie Hilly, M.D., Federica Piana, M.D., Laure Girault, M.D., Nada Sabourdin, M.D., Isabelle Constant, M.D., Ph.D., Anesthésie Réanimation, Hôpital Armand Trousseau, Paris, France.**

**OB A4086****Dexmedetomidine Does Not Have Contractile-Enhancing Effect on Human Myometrium: An In-vitro Study**

This is an in-vitro study of the effect of dexmedetomidine on pregnant human myometrium. **Jie Zhou, M.D., M.S., M.B.A., Yu Du, M.D., Xuemei Lin, M.D.; Anesthesiology, Brigham and Women's Hospital, Harvard Medical School, Boston, MA, West China Second University Hospital, Chengdu, China.**

**POSTER PRESENTATIONS****PO05-2 CLINICAL NEUROSCIENCES**

8-10 a.m. | Hall B1-Area E

**NA A4087****Anesthetic Management and Considerations for Laparoscopic Diaphragm Pacing System (DPS) Placement in Patients With Amyotrophic Lateral Sclerosis (ALS): The Virginia Mason Experience**

Selected patients with amyotrophic lateral sclerosis (ALS) may benefit from laparoscopic Diaphragm Pacing System placement to improve quality of life and delay permanent mechanical ventilation. The clinical management of a series of 6 patients undergoing this operation at our institution is described. Total intravenous anesthesia without muscle relaxant and extubation to immediate BiPAP support are reasonable strategies for the anesthetic management of this high risk group of patients. Pneumothorax was observed in two patients, so chest radiographs should be considered early in the event of respiratory decompensation. **Andrew B. Lyons, M.D., Michael A. Elliot, M.D., Grete H. Porteous, M.D.; Anesthesiology, Neurology, Virginia Mason Medical Center, Seattle, WA.**

**NA A4088****Effects of Prolonged Inspiratory Time on Oxygenation and Cerebral Perfusion Pressure During Pneumoperitoneum in the Trendelenburg Position**

Equal ratio ventilation significantly reduced CPP due to its secondary hemodynamic effects during pneumoperitoneum in the Trendelenburg position. **Youn Yi Jo, M.D., Ph.D., Hong Soon Kim, M.D., Kyung Cheon Lee, M.D., Yong Beom Kim, M.D., Wol Seon Jung, M.D.; Gachon University Gil Medical Center, Incheon, Korea, Republic of.**

**NA A4089****Effect of Prewarming on Intraoperative Core Temperature in Patients Undergoing Endovascular Coiling of Cerebral Aneurysms**

30 minutes of forced-air warming before induction of anesthesia increased initial core temperature slightly and reduced the extent of decrease in core temperature during the first 40 minutes of anesthesia and the incidence of redistribution hypothermia. **Il Seok Kim, M.D.; Department of Anesthesiology and Pain Medicine, Kangdong Sacred Heart Hospital, Hallym University College of Medicine, Seoul, Korea, Republic of.**

**NA A4090****The Relative Effects of Dexmedetomidine and Propofol on Cerebral Blood Flow and Brain Oxygenation**

The effect of dexmedetomidine is non-inferior to propofol on cerebral blood flow velocity and brain oxygenation during awake deep-brain stimulator insertion. **Michael Kot, M.D., Attila Podolyak, M.D., Maged Y. Argalious, M.D., Andre Machado, M.D., Edward J. Mascha, Ph.D., Zeyd Y. Ebrahim, M.D., Andrea M. Kurz, M.D., Daniel Sessler, M.D., Ehab S. Farag, M.D., F.R.C.A.; Anesthesia Department, Neurosurgery, Cleveland Clinic, Cleveland, OH.**

**NA A4091****Elevated Diastolic Collapsing Margin Is Associated With Increased Risk of Intra-Ventricular Hemorrhage in Preterm Neonates**

Preterm infants are at risk for intraventricular hemorrhage. Past studies have failed to demonstrate a relationship between blood pressure and risk of intraventricular hemorrhage. Our findings demonstrate a strong correlation with elevations of the cerebral vasculature diastolic closing margin and intraventricular hemorrhage. Measurements of the diastolic closing margin could individualize and guide blood pressure management in high-risk, preterm infants. **Ronald B. Easley, M.D., Ken M. Brady, M.D., Kathleen K. Kilbler, B.S., C.C.P., Georgios Varsos, Ph.D., Charles D. Fraser, III, B.S., Christopher Rhee, M.D., Craig Rusin, Ph.D., Dean B. Andropoulos, M.D., Jeffrey Kaiser, M.D.; Baylor College of Medicine/Texas Children's Hospital, Houston, TX, Cambridge University, Cambridge, United Kingdom.**

**NA A4092****A Comparison of Hemoglobin Measured by Co-oximetry and Central Laboratory During Major Spine Fusion Surgery**

This study aims to evaluate if the hemoglobin concentration obtained by means of arterial blood gas (ABG) co-oximetry and central laboratory techniques (CBC) clinically correlate when using simultaneous measurements of hemoglobin concentration obtained during complex spine fusion surgery. The mean difference between measured hemoglobin values (i.e., bias) was 0.4 g/dL (95% CI 0.36 to 0.41 g/dL). The hemoglobin values obtained from ABG and CBC cannot be used interchangeably when verifying accuracy of novel point-of-care hemoglobin measurement modalities or when managing a patient with critical blood loss. **William J. Navarre, M.D., Louanne M. Carabini, M.D., Michael L. Ault, M.D., John Patrick F. Bebawy, M.D., Dhanesh K. Gupta, M.D.; Northwestern Memorial Hospital, Chicago, IL.**

**NA A4093****Influence of Gender, Anxiety and Depression on Post-operative Hyperalgesia in Patients Subjected to Spinal Surgery Under General Intravenous Anesthesia with Fentanyl or Remifentanyl**

In a post-hoc analysis of data from an observational study, we looked at the incidence of hyperalgesia in relation to gender and at a possible influence of gender on the relationship between anxiety and depression with the occurrence of hyperalgesia. 47 patients receiving TIVA with propofol and either remifentanyl or fentanyl were studied. Anxiety, but not depression, was associated with hyperalgesia in men; depression but not anxiety, was associated with hyperalgesia in women. Factors other than opioid protocol may influence post-operative hyperalgesia. **Pedro P. Amorim, M.D., Susana T. Alves, M.D., Tiago B. Mendes, Student, Ana M. Duarte, Student, Daniel O. Mendes, Student, Mónica D. Mesquita, Student, Ana C. Pinto, Student, André D. Santos, Student; Anestesiologia, Hospital Santo Antonio, Instituto Ciências Biomédicas Abel Salazar, Porto, Portugal.**

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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## NA A4094

### (S)-Ketamine Enantioselectively Inhibits D-Serine Transport by the Alanine-Serine-Cysteine Transporter (ASCT2)

We report the pharmacodynamic effect of KET on intracellular D-Ser concentrations in which increased intracellular concentrations of D-Ser are produced by (S)-KET mediated inhibition of the ASCT2 transporter. The in vitro effect is consistent with the rapid drop in systemic D-Ser plasma concentrations observed in clinical studies. **Michael Goldberg, M.D., Nagendra Singh, Ph.D., Rajib Paul, Ph.D., Irving W. Wainer, Ph.D., Anesthesiology, Cooper University Hospital, Cooper Medical School of Rowan University, Camden, NJ, The Laboratory of Clinical Investigation, NIA, NIH, Baltimore, MD.**

## NA A4095

### Outcomes of Severe Traumatic Brain Injury (TBI) in Thailand: A Need for Increasing Adherence to TBI Guidelines

Traumatic Brain Injury (TBI) is a major global public health problem. Using a modified NINDS Common Data Elements (CDEs) to abstract data adhered to Brain Trauma Foundation (BTF) Guideline was showed in the abstract. We are looking for improving the best care and outcomes of TBI patients. **Sumidtra Prathep, M.D., Hutcha Sriplung, M.D., Nakornchai Phuenpathom, M.D., Jozeph R. Zunt, M.D., M.P.H., Monica S. Vavilala, M.D.; Anesthesiology, Epidemiology, Neurosurgery, Prince of Songkla University, Hatyai, Songkhla, Thailand, Global Health, University of Washington, Seattle, WA.**

## NA A4096

### Remifentanyl Does Not Decrease the EEG Burst Suppression Threshold (MAC<sub>BS</sub>) of Sevoflurane

Reduction of MAC (skin incision) by R may mainly reflect spinal and peripheral effects, while MAC<sub>BS</sub> is not reduced by R. In contrast to expectations, there was no synergistic effect of R on MAC<sub>BS</sub>. The increase of MAC<sub>BS</sub> by R may be due to a reduction of external input, reduction of excitatory effects of sevoflurane, or an increased resistance against state transitions. **Semra Senpolat, M.D., Denis Jordan, Ph.D., Yvonne Kruschinski, M.B.I.O.L., Eberhard F. Kochs, M.D., Gerhard Schneider, M.D., Ph.D., University of Witten/Herdecke, Helios Klinikum, Wuppertal, Germany, Klinikum Rechts der Isar, Technische Universität München, Munich, Germany.**

## NA A4097

### Complications Arising from Prone Positioning for Spinal Surgery

Prospective review of complications following prone positioning associated with complex spinal surgery. **Julia Taylor, M.B.Ch.B., Vidhya Nagaratnam, M.B.B.S., Astri Luoma, M.BCh.B.; Department of Neuroanaesthesia, National Hospital for Neurology & Neurosurgery, London, United Kingdom.**

## NA A4098

### Do Long-term Gabapentinoids Offer Post-operative Pain Reduction After Spinal Fusion Surgery? A Retrospective Chart Review

Gabapentin and Pregabalin (G/P) are used as analgesic adjuncts in the peri-operative setting. Our single center, retrospective study demonstrated that taking long term G/P does not mitigate acute post operative pain after spinal fusion surgeries. **Elisabeth Abramowicz, M.D., Eduardo E. Galeano, M.D., Singh Nair, M.D., John K. Houten, M.D.; Anesthesiology, Neurosurgery, Albert Einstein College of Medicine, Montefiore Medical Center, Bronx, NY.**

## NA A4099

### Comparing Triple Therapy with Scopolamine Versus Palonosetron for Prevention of Nausea and Vomiting post Craniotomy

Both evaluated triple-therapies showed similar efficacy during the first 24 hours in preventing PONV in patient undergoing craniotomy. However, the scopolamine group showed to be more effective to prevent PONV especially during 24-120 hours. Future studies using both regimens affecting different receptor pathway should be performed to prove statistical significance. **Alberto A. Uribe, M.D., Maria A. Antor, M.D., Erika G. Puente, M.D., Karina M. Castellon, M.D., Joseph G. Werner, M.D., Sergio D. Bergese, M.D.; Anesthesiology, The Ohio State University Wexner Medical Center, Columbus, OH.**

## NA A4100

### Principal Component Analysis of ADNI Plasma Biomarkers for POCD Prediction

The cognitive risks factors associated with surgery are similar in respects to those found in chronic illnesses like Alzheimer's Disease (AD), where blood biomarkers (BMs) are studied to assist in early diagnosis. We describe an approach to analyzing these BMs based on results by others for AD study. This report uses principal component analysis and looks first at presurgical BM values. **Richard P. Kline, Ph.D., Michael Haile, M.D.; Anesthesiology, NYU Langone Medical Center, New York, NY.**

## NA A4101

### The Protective Effects of HET0016 on Pediatric Rat Model Following Traumatic Brain Injury

HET0016 can decrease the lesion volume and neuroinflammation after TBI. Meanwhile it can increase the stability of blood-brain barrier. **Shiyu Shu, Ph.D., Anesthesiology, Children's Hospital of Chongqing Medical University, Chongqing, China.**

## PO09-2 EXPERIMENTAL CIRCULATION

8-10 a.m. | Hall B1-Area C

## CA A4102

### Acute Hyperglycemia Diminishes Cardioprotective Effects of High Dose Insulin in the Ischemic Rat Heart

It is reported that not only diabetes but also the acute hyperglycemia abolishes ischemic preconditioning effects. On the other hand, insulin is an agent that has been shown to reduce myocardial injury and improve cardiac function. However, the preconditioning effects of insulin under hyperglycemic state are still unclear. We evaluated interactive effect of high dose insulin and hyperglycemia in the three groups of ischemic rat heart. The hearts were perfused with a Langendorff system. After reperfusion, the contractility and the pAkt in hyperglycemic group decreased compared with normoglycemic group. Acute hyperglycemia diminishes cardioprotective effects of insulin. The pAkt suppression is probably leading to contractile myocardial dysfunction. **Yosuke Nakadate, M.D., Hiroaki Sato, M.D., Takeshi Oguchi, M.D., Tamaki Sato, M.D., Kazuha Mitsui, M.D., Takashi Matsukawa, M.D.; University of Yamanashi, Yamanashi, Japan.**

## CA A4103

### Effects of Acute Hypercapnia in Stunned Myocardium in Swine

Cardioprotective effect of acute hypercapnia before ischemia was studied in swine stunned myocardium. Hypercapnia group (n=10) were ventilated to maintain PaCO<sub>2</sub> approximately 70 mmHg 30-min until 15 minutes before ischemia. Normocapnia group (n=10) were ventilated normally. Myocardial stunning was produced by 12-min ischemia and 90-min reperfusion in all swine. Functional recovery was evaluated with segment shortening. Acute hypercapnia 15-min before ischemia could not enhance the functional recovery of stunned myocardium in swine. Attenuation of the preconditioning stimuli by the increase of the coronary blood flow would be considered as the result, and therefore enough preconditioning stimuli would not be obtained. **Tetsuya Hara, M.D., Osamu Yoshitomi, M.D., Daiji Akiyama, M.D.; Anesthesiology, Nagasaki University School of Medicine, Nagasaki, Japan.**

## CA A4104

### Nitrite Reduces Ischemia-Induced Ventricular Arrhythmias Via Preservation of Connexin 43 Protein in Rats

We reported at the ASA 2013 Annual Meeting (A2139) that nitrite could attenuate ischemia-induced ventricular arrhythmias. The purpose of this study was to determine whether treatment with nitrite affects Cx43, a principal ventricular gap-junction channel protein, during MI. The amount of Cx43 expression in each ischemic left ventricle was quantified by Western blotting. Our results suggest that 0.15 mg/kg sodium nitrite preserves Cx43 protein during 30 min of LAD ligation. This might be one of the mechanisms of nitrite's antiarrhythmic effect. **Daisuke Maruyama, M.D., Naoyuki Hirata, M.D., Ph.D., Ryo Miyashita, M.D., Ryoichi Kawaguchi, M.D., Yusuke Yoshikawa, M.D., Michiaki Yamakage, M.D., Ph.D.; Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan.**



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**CA A4105****Dexmedetomidine-Induced Contraction Involves Caldesmon Phosphorylation Mediated by JNK Phosphorylation in Isolated Rat Aortas**

Taken together, these results suggest that dexmedetomidine-induced contraction involves caldesmon phosphorylation via alpha-2 adrenoceptor-mediated PKC and JNK phosphorylation in rat aortic vascular smooth muscle. In addition, JNK phosphorylation was induced by the PKC activator PDBu. **Ju-Tae Sohn, M.D., Seong-Ho Ok, M.D., Jongsun Yu, M.D., Il-Woo Shin, M.D., Heon-Keun Lee, M.D., Young-Kyun Chung, M.D.;** Department of Anesthesiology and Pain Medicine, Gyeongsang National University Hospital, Gyeongsang National University School of Medicine, Jinju, Korea, Republic of.

**CA A4106****Lipid Emulsion Attenuates Bupivacaine-Induced Cytotoxicity Via Reduction of Apoptosis in H9c2 Rat Cardiomyoblast Cell Lines**

Taken together, these results suggest that SMOFlipid® emulsion attenuates the decreased cell viability induced by toxic-dose bupivacaine via the reduction of apoptotic cell death associated with both intrinsic and extrinsic pathway in H9c2 rat cardiomyoblast cell lines. **Ju-Tae Sohn, M.D., Seong-Ho Ok, M.D., Jongsun Yu, M.D., Il-Woo Shin, M.D., Heon-Keun Lee, M.D., Young-Kyun Chung, M.D.;** Department of Anesthesiology and Pain Medicine, Gyeongsang National University Hospital, Gyeongsang National University School of Medicine, Jinju, Korea, Republic of.

**CA A4107****Lipid Emulsion Inhibits Toxic Dose Bupivacaine-Induced Vasodilation Via Reversal of Inhibited Myosin Phosphatase Target Subunit 1 Phosphorylation**

Taken together, these results suggest that Intralipid® attenuates toxic dose bupivacaine-induced vasodilation via the reversal of toxic dose bupivacaine-induced inhibition of MYPT1 phosphorylation in endothelium-denuded aortas precontracted with phenylephrine. **Ju-Tae Sohn, M.D., Seong-Ho Ok, M.D., Jongsun Yu, M.D.;** Department of Anesthesiology and Pain Medicine, Gyeongsang National University Hospital, Jinju, Korea, Republic of.

**CA A4108****Nerve Growth Factor Protects the Ischemic Heart From Apoptosis by Alleviation of Endoplasmic Reticulum Stress**

Pretreatment with exogenous NGF may protect isolated rat hearts against ischemia triggered apoptosis and facilitate the recovery of cardiac function after global ischemia. This NGF induced anti-apoptosis effect in ischemic hearts included a mechanism of alleviation of ERS, which seems to be mediated by activation of PI3K-Akt pathway. **Wei Ke, M.D.;** Department of Anesthesiology, First Affiliated Hospital of Chongqing Medical University, Chongqing, China.

**CA A4109****Analysis of Doxorubicin Cardiotoxicity at the Level of a Single Cardiomyocyte**

To explore molecular mechanisms of doxorubicin-induced cardiotoxicity, we examined the contractile function and intracellular calcium transient in a single cardiomyocyte prepared from doxorubicin-treated wild-type and ALDH2 knockout mice. Doxorubicin treatment was found to impair the regulatory function of proteins involving intracellular calcium movement as well as the contractile function of sarcomeric proteins in cardiomyocytes. **Kengo Hayamizu, M.D., Sachio Morimoto, Ph.D., Miki Nonaka, B.S., Tatsuya Yoshihara, M.D., Ph.D., Sumio Hoka, M.D., Ph.D., Toshiyuki Sasaguri, M.D., Ph.D.;** Graduate School of Medical Sciences, Kyushu University, Fukuoka, Japan.

**CA A4110****Activation of KCNQ Voltage Sensitive K+ Channels Exerts Vasodilation Resulting in Hypotension in Rats**

Both naturally occurring and synthetic Kv7 channel openers including L-kynurenine, dilate conduit arteries, whereas the response is more apparent in smaller arteries. In vivo, Kv7 channel opener administration causes hypotension. **Kensuke Sakakibara, M.D., Hiroyuki Kinoshita, M.D., Kazuo Ando, M.D., Yoshitaka Yasuda, M.D., Guo-Gang Feng, M.D., Ph.D., Jiazheng Li, M.D., Noboru Hatakeyama, M.D., Ph.D., Yoshihiro Fujiwara, M.D., Ph.D., M.B.A., .;** Anesthesiology, Pharmacology, Aichi Medical University School of Medicine, Nagakute, Japan.

**CA A4111****Effect of Hypocapnic Alkalosis on Myocardial O2 Supply/Demand Balance in the Absence and Presence of Hemodilution**

The current study demonstrated that myocardial oxygen supply/demand balance was maintained during hypocapnic alkalosis in the absence and presence of hemodilution. **Edward A. Czinn, M.D., M. Ramez Salem, M.D., George J. Crystal, Ph.D.;** Department of Anesthesiology, Broward Health Medical Center, Fort Lauderdale, FL, Advocate Illinois Masonic Medical Center, Chicago, IL.

**CA A4112****Upstream Open Reading Frames Regulate Cannabinoid Receptor 1 Expression Under Baseline Conditions and During Cellular Stress**

uORFs within the CNR1 variants 3 and 4 modulate gene expression both in normal situations and under conditions of cellular stress induced by hypoxia, hypoglycemia and hyperthermia. Because CNR1 encodes for the CB1 receptor which is a molecular co-target of propofol, these effects could influence neurocognitive and immune modulatory effects of propofol under conditions of cellular stress. **Martina Pfof, Jr., Ph.D., Marlene Eggert, M.D., Gustav Schelling, M.D., Ortrud Steinlein, M.D.;** Department of Human Genetics, Department of Anesthesiology, University of Munich, Munich, Germany.

**CA A4113****Lipid Emulsion Modulates Mitochondrial Oxidative Phosphorylation and Reactive Oxygen Species Substrate-Dependently: Implications for Cardioprotective Effect of Lipid Emulsion**

A lipid emulsion has been reported to have a cardioprotective effect. However, the mechanisms of cardioprotection by a lipid emulsion have not been elucidated. We investigated the effects of a lipid emulsion on mitochondrial respiration and ROS generation under different substrate conditions. Our results showed that a lipid emulsion activated complex I, but not complex II, respiration and enhanced ROS generation by complex II substrate. A small amount of ROS under a complex II substrate condition may have a key role in the cardioprotection of a lipid emulsion. **Naoyuki Hirata, M.D., Ph.D., Ryo Miyashita, M.D., Daisuke Maruyama, M.D., Ryoichi Kawaguchi, M.D., Yusuke Yoshikawa, M.D., Michiaki Yamakage, M.D.;** Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan.

**CA A4114****The Cost of Autocentering the PPG Waveform: Is It Worth The Price?**

Comparison of changes in the DC component of an uncentered and an autocentered photoplethysmograph during lower body negative pressure revealed that autocentering obscured the effect of hypovolemia. **Siqin Nie, M.D., I-Hsun Liang, M.D., Nina Stachenfeld, Ph.D., Aymen A. Alian, M.B.,B.Ch., M.D., Kirk H. Shelley, M.D., Ph.D., David G. Silverman, M.D.;** Anesthesiology, First Affiliated Hospital of Guangzhou University of Chinese Medicine, Guangzhou, China, Anesthesiology, Yale University School of Medicine, New Haven, CT, J.B. Pierce Laboratory -Physiology.

**CA A4115****XX Mice Are More Prone to Develop Hypoxia-Induced Pulmonary Hypertension Than XY Mice Regardless of Their Gonadal Sex**

Although female rodents are protected against experimental PH, having an extra X chromosome does not offer protection against PH in gonadectomized mice. **Soban Umar, M.D., Ph.D., Alex Centala, B.S., Andrea Iorga, B.Sc., Salil Sharma, Ph.D., Jingyuan Li, Ph.D., Arthur P. Arnold, Ph.D., Mansoureh Eghbali, Ph.D.;** Anesthesiology, Physiology, UCLA Medical Center, Los Angeles, CA.



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### CA A4116

#### Effects of Fibrinogen Supplementation on Myocardial Infarction and Cardioprotection by Ischemic Preconditioning in the Rat in Vivo

We investigated in the rat in vivo whether bleeding prophylaxis with fibrinogen influences 1) the extent of myocardial infarction, and 2) the cardioprotective effect of ischemic preconditioning. In this study administration of fibrinogen had no effect on myocardial infarction or the cardioprotective effect of ischemic preconditioning. **Marianne de Schmidt, M.D., Vera Welke, M.D., Andre Heinen, M.D., Ph.D., Ragnar Huhn, M.D., Ph.D.;** Department of Anesthesiology, Department of Cardiovascular Physiology, University Hospital Duesseldorf, Duesseldorf, Germany.



### CA A4117

#### Role of BK Channel $\beta$ Subunits in Mitochondrial Function and Protection of the Heart from Ischemia-reperfusion Injury

We investigated the role of BKCa channel  $\beta 1$  and  $\beta 4$  modulatory subunits in protecting the heart from ischemic insult.  $\beta 4$  but not  $\beta 1$  gene ablation produced a significant improvement in heart function after ischemia and reperfusion. On the other hand, knocking out  $\beta 4$  expression caused a reduction in mitochondrial function assessed by calcium retention capacity experiments. The results highlight distinct roles of  $\beta 4$  subunit contingent to the heart health status. **Christopher O. Ortiz, M.D., Ph.D., Enrique Balderas, Ph.D., Enrico Stefani, M.D., Ph.D., Ligia Toro, Ph.D.;** Anesthesiology, University of California, Los Angeles, Los Angeles, CA.

### PO13-6 OUTCOMES AND DATABASE RESEARCH 8-10 a.m. | Hall B1-Area A

### FA A4118

#### Postherpetic Neuralgia Is Associated With an Increased Risk of Developing Coronary Heart Disease: A Population-based Cohort Study

Patients with postherpetic neuralgia had approximately twice the risk of developing a subsequent coronary event when compared to those without postherpetic neuralgia. Postherpetic neuralgia thus should be considered as a risk factor of coronary heart disease. **Pei-Shan Tsai, Ph.D., Chun-jen Huang, M.D., Ph.D.;** College of Nursing, Taipei Medical University, Taipei, Taiwan, Department of Anesthesiology, Taipei Tzu Chi Hospital, New Taipei City, Taiwan.

### FA A4119

#### The Impact of Perioperative Anemia and Transfusion on Joint Replacement Outcomes

Pre-operative anemia in total joint arthroplasty increases transfusion likelihood and length of stay. Correction of iron-deficiency anemia reverses these observed trends. **Amanda K. Brown, M.D., Ryan Budwany, Medical Student;** Anesthesiology, Mercer University School of Medicine, Macon, GA.

### FA A4120

#### Postoperative Adverse Outcomes in Patients With Low Income - A Nationwide, Population-Based Retrospective Cohort Study

The major concern for a health care system with universal coverage is inequity and inconsistency of the quality of medical care. Using the database of Taiwan National Health Insurance System, we showed that the surgical patients with low income had significantly higher postoperative complication and mortality rates. Attention and revision of protocol of perioperative care is needed for this specific population. **Ta-Liang Chen, M.D., Ph.D., Yu-Cih Lin, B.S.;** Anesthesiology, Taipei Medical University Hospital, Taipei, Taiwan, Anesthesiology, Graduate School of Nursing, Taipei Medical University, Taipei, Taiwan.



### FA A4121

#### The Association Between Rheumatoid Arthritis With Perioperative Complications

A cross sectional database study of rheumatoid arthritis looking at perioperative mortality. **Michael H. Doan, M.D., Amanda Moraska, M.D., Zhuo Sun, M.D., Natalya Makarova, M.S., Brian D. Hesler, M.D., Alparslan Turan, M.D.;** Outcomes Research, Cleveland Clinic Foundation, Cleveland, OH.

### FA A4122

#### Comparison of Anesthetic Management and Outcomes of Robot-Assisted Versus Pure Laparoscopic Radical Prostatectomy

We compared anesthetic management and outcomes in patients undergoing robot-assisted laparoscopic prostatectomy (RALP) and pure laparoscopic radical prostatectomy (LRP). Our data revealed that RALP surgery involves less blood loss and requires fewer blood products than LRP. The RALP patients had longer pneumoperitoneum times and greater intraoperative opioid use. There was no significant difference in postoperative analgesic consumption and length of stay in the PACU. Anesthetic outcomes of RALP were generally satisfactory, except PONV. Longer pneumoperitoneum time and greater opioid consumption may be associated with the greater incidence of PONV. Prophylaxis of PONV should be arranged for RALP procedures. **Hiroshi Yonekura, M.D., Hiroyuki Hirate, M.D., Kazuya Sobue, M.D., Ph.D.;** Department of Anesthesiology and Medical Crisis Management, Nagoya City University Graduate School of Medical Sciences, Nagoya, Japan.

### FA A4123

#### Reduction of Length of Hospital Stay Following Total Knee Arthroplasty: The Role of the Anesthesiologist in Leading Total Functional Recovery

Anesthesiologists can synchronize and facilitate post TKA recovery protocol effectively and reduce LOS. **Chunyan Qiu, M.D., M.S., Vu T. Nguyen, M.D., Diana LaPlace, M.D., Preeti P. Shah, M.D., Andrew T-Y Ko, Student, Jessica Y. Qiu, Student, Maria A. Morkos, Medical Student, Maria T. Enciso, B.S.N., Renato V. Etrata, M.D., Atef Morkos, M.D.;** Anesthesiology, Kaiser Permanente, Baldwin Park, CA, George Washington University, Washington, DC.

### FA A4124

#### A Placebo-Controlled Study to Evaluate the Efficacy of the Administration of Fibrinogen in Liver Transplantation

Patients were assigned to fibrinogen (SG, 40 cases), or placebo (PG, 41 cases). Did not require any RBCs resulted in 43.6% in the SG vs 34.1% in the PG (net difference 9.5%,  $p=0.493$ ). Median RBC's transfused were: 2 (0-3) in the SG vs 2 (0-5) in the PG ( $p=0.172$ ). Two (5%) vascular thrombosis events were present in the SG vs 10 (25%) in the PG. Based on this report patient's recruitment has been stopped. **Antoni Sabate, M.D., Ph.D., Rosa B. Gutierrez, M.D., Patricia Mellado, M.D., Annabel Blasi, M.D., Joan Beltran, M.D., Pio Jailson, M.D., Marta Costa, M.D., Raquel Reyes, M.D., Francisco Acosta, M.D., Silvia Perez-Pujol, M.D., Ph.D.;** Anesthesiology, Hospital Universitari de Bellvitge, Barcelona, Spain, Hospital de Cruces, Bilbao, Spain, Anesthesiology, Virgen del Rocio, Sevilla, Spain, Hospital Clinic, Barcelona, Spain, Virgen de la Arrixaca, Murcia, Spain.

### FA A4125

#### An Observational Study of Perioperative Antiplatelet Management in Patients with Coronary Stents

This study applied two recently established protocols to assess perioperative antiplatelet management decisions. Due to suboptimal adherence to current perioperative antiplatelet management guidelines in patients with coronary stents, this study could be used to support the notion of an anesthesiologist-led Perioperative Surgical Home. **Austin Woolard, M.S., Jesse M. Ehrenfeld, M.D., M.P.H., Susan S. Eagle, M.D., Jonathan P. Wanderer, M.D., M.Phil.;** University of Tennessee Health Science Center, Memphis, TN, Anesthesiology, Vanderbilt University, Nashville, TN.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain

**FA A4126**

**Effect of Labor Epidural Analgesia on Non-Obstetrical Major Complications, Length of Hospital Stay, and Cost During Labor and Delivery**

Labor epidural analgesia is superior for pain relief during labor and delivery and proven to be a safe technique with minimal complications. The effect of epidural analgesia on the rate of peripartum major medical complications is unknown, and because the rate of these complications is very low, a very large sample is needed to investigate that effect. Our analysis utilizing the nationwide inpatient sample (NIS) revealed that labor epidural has no significant effect on the likelihood of major peripartum medical complication. On the other side, labor epidural decreases both the hospital length of stay and total inpatient charges. **Ahmad Elsharydah, M.D., M.B.A., Mallorie T. Hiser, M.D., Eric B. Rosero, M.D., M.S.;** Anesthesiology and Pain Management, UT Southwestern Medical Center, Dallas, TX.

**FA A4127**

**Post-Operative Outcomes Associated with Residual Block (RECITE-U.S.)**

Patients with residual neuromuscular blockade at tracheal extubation had statistically significantly increased odds of having at least one unanticipated hospital procedure, and receiving respiratory therapy. **Leif Saager, M.D., Tricia Meyer, PharmD, Harold S. Minkowitz, M.D., Scott B. Groudine, M.D., Beverly K. Philip, M.D., Pedro P. Tanaka, M.D., Ph.D., Tong J. Gan, M.D., Yiliani Rodriguez-Blanco, M.D. Roy G. Soto, M.D., Eric M. Maiese, Ph.D.;** Outcomes Research, Cleveland Clinic, Cleveland, OH, **Scott & White Healthcare, Temple, TX, Memorial Hermann Memorial City Med Ctr, Bellaire, TX, Albany Medical Center, Latham, NY, Brigham & Women's Hospital, Boston, MA, Stanford University, Menlo Park, CA, Duke University Medical Center, Durham, NC, University of Miami, Miami, FL, William Beaumont Hospital, Bloomfield Hills, MI, Merck & Co. Inc., West Point, PA.**

**FA A4128**

**Variation in Utilization of Perioperative Arterial Catheterization Among Hospitals in Elective Orthopedic Surgery**

Utilizing a large national database the variation in usage of arterial catheters across respective hospitals has been evaluated for patients undergoing elective orthopedic surgery. We identified a high variation of utilization of AC between hospitals and geographical regions. In general, hospitals performing less procedures in a non-teaching environment, more commonly used arterial catheters. AC use was associated with a longer hospital stay and substantially higher cost. **Sumudu Dehipawala, B.S., Mathias Oppeler, M.D., Jashvant Poeran, M.D., Ph.D., Thomas Danning, M.D., Rehana Rasul, M.A., M.P.H., Stavros G. Memtsoudis, M.D., Ph.D.;** Department of Anesthesiology, Hospital for Special Surgery, New York, NY, Department of Healthcare Policy and Research, Weill Cornell Medical College, New York, NY, Department of Anesthesiology, Landeskrankenhaus Salzburg, Salzburg, Austria.

**FA A4129**

**Association Between Thoracic Epidural Analgesia and the Risk of Atrial Arrhythmias After Pulmonary Resection: A Retrospective Cohort Study**

TEA was not associated with decreased occurrence of postoperative atrial arrhythmia. **Rakhi Pal, M.B.B.S., M.D., Ryu Komatsu, M.D., Jared Dalton, Ph.D., Denis Chang, M.D., Roshni Sreedharan, MBBS, M.D., Radhika P. Grandhe, M.B.,B.S., Karine Dias, M.D., Allen Bashour, M.D., Sudish C. Murthy, M.D., Alparslan Turan, M.D.;** Anesthesiology, Anesthesia and Outcome Research, Quantitative Health Science and Outcome Research, Cardiothoracic Critical Care, Thoracic Anesthesia, Cleveland Clinic, Cleveland, OH.

**FA A4130**

**Elderly Patients and Hospital Readmission after Outpatient Surgery: An Analysis of 69,359 Ambulatory Surgical Procedures**

Age is a significant predictor of hospital readmission following ambulatory surgery. In addition to the increase in co-morbidities associated with increased age, factors such as increased medication errors, decreased support and inability to follow postoperative instructions may increase readmission in elderly patients following outpatient surgery. **Robert J. McCarthy, PharmD, Gildasio S. De Oliveira, M.D., M.Sc.;** Anesthesiology, Northwestern University Feinberg School of Medicine, Chicago, IL.

**FA A4131**

**Sjögren's Syndrome and Adverse Perioperative Outcomes**

Patients with Sjögren's syndrome (SS) are found to have intima-media thickening of the large vessels, functional impairment and endothelial dysfunction. The objectives were to evaluate the association of SS with thromboembolic complications, microcirculatory complications and in-hospital mortality in the perioperative setting. 21.78 million discharge records were reviewed and patients with SS were not found to have increased risk of thromboembolic, micro circulatory complications and in hospital mortality compared to general population in the perioperative setting. **Srinivasa R. Govindarajan, M.D., Rovnat Babazade, M.D., Brian D. Hesler, M.D., Zhuo Sun, M.D., Natalya Makarova, M.S., Jarrod E. Dalton, Ph.D., Alparslan Turan, M.D.;** Outcomes Research, Anesthesiology Institute, Quantitative Health Sciences, Cleveland Clinic, Cleveland, OH.

**FA A4132**

**Effect of Chronic Opioid Use and Intraoperative Esmolol on Perioperative Outcomes in Lumbar Laminectomy Surgery**

prospective, randomized, double-blinded, and placebo-controlled study to evaluate the effects of chronic opioid use and intraoperative esmolol administration on the anesthetic and analgesic requirements, hemodynamic stability during surgery, postoperative pain, opioid requirements and postoperative recovery outcomes in patients undergoing lumbar spine surgery. **Ofelia L. Elvir Lazo, M.D., Roya Yumul, M.D., Ph.D., Robert Naruse, M.D., Alen Ternian, M.D., Taizoon Yusufali, M.D., Antonio Hernandez Conte, M.D., Bradley Reid, M.D., Ronald Wender, M.D., Paul F. White, M.D., Ph.D.;** Anesthesiology, Cedars Sinai Medical Center, Los Angeles, CA.

**FA A4133**

**Combined General-Epidural Anesthesia Is Associated with a Lower Incidence of Reoperation for Bowel Ischemia as Compared to General Anesthesia Alone After Elective Open Abdominal Aortic Aneurysm Repair**

Open abdominal aortic aneurysm repairs are associated with high incidence of ischemic colitis. We reviewed medical records of patients undergoing abdominal aortic aneurysm surgery over a period of 9 year. Combined epidural-general anesthesia was associated with significantly lower incidence of reoperation for bowel ischemia after open aortic aneurysm surgery. **Amit Bardia, M.B.B.S., Mauricio D. Garcia Jacques, M.D., Syed M. Khurram Owais, M.B.B.S., Mario Montealegre, M.D., Feroze Mahmood, M.D., Robina Matyal, M.D.;** Anesthesia and Critical Care, Beth Israel Deaconess Medical Center, Boston, MA.



**PO14-4 PATIENT SAFETY AND PRACTICE MANAGEMENT  
8-10 a.m. | Hall B1-Area B**

**PI A4134**

**Reducing Unnecessary Preoperative Blood Orders and Costs by Implementing an Institution-specific Maximum Surgical Blood Order Schedule (MSBOS)**

Implementation of an updated maximum surgical blood order schedule (MSBOS) based on institution-specific transfusion data acquired from our anesthesia information management system, resulted in a substantial decrease in unnecessary preoperative blood orders and associated costs, without a clinically significant increase in emergency release blood transfusions. **Jack O. Wasey, B.M., B.Ch., Aileen L. Pan, M.D., Michael J. Oleyar, D.O., Paul M. Ness, M.D., Aaron Ar Tobian, M.D., Steven M. Frank, M.D.;** Anesthesiology/Critical Care Medicine, Pathology (Transfusion Medicine), The Johns Hopkins Medical Institutions, Baltimore, MD.



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### PI A4135

#### Procedural Timeout Compliance Is Improved With an Electronic Surgical Flight Board and Real Time Clinical Decision Support

Clinical decision support (CDS) can help improve multiple processes in the operating Room. We hypothesize that the institution of a surgical flight board with embedded real-time data support will improve compliance with the pre-surgical safety checklist. In this prospective, observational trial, we analyzed surgeon-led procedural timeout compliance for 300 surgical procedures in three phases. Formal teaching combined with the use of the electronic checklist and real-time CDS improved compliance. Utilizing an EMR to support a surgical safety checklists improves adherence to safety practices vital to quality patient care. **Torin D. Shear, M.D., Mark Deshur, M.D., Aashka Patel, B.S., Michael B. Ujiki, M.D.;** Anesthesia, Surgery, NorthShore University HealthSystem, Evanston, IL.

### PI A4136

#### Optimizing Door to Operating Room Time for Emergency Hip Fracture Patients

Traumatic hip fractures have an approximate 1 year mortality of 30% and minimizing time from admission to surgery decreases mortality. Utilizing a multidisciplinary approach we determined factors causing delays in patients going to the OR in our institution. We created a hip fracture pathway that leverages anesthesiologists as peri-operative physicians to determine which patients can be fast tracked to the OR. Subsequent evaluation will evaluate the impact of the checklist on mortality in patients treated for hip fracture. **Megan J. Sharpe, M.D., Shubjeet Kaur, M.D., John Wixted, M.D.;** Anesthesiology, Orthopedics, University of Massachusetts, Boston, MA.

### PI A4137

#### Situational Awareness Errors in Anesthesia Malpractice Claims

We analyzed the role of individual situational awareness (SA) errors in anesthesia malpractice claims for death and permanent brain damage. SA errors contributed directly to death or brain damage in 78% of claims. SA error claims were more likely to result in payment than other claims, with 83% paid on behalf of the anesthesiologist (vs. 45% of others, p=0.001). **Amanda R. Burden, M.D., Karen B. Domino, M.D., M.PH., Shawn L. Mincer, MSW, Karen L. Posner, Ph.D., Randolph H. Steadman, M.D., M.S., Klaus J. Wagner, M.D., Christian M. Schulz, M.D.;** Anesthesiology, Cooper Medical School of Rowan University, Camden, NJ, Anesthesiology & Pain Medicine, University of Washington, Seattle, WA, Anesthesiology, UCLA School of Medicine, Los Angeles, CA, Klinik Fur Anaesthesiology, Klinikum Rechts Der Isar, Technische Universitat Munchen, Munich, Germany.

### PI A4138

#### A Multidisciplinary Approach to Optimize First Operating Room Case Start Times

A collaborative perioperative initiative led by anesthesiologists, nurses, and surgeons to better coordinate patient preparation on the morning of surgery, has led to a significant increase in on-time first case starts and sustainable system improvements. **Athir Morad, M.D., Justin M. Sacks, M.D., Jeannie Lee, R.N., CNOR, M.S.N., M.B.A., Jackie L. Martin, Jr., M.D.;** Anesthesiology and Critical Care Medicine, Plastic and Reconstructive Surgery, Nursing, Johns Hopkins School of Medicine, Baltimore, MD.

### PI A4139

#### The Use of a Business Intelligence Program to Detect Narcotic Diversion

Substance abuse and addiction is a well recognized occupational hazard for Anesthesia practitioners, who have ready access to narcotics. Anesthesia information management systems (AIMS) and Pharmacy information management systems (PIMS) have been shown to improve medication documentation and aid in the detection of suspected narcotic diversion. We describe our experience with developing a Business Intelligence (BI) program (Qlikview, Qliktech, Radnor PA) to unite data from our AIMS (Epic Anesthesia, Epic Systems, Verona WI) and PIMS (Pyxis, Care fusion, San Diego CA) to detect narcotic diversion. **B. R. Brenn, M.D., Margaret A. Kim, B.S., D.P.M.;** Anesthesia and Critical Care, Alfred I duPont Hospital for Children, Wilmington, DE, Nemours Enterprise Analytics, Nemours Foundation, Jacksonville, FL.

### PI A4140

#### The Effect of a Surgical Safety Checklist on Patient Safety Indicators in a Pediatric Population: A Cohort Study

We conducted a historical cohort study of 100 children (50 per group) who underwent non-cardiac surgery before or after the implementation of a surgical safety checklist (SSCL) in an academic pediatric hospital. The primary aim was to evaluate the effect of the SSCL on the rate of patient safety indicators, not just adverse events, in this population. In this cohort, the overall rate of patient safety indicators decreased from 84 to 42 per 100 hospital admissions (odds ratio [95% confidence interval] of 0.41 [0.24 - 0.69]; P = 0.01). Measuring SSCL-orientated patient safety indicators may provide a feasible approach for evaluating the effectiveness of SSCL implementation in healthcare settings with already low complication rates. **James D. O'Leary, M.B., B.Ch., MM(Clin Epi), FCARCSI, Victoria Howell, M.B., Ch.B., F.R.C.A., Alasdair Howie, B.M., B.Ch., F.R.C.A.;** Department of Anesthesia and Pain Medicine, Hospital for Sick Children, Toronto, ON, Canada.

### PI A4141

#### Identification of System Vulnerabilities in the Perioperative Medication Delivery System: Comparing Self Filled Versus Prefilled Medication Syringes

A system vulnerability (SV) is defined as an activity or event that has the potential to reduce safety, efficiency of provider workflow, or increase drug costs and waste. Pre-filled syringes reduce the number and severity of SV compared to Self-filled syringes. **James H. Abernathy, M.D., M.PH., Yushi Yang, M.S., Christopher Fortier, Pharm.D., Joy Rivera, Ph.D.;** Medical University of South Carolina, Charleston, SC, Clemson University, Clemson, SC, Massachusetts General Hospital, Boston, MA.

### PI A4142

#### Emergency Manual Implementation: Cultural Changes, Perceptions, and Clinical Use

Emergency manuals (EMs), context-relevant sets of cognitive aids or crisis checklists, were designed for use during, before, and after critical events. Simulation studies of operating Room (OR) critical events show more efficient, effective care is delivered when EMs are used. EMs were made accessible in all Stanford ORs in fall 2012, along with ongoing trainings in why, when, and how to use EMs. Anesthesia residents were surveyed pre- and post-implementation. This early step in implementation science for clinical implementation of EMs assesses changes in culture and perceptions as well as measuring self-reported clinical use of emergency manuals. **Justin E. Pollock, M.D., Sylvia Berekynei, Ph.D., Katy Nandagopal, Ph.D., Steve K. Howard, M.D., Sara Goldhaber-Fiebert, M.D.;** Anesthesiology, Stanford Hospital and Clinics, Palo Alto, CA.

### PI A4143

#### Using the Electronic Health Record to Improve Self-Reporting of Unanticipated Events, Complications, and Adverse Reactions to Anesthesia

Summary. Following implementation of ED, self-reporting of unanticipated events, complications, and adverse reactions to anesthesia increased from 11.2% to 75.5%, the total number of RAE per month tripled, and less than 2% of cases failed to indicate whether a reportable event occurred. ED significantly improved self-reporting and documentation of RAE in accordance with existing regulatory requirements. **Brian N. Kravitz, M.D., Amanda L. Tackett, R.N., Daniel W.B. Ternan, R.N., Peter Szmuk, M.D., Christopher M. Meggyesy, M.D., William H. Jones, D.O.;** Anesthesiology, Children's Medical Center, Dallas, TX, University of Texas Southwestern and Children's Medical Center, Dallas, TX.



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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**PI A4144****Evaluating the Cost-Effectiveness of Noninvasive Hemodynamic Monitoring Devices Used For Perioperative Fluid Optimization: A Preliminary Budget Impact Analysis (BIA)**

The use of noninvasive hemodynamic monitoring devices as part of a preemptive strategy for fluid optimization is associated with decreased Length Of Stay (LOS) as well as decreased morbidity and mortality following major abdominal surgery. In this abstract, we present a durable Budget Impact Analysis (BIA) as part of a personalized and predictive model that can be leveraged by hospital enterprise leadership to evaluate the cost-effectiveness of purchasing noninvasive hemodynamic monitoring equipment. This model is flexible enough to accommodate similar technology in other areas of an enterprise or can be redesigned and customized for different technology. We propose that such a model be used as an economic evaluation for novel technological solutions in the post-health-reform era. **Thomas J. Hopkins, M.D., Adi Renbaum, M.B.A., Timothy Miller, M.B., Ch.B., Tong J. Gan, M.D.;** Duke University Medical Center, Durham, NC, ANR Consulting, Bethesda, MD.

**PI A4145****Prospective Observational Analysis of Ambient Operating Room Noise During Induction and Emergence - A Quality Improvement Study**

A prospective observational analysis was performed to determine levels of ambient operating room noise during induction of and emergence from general anesthesia. During the short periods of induction and emergence, maximum sound levels reached 114.7 dB which is equivalent to the noise generated by the operation of a chain saw. These findings suggest that efforts should be made to develop mitigation and management strategies that could be implemented to control noise during critical phases of anesthesia practice to improve this important aspect of patient safety. **Michael A. Akerley, D.O., Andrey Bilko, B.S., Elbert Mets, Undergraduate, Brandon J. Rein, D.O., David Dekorte, J.D., M.B.A., Julia C. Caldwell, M.D., Sonia Vaida, M.D.;** Department of Anesthesiology, Penn State University Hershey Medical Center, Hershey, PA.

**PI A4146****Using Providers' Self-Reported Time Away Information to Predict Daily Surgical Service Volume Months in Advance**

This methodology predicts up to 7 weeks in advance, daily case volume for each surgeon, and the entire service, using historical data of case volume distributions, probability of surgeons' OR days, and information about surgeon availability. Most medical centers use manual processes to record surgeons' away-times in order to close unused ORs or release ORs to other services on those days. To our knowledge this is the first study that shows systematically the potential of provider time-away information for making daily volume predictions. Identifying available block time months in advance is the critical first step in dynamically reallocating to the services that can rearrange their schedules. **Vikram Tiwari, Ph.D., Warren S. Sandberg, M.D., Ph.D.;** Anesthesiology, Vanderbilt University Medical Center, Nashville, TN.

**PI A4147****The Anesthesia Report Card: Feedback That Can Make Us Better Doctors**

A significant body of research supports the idea that timely, substantive feedback encompassing certain metrics improves physician performance and patient outcome. In accordance with this research and the need to comply with reporting requirements being instituted by professional organizations and the government after healthcare reform, we developed a model for an anesthesia report card that could provide this kind of feedback and reportable information. **Christian D. Peccora, M.D., Robert Gimlich, B.S., Richard Cornell, M.B.A., Luigino Nascimben, M.D., Ph.D., Richard D. Urman, M.D., M.B.A.,** Anesthesiology, Perioperative, & Pain Medicine, Harvard Medical School - Brigham & Women's Hospital, Boston, MA.

**PI A4148****WHO Checklist Implementation and Its Impact in Perioperative Mortality in an Tertiary Medical Centre in Chile**

In 2009, a WHO sponsored study published the results of the use of a surgical checklist, reporting a decrease in mortality and morbidity. On Sep-2009 the checklist was introduced in our institution, an academic tertiary medical centre in Santiago, Chile. Using propensity score methods (matching and weighting) we compare the pre and post intervention period and found a decrease in-hospital mortality, length of stay and surgical site infection. This is the first Latin American study reporting morbidity and mortality after the implementation of the WHO checklist in surgical patients. **Ghislaine C. Echevarria, M.D., M.S., Constanza Ferdinand, R.N., Lorena Camus, R.N., Hector J. Lacassie, M.D.;** Department of Anesthesiology, New York University School of Medicine, New York, NY, Anesthesiology Department, Pontificia Universidad Catolica de Chile, Santiago, Chile.

**PI A4149****Radiation Exposure of the Eye and Thyroid During Fluoroscopy-Guided Cervical Epidural Steroid Injections**

The purpose of this study is evaluation about exposure of radiation during performing cervical epidural block. **Pyung Bok Lee, Associate Professor, Woong Ki Han, Resident, Jinyoung Jeong, Fellow, Hyunseung Jin, Fellow, Eunjoo Choi, Assistant Professor;** Seoul National University Bundang Hospital, Seongnam-si, Korea, Republic of.

**PO06-3 CRITICAL CARE****10 a.m.-12 p.m. | Hall B1-Area D****CC A4150****The Class IA p110 $\delta$  and Class IB p110 Isoforms of PI3K Are Involved in Mediating the Anti-inflammation Effects of Magnesium Sulfate**

MgSO<sub>4</sub> possesses potent anti-inflammation effects. Our data revealed that the class I isoforms of PI3K, especially PI3K $\delta$  and PI3K $\beta$ , are involved in mediating the anti-inflammation effects of MgSO<sub>4</sub>. **Chun-jen Huang, M.D., Ph.D., Wei-Chih Chou, M.D., Shih-Ching Wang, M.D., Pei-Shan Tsai, Ph.D.;** Department of Anesthesiology, Taipei Tzu Chi Hospital, New Taipei City, Taiwan, Taipei Medical University, Taipei, Taiwan.

**CC A4151****A Model of Surgery and Infection in STZ-induced Diabetic Rats**

A surgery/infection model in rats is presented that shows clear differences between STZ-diabetic and nondiabetic rats in the ability to clear bacteria from the surgical injection site. **Jeffrey S. Kroin, Ph.D., Sasha Shafikhani, Ph.D., Jinyuan Li, M.D., Ph.D., Jingpin Li, M.S., Kenneth J. Tuman, M.D., Asokumar Buvanendran, M.D.;** Anesthesiology, Immunology, Rush Medical College, Chicago, IL.

**CC A4152****Differential Role for p120-catenin in Regulation of TLR4 Signaling in Macrophages**

Our results indicate that p120-catenin functions as a differential regulator of TLR4 signaling pathways by facilitating TLR4 endocytic trafficking in macrophages and support a novel role for p120-catenin in influencing the macrophages in the lung inflammatory response to endotoxin. **Guochang Hu, M.D., Ph.D., Zhiyong Yang, M.D., Ph.D., Changping Gu, M.D., Dong Sun, M.D., Zhibo Yan, M.D., Ph.D., David E. Schwartz, M.D., Richard D. Minshall, Ph.D., Randal O. Dull, M.D., Ph.D., Yang Zhang, M.D.;** University of Illinois at Chicago, Chicago, IL.

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### CC A4153

#### Is TRALI Not a Severe Form of Acute Lung Injury? Evaluation of the Clinical Features of Transfusion-related Acute Lung Injury (TRALI) in an Intensive Care Unit

Since the number of TRALI patients is very small, the pathophysiology of and treatment for TRALI remain unclear. This study was carried out to elucidate the clinical features used for 11 TRALI patients. Onset time for TRALI was less than 240 minutes after the start of transfusion. Duration of mechanical ventilation was  $8.2 \pm 5.8$  days. Despite severe respiratory failure, all of the patients survived. Critical supportive therapy to provide time for allowing the injured lung to recover such as administration of catecholamine and a steroid, prone positioning and ECMO is important, since clinical manifestations of TRALI may be reversible. **Satoshi Kazuma, M.D., Yoshiki Masuda, M.D., HiRoomi Tatsumi, M.D., Kyoko Goto, M.D., Kanako Takahashi, M.D., Hitoshi Imaizumi, M.D., Michiaki Yamakage, M.D.;** Department of Intensive Care Medicine, Sapporo Medical University, Sapporo, Japan.



### CC A4154

#### Innate Immunity May Play a Role in Transfusion Reaction Through Upregulation of Platelet TLR4 Expression

The major immunologic reactions to transfusion complications were inflammation entity. Platelets express TLR4 have been shown to functionally modulate innate immunity and inflammation. Our study showed that blood transfusion may upregulate human platelet TLR4 expression that indicate platelets may induce innate immunity. **Wei-Hung Chan, Sr., M.D., Mei-Hua Hu, M.D., Chien-Sung Tsai, M.D., Chen-Hwan Cherng, M.D., Go-Shine Huang, M.D.;** Department of Anaesthesiology, Division of Cardiovascular Surgery, Tri-Service General Hospital, National Defense Medical Center, Taipei City, Taiwan, Department of Paediatrics, Chang Gung Memorial Hospital at Keelung, Chang Gung University College of Medicine, Taoyuan, Taiwan.

### CC A4155

#### Association Between Hypophosphatemia and Cardiac Arrhythmias in Early Sepsis

It well known that the new onset arrhythmias are common in septic patients. It thought that hypophosphatemia in the early stage of sepsis may contribute to the development of new arrhythmias. In this study, we hypothesized that intravenous (iv) phosphorus replacement may reduce the incidence of arrhythmias in septic patients. 34 Adult septic patients with hypophosphatemia admitted to the general intensive care were treated with iv phosphorus replacement per ICU protocol, and the incidence of new arrhythmias were compared with 16 patients from previously published data. Iv phosphorus replacement was associated with a significantly reduced incidence of arrhythmias (38% vs 63%  $p < 0.04$ ). **Andrew Schwartz, M.D., Brotfein Evgheni, M.D.;** Department of Anesthesiology and Critical Care, Soroka Medical Center, Ben-Gurion University of the Negev, Beer-Sheva, Israel, Anesthesia, Soroka Medical Center, Beer Sheba, Israel.

### CC A4156

#### The Assessment of Interaction of Chronic Hyperglycemia on the Relationship Between Hypoglycemia and Mortality in Critically Ill Patients

In this single center retrospective study, we assessed whether chronic hyperglycemia and presence of diabetic mellitus (DM) would modulate the association between hypoglycemia and outcome during critical illness. We included 1675 ICU patients who had their HbA1c level measured within the three months before ICU admission and at least 3 times glucose measurements during ICU stay. In patients both with and without DM, mortality in patients with hypoglycemia (defined as  $\leq 80$ mg/dL) was significantly higher those of patients without hypoglycemia. In multivariate logistic analysis for hospital mortality, there was no significant interaction between hypoglycemia and presence of DM ( $p = 0.35$ ), and between hypoglycemia and HbA1c ( $p = 0.24$ ). **Moritoki Egi, M.D., Tomoyuki Kanazawa, M.D., Yuichiro Toda, M.D., Ph.D., Kiyoshi Morita, M.D., Ph.D.;** Okayama University Hospital, Okayama, Japan.

### CC A4157

#### Comparison of Two Intraosseous Access Devices: Success Rate and Explanation of Failures by Novice Users

We compared two different Intraosseous (IO) access devices for the adult proximal humerus by a novice physician. This study was conducted in a training course and used Thiel's embalming cadavers, which conserve a texture close to that in the living. Although no significant differences were found in success rate and procedure time between EZ- IO® and BIG®, causes of failure were different. With the use of EZ- IO, feasibility of IO access depended on stability of the needle, which was completely controlled by the physician. With the use of BIG, feasibility depended on aspects of the patient's physique such as BMI. Determination of the cause of failure is beneficial for education and would enable IO devices to be used more safely in clinical settings. **Hideaki Sasaki, M.D., Tomohisa Niiya, M.D., Ph.D., Michiaki Yamakage, M.D., Ph.D.;** Department of Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan.

### CC A4158

#### Clinical Differences of the Rapid Response System Between Patients Admitted to the Surgical and Medical Services

The triggers, outcomes, and clinical requirements and interventions associated with the Rapid Response System greatly differed between the medical and surgical services. Therefore, further research is needed to evaluate the efficacy of a tailored approach to specific groups in the Rapid Response System. **Dong Seon Lee, R.N., SangHeon Park, M.D., Ph.D., Yeon Joo Lee, M.D., Young-Jae Cho, M.D., Inae Song, M.D.;** Interdepartment of Critical Care Medicine, Department of Internal Medicine, Seoul National University Bundang Hospital, Department of Anesthesiology and Pain Management, Seoul National University Bundang Hospital, Seongnam, Korea, Republic of.

### CC A4159

#### The Pharmacokinetics of Sulfanegen in a Rabbit Model

Sulfanegen a new antidote to cyanide is rapidly absorbed by the intramuscular route with a half-life of 1.61 hours. **Kumar G. Belani, M.B.B.S., M.S., Bryant M. Moeller, B.S., Harpreet Singh, M.B.B.S., Alexandre R. Monteil, Ph.D., Navneet Kaur, M.B.B.S., Simranjit S. Sra, M.B.B.S., Brian A. Logue, Ph.D., David S. Beebe, M.D., Michael W. Stutelberg, B.S., Steven E. Patterson, Ph.D.;** Anesthesiology & Center for Drug Design, University of Minnesota, Minneapolis, MN, Chemistry and Biochemistry, South Dakota State University, Billings, SD.

### CC A4160

#### Activity and Outcome of Kidney Graft from Uncontrolled Donors After Cardiac Death: Normothermic Recirculation Versus In Situ Perfusion

The use of uncontrolled deceased donors after cardiac arrest (uDDCA) has been developed in France to counteract organ shortage. We conducted a retrospective analysis of all uDDCA in our institution in order to evaluate activity and short-term outcomes of uDDCA grafts, by comparing 2 techniques: Normothermic Recirculation (NR) and In Situ Perfusion (ISP). Of 110 potential uDDCA, 34 were finally donors, and 47 patients were transplanted from those uDDCA. More technical problems and no earlier recovery of graft function were observed with the NR technique. **Claire Delsuc, Jr., Resident, Alexandre Faure, M.D., Xavier Matillon, Resident, Vanessa Labeye, M.D., Guillaume Marcotte, M.D., Christian Guillaume, M.D., Olivier Martin, M.D., Bernard Floccard, M.D., Thomas Rimmelé, M.D.;** Hopital Edouard Herriot, Lyon, France.



### CC A4161

#### Empirical Antimicrobial Treatment in Vascular Surgery

We analyse all antibiograms obtained in vascular graft explanation. **Laurent Stecken, SrM.D., Helene Perfetti, M.D., Alice Quinart, M.D., François Sztark, Ph.D.;** CHU Pellegrin, Bordeaux, France.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain

**CC A4162****Angiotensin Converting Enzyme Inhibitor-induced Angioedema: Effective Treatments Exist, We Should Get Them Fast!**

Patients treated with Angiotensin Converting Enzyme inhibitors or Angiotensin II Receptor Blockers may experience a severe bradykinin-mediated angioedema. We studied the access of the patients to its specific treatments. Due to their pharmacological characteristics and their high costs, they remain insufficiently available. This loss of time would be avoidable by establishing supply protocols with mobile medical team. **Florent Moriceau, M.D., Bernard Floccard, M.D., Olivier Martin, M.D., François Malavieille, M.D., Alexandre Faure, M.D., Christian Guillaume, M.D., Brigitte Coppéré, M.D., Valérie Chamouard, Pharm.D., Thomas Rimmelé, M.D., Ph.D.,** Anesthesiology and Intensive Care Department, Internal Medicine Service, Pharmacy, Edouard Herriot Hospital, Lyon, France.

**CC A4163****Learning Curve for Ultrasound-guided Subclavian Vein Cannulation in Adult with Short Axis Approach: A CUSUM Analysis Study**

To our knowledge, the CUSUM method has never be used to assess learning curve for the central venous access with ultrasound guidance. In our study, we evaluate the learning curve of anaesthetics residents for the ultrasound-guided subclavian vein cannulation (short axis). **Nicolas Fritsch, Dr. Cruc Maximilien, Dr. Tran Van David, Dr. Mazocky Elodie, Dr. Fontaine Bruno, Pr;** Department of Anesthesiology, Military Hospital Robert Picqué, Villenave D'Ormon Cedex, France.

**CC A4164****Acute Lung Injury in Patients After Liver Transplantation**

ALI occurred at a rate of 4.3% following OLT in adult patients and was associated with preoperative encephalopathy, requirement of intubation, and total bilirubin concentration and intraoperative blood transfusion. In addition, ALI was also associated with longer ventilation and hospital stay, and a higher rate of graft failure. **Victor Xia, M.D., Wei Zhao, M.D.;** Anesthesiology, University of California, Los Angeles, Los Angeles, CA, Anesthesiology, Shangdong University Qianfoshan Hospital, Jinan, China.

**CC A4165****Electronic Urinary Output Monitoring During Cardiac Surgery and Postoperative ICU Care**

Continuous monitoring of urine output (UO) using electronic urine output monitors (eUOM) may provide a new tool for determination of oliguria and AKI. **Wei Han, M.D., Charles Mitchell, R.N., Joe S. Funston, M.D., Erin G. Sreshta, M.D., Donald S. Prough, M.D., Paul M. Ford, M.D., Michael P. Kinsky, M.D., George C. Kramer, Ph.D.,** Anesthesia, University of Texas Medical Branch at Galveston, Galveston, TX.

**PO07-2 DRUG DISPOSITION, METABOLISM AND ELIMINATION  
10 a.m.-12 p.m. | Hall B1-Area A****FA A4166****Coagulation Effects of Sugammadex Judged by Rotational Thromboelastometry in Morbidly Obese Patients**

In morbidly obese patients who are receiving bariatric surgery sugammadex has a limited, transient, and clinically irrelevant effect on coagulation assessed by rotational thromboelastometry (ROTEM®). **Michele Carron, M.D.;** Department of Medicine, Anaesthesiology and Intensive Care, University of Padova, Padova, Italy.

**FA A4167****Effect of Pirenzepine on Train-of-four Fade and EC95 of Rocuronium in Rat Phrenic Nerve - Hemidiaphragm Preparation**

By using phrenic nerve-hemidiaphragm preparation, we investigated whether M1 facilitatory receptor is contributed to doses of rocuronium for complete neuromuscular blockade and train-of-four fade made by serial addition of the loading and boost doses of rocuronium. Pirenzepine, M1 blocking agent can affect the EC95 and train-of-four fade of rocuronium by blocking presynaptic M1 receptor and by modulating facilitatory feedback effect of M1 receptor. **Yong Beom Kim, M.D., Ph.D., Sang Seok Lee, M.D., Ph.D., Hong Soon Kim, M.D., Ph.D., Wolseon Jung, M.D., Ph.D., Hee Yeon Park, M.D., Ph.D., Kyeong Kyun Lee, M.D., Hong Seok Yang, M.D., Ph.D.;** Anesthesia and Pain Medicine, Gachon University, College of Medicine, Incheon, Korea, Republic of, Anesthesia and Pain Medicine, Inje University, College of Medicine, Busan, Korea, Republic of, Anesthesia and Pain Medicine, Ulsan University, College of Medicine, Seoul, Korea, Republic of.

**FA A4168****Interval Between Last Dose of Rocuronium and Sugammadex Is Shorter in Comparison With Neostigmine**

Sugammadex has been commercially available for a few years in Japan. Since this agent was introduced, many clinicians have felt that the interval between the administration of the last dose of rocuronium and its reversal agent has shortened. Recently, it has been shown that the short interval is correlated to postoperative residual weakness. This study was conducted to investigate how the interval changed since sugammadex was introduced. We investigated 518 patients who received either sugammadex or neostigmine. As a result, it was revealed that the interval was significantly shorter in patients who received sugammadex compared with those who received neostigmins. This trend could lead to increased postoperative complications. **Satoru Fujii, M.D., Tsunehisa Tsubokawa, M.D., Yuka Fujii, M.D.;** Kanazawa University Hospital, Kanazawa City, Japan.

**FA A4169****Rapid Reversal of Rocuronium-Induced Neuromuscular Blockade by Sugammadex in Liver Dysfunction Patients**

Sugammadex can rapidly reverse the neuromuscular blockade after a continuous infusion of rocuronium in patients with liver dysfunction undergoing hepatic surgery. Sugammadex was found to be safe and well tolerated. However, further studies of sugammadex under similar conditions should be conducted involving a large number of patients with liver dysfunction undergoing hepatic surgery. **Ai Fujita, M.D, Natsuki Ishibe, M.D, Tatsuya Yoshihara, M.D, Ph.D., Kengo Hayamizu, M.D, Hidekazu Setoguchi, M.D, Ph.D., Sumio Hoka, M.D, Ph.D.;** Anesthesiology & Critical Care Medicine, Department of Clinical Pharmacology, Graduate School of Medical Sciences, Kyushu University, Fukuoka, Japan.

**FA A4170****Dose of Sugammadex for Rapid Reversal of Rocuronium-Induced Profound Neuromuscular Block Is Different Between Young and Elderly Adult Patients**

Recovery from rocuronium-induced neuromuscular blockade following sugammadex administration is known to be slower in the elderly due to decreased cardiac output. We found that the ED50 and ED95 of sugammadex needed for rapid reversal of rocuronium-induced profound neuromuscular blockade are affected by age, and a higher dose should be considered when reversal within 2 min is anticipated in elderly adults of over 70 years compared to young adults. **Seokyung Shin, M.D., Ph.D., Bo Ra Lee, M.D., So Yeon Kim, M.D., Ph.D.;** Anesthesiology and Pain Medicine, Yonsei University College of Medicine, Seoul, Korea, Republic of.



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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### FA A4171

#### Three Cases of Sugammadex-Induced Severe Bradycardia and Decreased Heart Rate

Sugammadex has been widely used in Japan since 2010. It is quite effective regarding reversal of neuromuscular blockade and has few side effects compared with anticholinesterase drugs. Five advanced bradycardias and seven cardiac arrests have been reported as side effects. However, we experienced one case of sugammadex-induced severe bradycardia in 4108 uses of sugammadex. It seems that the appearance of side effects such as bradycardia occur 3 to 5 minutes after sugammadex injection. Careful observation of patients is necessary for 5 to 10 minutes after administering sugammadex. **Rie Shimizu, senior resident, Hiroshi Yamamoto, M.D., Mitsuo Iwasaki, M.D., Marie Ninomiya, M.D., Tomoyo Nishida, M.D., Megumi Okawa, M.D., Koji Takada, M.D.;** Department of Anesthesia, Toyonaka Municipal Hospital, Toyonaka, Osaka, Japan.



### FA A4172

#### Neuromuscular Blockade Improves Surgical Conditions (NISCO)

Our study evaluating the impact of muscle relaxation on surgical conditions and patients' outcome shows that deep neuromuscular blockade ameliorates surgical conditions for laparoscopic cholecystectomy. **Manfred Blobner, M.D., Christiane G. Frick, M.D., Roland B. Stäubli, M.D., Hubertus Feussner, M.D., Stefan J. Schaller, M.D., Christoph Unterbuchner, M.D., Charlotte Lingg, M.D., Martina Geisler, M.D., Heidrun Fink, M.D.;** Klinik für Anaesthesiologie, Klinikum rechts der Isar, Technische Universität München, Munich, Germany.

### FA A4173

#### Effects of Sugammadex and Rocuronium-Sugammadex Association on Serum Creatinine and Kidney Histopathology in Rats

Randomized experimental study to evaluate the effects of sugammadex and the rocuronium-sugammadex combination on serum creatinine and kidney pathology in rats concluded that there were no changes on the serum creatinine between the two moments studied and no kidney pathological lesion after sugammadex. **Ismar L. Cavalcanti, M.D., Ph.D., Paulo A. Germano Filho, M.D., Hugo Camara Tinoco de Siqueira, M.D., Nubia V. Figueiredo, M.D., Ph.D., Luiz A. Vane, M.D., Ph.D.;** Anesthesiology, Fluminense Federal University, Niterói, Brazil, Anesthesiology, Rio de Janeiro Federal University, Rio de Janeiro, Brazil, University of Sao Paulo State, Sao Paulo, Brazil.

### FA A4174

#### Severity of Myasthenia Gravis Influences the Reversal Effect of Neostigmine on Rocuronium-induced Muscle Relaxation In Vitro

We investigated the dose-dependent reversal effects of neostigmine (NSG) on rocuronium-induced muscle relaxation of phrenic nerve-hemidiaphragm preparations removed from rats with moderate and severe myasthenia gravis (MG) induced by antibody administration and also from normal rats as controls. The concentration-twitch tension curve for NSG in the severe MG group was significantly different from the curve in the control group, whereas there was no significant difference in the curves between the moderate MG and control groups and also between the moderate MG and severe MG groups. The results indicate that severity of MG influences the reversal effect of NSG on rocuronium-induced muscle relaxation. **Tomohisa Niya, M.D., Ph.D., Kazunobu Takahashi, M.D., Yukimasa Takada, M.D., Eichi Narimatsu, M.D., Ph.D., Michiaki Yamakage, M.D., Ph.D.;** Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan.

### FA A4175

#### Comparison of Sugammadex and Neostigmine on Postoperative Nausea and Vomiting: A Randomized, Blinded Trial

Sugammadex maybe preferred in patients with high risk for postoperative nausea and vomiting (PONV) and where low heart rates are not warranted in the postoperative period. **Onur Koyuncu, Assistant Professor, Selim Turhanoglu, Professor, Cagla Akkurt, Associate Professor, Mustafa Ozkan, Assistant Professor, Daniel Sessler, M.D., Alparslan Turan, M.D.;** Anesthesiology, Mustafa Kemal University, Hatay, Turkey, Outcomes Research, Cleveland Clinic, Cleveland, OH.

### FA A4176

#### Reversal of Neuromuscular Blockade with Sugammadex at the Reappearance of 4 Twitches to Train-of-4 Stimulation in Pediatric Patients

At the reappearance of TOFC-4, the amount of sugammadex required to reverse the neuromuscular block could be less than that at TOFC-2 in pediatrics. Sugammadex doses of 0.5 mg/kg and 1.0 mg/kg could effectively reverse a rocuronium-induced block in which a pediatric patient had recovered spontaneously to a threshold TOFC-4 in terms of a TOF ratio of 0.9. However, attention should be paid to patient recovery because the time to recovery of the T1 height might be delayed when a low dose of sugammadex is administered. **Keiko Seki, M.D., Tomoki Sasakawa, M.D., Hajime Iwasaki, M.D., Kenichi Takahoko, M.D., Hiroshi Iwasaki, M.D.;** Asahikawa Medical University, Asahikawa, Japan.

### FA A4177

#### Effect of Magnesium Sulfate on the Recovery of the T1 Height and Train of Four after Reversal of Moderate Neuromuscular Blockade Facilitated with Sugammadex: a Randomized Controlled Study

During spontaneous recovery from neuromuscular blockade, the recovery of T1 height to baseline precedes the recovery of the T4/T1 ratio. When sugammadex is used to facilitate recovery of neuromuscular blockade induced by rocuronium, the recovery of the T4/T1 ratio occurs before recovery of T1 height to baseline. Pretreatment with magnesium sulfate retards T1 recovery time after the reversal of the moderate neuromuscular block facilitated by sugammadex. **Paulo Alipio Germano Filho, M.D., Nubia V. Figueiredo, M.D., Ph.D., Louis A. Barrucand, M.D., Ph.D., Hugo C. Tinoco de Siqueira, M.D., Ismar L. Cavalcanti, M.D., Ph.D.;** Anesthesiology, Bonsucesso Federal Hospital, Rio de Janeiro, Brazil, Anesthesiology, Fluminense Federal University, Niterói, Brazil.

### PO10-4 EXPERIMENTAL NEUROSCIENCES: INFLAMMATION, COGNITIVE DYSFUNCTION AND NEUROPROTECTION 10 a.m.-12 p.m. | Hall B1-Area E

### NA A4178

#### Droperidol Lowers the Shivering Threshold in Rabbits

We evaluated the effect of droperidol on the shivering threshold in Rabbits. High-dose droperidol significantly reduces the shivering threshold in rabbits, and can thus be used to prevent or treat shivering after surgery or during induction of therapeutic hypothermia. **Taishi Masamune, M.D., Ph.D., Keiichi Wada, M.D., Hiroaki Sato, M.D., Kenta Ueda, M.D., Tadahiko Ishiyama, M.D., Ph.D., Daniel Sessler, M.D., Takashi Matsukawa, M.D., Ph.D.;** Surgical Center, Department of Anesthesiology, University of Yamanashi Hospital, Chuo, Japan, Department of Anesthesia, Fujiyoshida Municipal Hospital, Fujiyoshida, Japan, Cleveland Clinic, Cleveland, OH.

### NA A4179

#### Compensation by PKC $\beta$ When PKM $\zeta$ Is Disabled Results in Abnormal and Inefficient Learning: Implications for Post-operative Cognitive Dysfunction

Many studies have shown that the persistent activity of atypical Protein Kinase M $\zeta$  (PKM $\zeta$ ) is crucial for long-term potentiation (LTP) and long-term memory (LTM) maintenance. Here we show that atypical PKC $\beta$  may function as a "back-up" mechanism when PKM $\zeta$  is disabled in amnesic disorders. Future studies will determine whether non-specific synthesis of atypical PKCs underlies post-operative cognitive dysfunction. **Panayiotis Tsokas, Ph.D., Changchi Hsieh, Ph.D., Yudong Yao, Ph.D., Ira S. Kass, Ph.D., Todd Sacktor, M.D., James E. Cottrell, M.D.;** Anesthesiology; Physiology & Pharmacology; Robert F Furchgott Center for Neural & Behavioral Science, SUNY Downstate Medical Center, Brooklyn, NY.



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain

**NA A4180****Neuron-Targeted Caveolin-1 Remodels Hippocampal Neurons and Enhances Hippocampal Plasticity and Cognition**

We demonstrated that neuron-targeted overexpression of caveolin-1 in the hippocampus enhances functional neuronal growth and plasticity in vivo and prevents age related disruption of fear memories. **Junji Egawa, M.D., Jan M. Shilling, M.D., Edmund Posadas, Student, Chitra D. Mandyam, Ph.D., Piyush M. Patel, M.D., Ph.D., Brian P. Head, Ph.D.;** Anesthesia, VASDHS/UCSD, San Diego, CA, Scripps Research Institution, La Jolla, CA.

**NA A4181****P2X7 Receptors May be Involved in Postoperative Cognitive Dysfunction via Modulating Inflammatory Responses in the Mouse Hippocampus**

Surgery under isoflurane anesthesia is more likely induce postoperative cognitive dysfunction(POCD )compared with sevoflurane and desflurane. This cognitive dysfunction may be mediated through P2X7 receptor and neuroinflammation. **Bin Zheng, M.D., Zhiyi Zuo, M.D., Ph.D.;** Department of Anesthesiology, University of Virginia Health System, Charlottesville, VA.

**NA A4182****Sevoflurane May Promote Invasion and Inhibit Migration of Glioma Cells**

Sevoflurane may promote invasion and inhibit migration of glioma cells. **Renchun Lai, M.D., Zhiyi Zuo, Ph.D.;** Anesthesiology, University of Virginia, Charlottesville, VA.

**NA A4183****Sevoflurane Postconditioning Increases Nrf2 and HO-1 Expression Via PKC Pathway in a Rat Model of Transient Global Cerebral Ischemia**

The antioxidant mechanism of sevoflurane postconditioning-induced neuroprotection remains unclear. We demonstrated that sevoflurane postconditioning increased Nrf2/HO-1 expression via PKC signaling in the early phase after transient global cerebral IR injury, suggesting that activation of antioxidant enzymes may be responsible for sevoflurane postconditioning-induced neuroprotection in the early phase after cerebral IR injury. **Hee-Pyoung Park, M.D., Ph.D., Young-Jin Lim, M.D., Ph.D., Young-Tae Jeon, M.D., Byung-Gun Kim, M.D.;** Department of Anesthesiology and Pain Medicine, Seoul National University Hospital, Seoul, Korea, Republic of, Bundang Seoul National Univ Hospital, Seongnam, Korea, Republic of, Seoul National University Bundang Hospital, Seongnam, Korea, Republic of.

**NA A4184****Protective Effect of RNase on Nephrectomy-Induced Postoperative Cognitive Dysfunction in Aged Mice**

We show that unilateral nephrectomy induced a significant cognitive impairment in aged mice. We demonstrate that RNase treatment can attenuate a unilateral nephrectomy-induced cognitive impairment in aged mice. **Chan Chen, M.D. Ph.D., Jingjing Cai, M.D., Tao Li, M.D. Ph.D., Hai Chen, B.S., Qian Li, M.D. Ph.D., Jin Liu, M.D. Ph.D., Tao Zhu, M.D. Ph.D.;** Department of Anesthesiology and Translational Neuroscience Center, West China Hospital, Sichuan University, Chengdu, China.

**NA A4185****Hypoglycemia Reduces the Shivering Threshold in Rabbits**

We evaluated the effect of blood glucose concentration on the shivering threshold in rabbits. It was linearly related to blood glucose concentration in lightly anesthetized rabbits. **Keiichi Wada, M.D., Taishi Masamune, M.D., Ph.D., Hiroaki Sato, M.D., Kenta Ueda, M.D., Tadahiko Ishiyama, M.D., Ph.D., Daniel Sessler, M.D., Takashi Matsukawa, M.D., Ph.D.;** Department of Anesthesia, Fujiyoshida Municipal Hospital, Fujiyoshida, Japan, Surgical Center, Department of Anesthesiology, Yamanashi University Hospital, Chuo, Japan, Cleveland Clinic, Cleveland, OH.

**NA A4186****Ondansetron Inhibits C-Fos Expression Induced by Isoflurane Exposure in the Rat Area Postrema**

Postoperative nausea and vomiting continues to be a common complication of anesthesia. In this study, we assessed ondansetron could inhibit c-Fos expression by isoflurane in the rat AP. Adult male Wistar ST rats were exposed to isoflurane after the administration of ondansetron and their AP sections were immunostained with c-Fos antibody. Ondansetron inhibits c-Fos expression induced by isoflurane exposure in the rat AP. This result suggests that 5-HT3 receptor may be involved in the emetic mechanism of isoflurane. **Tetsutarou Hase, M.D., Toshikazu Hashimoto, M.D., Ph.D., Koichi Takita, M.D., Ph.D., Hitoshi Saito, M.D., Yosuke Uchida, M.D., Rui Kato, M.D., Ph.D., Kenkichi Tsuruga, M.D., Yuji Morimoto, M.D., Ph.D.;** Department of Anesthesiology and Perioperative Medicine, Hokkaido University Graduate School of Medicine, Sapporo, Hokkaido, Japan.

**NA A4187****Preoperative Cognitive Intervention Can Prevent the Development of Spatial Memory Impairment After Abdominal Surgery in Aged Rats**

In the present study, we investigated the preventive effects of preoperative cognitive intervention on postoperative spatial memory impairment in aged rats. Our finding implies that preoperative cognitive intervention can be used as a non-pharmacological approach for the prevention of postoperative cognitive dysfunction in elderly patients. **Daiki Yamanaka, M.D., Takashi Kawano, M.D., Tetsuya Takahashi, M.D., Hideki Iwata, M.D., Satoko Imori, M.D., Akihiro Mrokawa, M.D., Sayaka Waki, M.D., Satoru Eguchi, D.D.S., Masataka Yokoyama, M.D.;** Department of Anesthesiology and Intensive Care Medicine, Kochi Medical School, Nankoku, Japan, Tokushima U School Dentistry, Tokushima, Japan.

**NA A4188****Pro- and Anti-inflammatory Cytokines Differentially Activate the Sensory Vagus Nerve**

The peripheral nervous system senses the body's inflammatory status in order to maintain homeostasis and adapt to physiologic challenges. The route and specificity by which this information is conveyed to the brain is unclear. By recording the electrical activity of the cervical vagus nerve in mice administered pro- or anti-inflammatory cytokines, we demonstrate that the sensory vagus neural circuit monitors inflammatory signals in a mediator-specific fashion, with pro- but not anti-inflammatory signals differentially enhancing vagus nerve activity. **Benjamin E. Steinberg, M.D., Ph.D., Sergio Robbiati, Ph.D., Harold A. Silverman, M.Sc., Sangeeta S. Chavan, Ph.D., Patricio T. Huerta, Ph.D., Kevin J. Tracey, M.D.;** Department of Anesthesia, University of Toronto, Toronto, ON, Canada, Feinstein Institute for Medical Research, Manhasset, NY.

**NA A4189****Dexmedetomidine Limits Postoperative Inflammation and Cognitive Decline Through an Alpha-2 Adrenoceptor Mechanism**

Dexmedetomidine is effective in limiting postoperative systemic- and neuro-inflammation as well as cognitive decline. **Susana Vacas, M.D., Ph.D., Mitchell Marubayashi, M.Sc., Mervyn Maze, M.B., Ch.B.;** Anesthesia and Perioperative Care, University California San Francisco, San Francisco, CA.

**NA A4190****TLR4 Signaling Mediates Postoperative Cognitive Dysfunction: Possible Role of S100A8 and S100A9**

Our data suggest that TLR4/MyD88 signaling pathway might participate in cognitive dysfunction induced by the tibia fracture surgery and S100A8 and S100A9 could strengthen this effect by activating TLR4. **Yanning Qian, Ph.D., Bo Gui, Ph.D.;** Anesthesiology, First Affiliated Hospital Jilin Nanjing Medical University, Nanjing, China.

**NA A4191****The Role of PKA/AKAP in Propofol Post-Conditioning Against Cognitive Dysfunction Induced by Cerebral IR Injury**

The role of PKA/AKAP in propofol post-conditioning against cognitive dysfunction induced by cerebral IR injury. **Wang Bin, Master, Guolin Wang, M.D., Haiyun Wang, Ph.D.;** Tianjin Research Institute of Anesthesiology, Tianjin Medical University, Tianjin, China.

**NA A4184****Protective Effect of RNase on Nephrectomy-Induced Postoperative Cognitive Dysfunction in Aged Mice**

We show that unilateral nephrectomy induced a significant cognitive impairment in aged mice. We demonstrate that RNase treatment can attenuate a unilateral nephrectomy-induced cognitive impairment in aged mice. **Chan Chen, M.D. Ph.D., Jingjing Cai, M.D., Tao Li, M.D. Ph.D., Hai Chen, B.S., Qian Li, M.D. Ph.D., Jin Liu, M.D. Ph.D., Tao Zhu, M.D. Ph.D.;** Department of Anesthesiology and Translational Neuroscience Center, West China Hospital, Sichuan University, Chengdu, China.

**NA A4188****Pro- and Anti-inflammatory Cytokines Differentially Activate the Sensory Vagus Nerve**

The peripheral nervous system senses the body's inflammatory status in order to maintain homeostasis and adapt to physiologic challenges. The route and specificity by which this information is conveyed to the brain is unclear. By recording the electrical activity of the cervical vagus nerve in mice administered pro- or anti-inflammatory cytokines, we demonstrate that the sensory vagus neural circuit monitors inflammatory signals in a mediator-specific fashion, with pro- but not anti-inflammatory signals differentially enhancing vagus nerve activity. **Benjamin E. Steinberg, M.D., Ph.D., Sergio Robbiati, Ph.D., Harold A. Silverman, M.Sc., Sangeeta S. Chavan, Ph.D., Patricio T. Huerta, Ph.D., Kevin J. Tracey, M.D.;** Department of Anesthesia, University of Toronto, Toronto, ON, Canada, Feinstein Institute for Medical Research, Manhasset, NY.

**NA A4189****Dexmedetomidine Limits Postoperative Inflammation and Cognitive Decline Through an Alpha-2 Adrenoceptor Mechanism**

Dexmedetomidine is effective in limiting postoperative systemic- and neuro-inflammation as well as cognitive decline. **Susana Vacas, M.D., Ph.D., Mitchell Marubayashi, M.Sc., Mervyn Maze, M.B., Ch.B.;** Anesthesia and Perioperative Care, University California San Francisco, San Francisco, CA.

**NA A4191****The Role of PKA/AKAP in Propofol Post-Conditioning Against Cognitive Dysfunction Induced by Cerebral IR Injury**

The role of PKA/AKAP in propofol post-conditioning against cognitive dysfunction induced by cerebral IR injury. **Wang Bin, Master, Guolin Wang, M.D., Haiyun Wang, Ph.D.;** Tianjin Research Institute of Anesthesiology, Tianjin Medical University, Tianjin, China.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain

### NA A4192

#### The Role of KCC2\_GABAA Receptor Converting in the Neuroprotection Induced by Propofol Postconditioning

Our results suggested that propofol postconditioning could change the flow of Cl<sup>-</sup>, which was mediated by KCC2, thus converting the changes of GABAA receptor induced by OGD. GABAA receptor could be a potential target for the treatment of ischemia disease. Besides, our further research may concentrate on the crosstalk between the AMPA and GABAA receptors. Ai Zhu, Master, Hongbai Wang, Master, Shuying Liu, Master, Haiyun Wang, Ph.D.; Tianjin Medical University General Hospital, Tianjin, China.

### NA A4193

#### Role of KCC2 in Acute and Long-term Neuroprotection Induced by Propofol Postconditioning in a Rat Model of Focal Cerebral Ischemia/Reperfusion

Propofol postconditioning plays a neuroprotective role via upregulating GABA function-related KCC2 expression in ischemic area in acute and long-term stage. Hong B. Wang, M.D., Shuying Liu, M.D., Haiyun Wang, Ph.D.; Tianjin Medical University General Hospital, Tianjin Research Institute of Anesthesiology, Tianjin, China.

Resident Research Award 3rd Place



### NA A4303

#### Activation of Nociceptin Opioid Peptide Receptors Blocks Cocaine Place Preference and Produces Analgesia

SCH 221510 demonstrated a dose dependent response in attenuating cocaine cpp which was not seen in NOPR knockout controls. Furthermore, SCH 221510 was shown to increase rear paw lick latency when compared to vehicle controls, and was absent in NOPR KO mice. Our results suggest activation of NOPR receptors with selective agonists could be useful for treating addiction and pain. Elisha E. Peterson, M.D., Ream Al-Hasani, Ph.D., Skylar M. Spangler, B.S., Steven Chang, Ph.D., Michael R. Bruchas, Ph.D.; Anesthesiology, Washington University in Saint Louis, Saint Louis, MO.

### PO12-1 OBSTETRIC ANESTHESIA: CESAREAN DELIVERY 10 a.m.-12 p.m. | Hall B1-Area C

### OB A4194

#### Anxiety as a Predictor of Postcesarean Section Analgesic Requirement: A Pilot Study

It is generally accepted that increased anxiety correlates with increased postoperative pain. Twenty women scheduled for elective cesarean section completed the State Trait Anxiety Inventory (STAI) preoperatively and were stratified accordingly into low ( $\leq 1$  SD below average for females age 19-39), normal (within 1 SD), or high ( $\geq 1$  SD) state and low, normal, or high trait. High state anxiety did not correlate with increased pain scores or analgesic requirements, suggesting that increased postoperative pain is due to trait rather than state of anxiety. Alexandra DePorre, B.S., Craig T. Hartrick, M.D., Yeong-Shiuh Tang, M.D.; Oakland University William Beaumont School of Medicine, Rochester Hills, MI, Beaumont Health System, Troy, MI.

### OB A4195

#### Does the Time of Day Affect the Decision to Incision Interval for Cesarean Section?

Preparation for non-elective cesarean section (CS) requires numerous steps and levels of coordination across a several disciplines. We questioned whether time of day affects what we considered to be a reasonable and an attainable goal of a 60 minute decision to incision interval (DII) for urgent CS. Our data analysis demonstrated that a smaller proportion of urgent CS performed at night had a DII below 60 minutes. The reasons for this are likely multifactorial, but reduced staffing at night is likely a contributing factor. Lori Ann W. Suffredini, D.O., Karen S. Lindeman, M.D.; Anesthesiology and Critical Care Medicine, The Johns Hopkins University School of Medicine, Baltimore, MD.

### OB A4196

#### Effect of Lateral Tilt Angle on the Volume of the Abdominal Aorta and Inferior Vena Cava in Pregnant and Non-Pregnant Women, as Determined by Magnetic Resonance Imaging

The volume of the aorta in the parturients did not change among left-lateral tilt positions and did not differ from those in the non-pregnant woman. Compression of the inferior vena cava reduced in left-lateral tilt positions of at 30°, 45°. Kan Zhang, M.D., Hideyuki Higuchi, M.D., Shunichi Takagi, M.D., Shiori Sakuma, M.D., Ikue Furui, M.D., Rui Matsumine, M.D., Ph.D., Makoto Ozaki, M.D.; Department of Anesthesiology, Tokyo Women's Medical University, Tokyo, Japan.

### OB A4197

#### Impact of Skin-to-Skin Contact on Maternal Pain Medication Consumption Following C-Sections

Skin-to-skin contact (STSC) has well-established benefits for the infant in the immediate post delivery period; however, maternal benefits of on post delivery pain management have not been fully elucidated. A retrospective pilot audit of pain medication usage was performed between patients who received STSC and those who did not. Although the difference between the two groups was not statistically significant, a trend was noted with higher morphine equivalent usage in STSC patients. Katherine A. Herbert, B.S., Sylvia H. Wilson, M.D., Bethany Wolf, Ph.D., Latha Hebbar, M.D.; Anesthesia and Perioperative Medicine, Public Health Sciences, Medical University of South Carolina, Charleston, SC.

### OB A4198

#### Mode of Anesthesia in Women Undergoing Preterm Birth by Cesarean Delivery: An Epidemiologic Analysis

Patients undergoing cesarean delivery before 37 weeks' gestation may be at increased risk of receiving general anesthesia. Alexander Butwick, M.B.B.S., F.R.C.A., M.S., Carolyn Weiniger, M.B., B.Ch., Sarah Osmundson, M.D., El-Sayed Yasser, M.D., Yair Blumenfeld, M.D.; Anesthesia, Obstetrics and Gynecology, Stanford University School of Medicine, Stanford, CA.

### OB A4199

#### Does Failure to Aspirate CSF During Spinal for Cesarean Section Predict Block Failure?

It is not clear whether the inability to freely aspirate CSF into the syringe after identifying the subarachnoid space has any implications for the success of the spinal anesthetic. In this prospective, observational study we were unable to aspirate CSF in 16 patients undergoing spinal anesthesia for cesarean section. Fifteen patients (94%) had a successful block indicating that CSF aspiration is not an important feature of spinal anesthetic technique. Seth E. Landa, M.D., Stephen P. Winikoff, M.D., Jeffrey Hsieh, M.D., Radhika Ravi, M.D.; Anesthesiology, New York Medical College - St. Joseph's Regional Medical Center, Paterson, NJ.

### OB A4200

#### Comparison of Efficacy of Two Doses of Intrathecal Clonidine with Hyperbaric Bupivacaine in Lower Segment Caesarean Section (LSCS)

Clonidine 30 µg added to Bupivacaine 10 mg for subarachnoid block give excellent intraoperative condition and increase duration of post operative analgesia with good haemodynamic stability, minimal side effect and no sedation in patients undergoing LSCS. Sachidanand J. Bharati, Sr., M.D., D.M., Shailendra Kumar, M.D.; Anesthesia, Pain and Palliative Care, Neuroanesthesia, All India Institute of Medical Sciences, Delhi, India.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain

**OB A4201**

**Association Between Use of Sevoflurane and Perioperative Hemorrhage in Caesarean Section**

We conducted a retrospective study to investigate the amount of perioperative bleeding in patients undergoing caesarean section under various anesthesia: general anesthesia (group GA: n=61) and spinal anesthesia (group SA: n=685). We further divided patients in group GA into a group of patients who were administered sevoflurane (group S: n=30) and a group of patients who were under total intravenous anesthesia (group P: n=31). Median IO-EBL in group GA was 271 ml, which was significantly higher than that (123 ml) in group SA ( $p < 0.001$ ). IO-EBL in group S was 223 ml, which was not significantly different from that (305 ml) in group P ( $p = 0.16$ ). IO-EBL in group S and that in group P were significantly higher than that in group SP ( $p = 0.03$  and  $p = 0.0002$ , respectively). Satoshi Kimura, M.D., Kazuyuki Matsuda, M.D., Mitsui Satoshi, M.D., Shinji Kobashi, M.D., Hidehiko Yatsuzuka, M.D.; Anesthesiology, Fukuyama Medical Center, Hiroshima, Japan.

**OB A4202**

**Lower Leg Compression Devices Versus Sequential Compression Devices to Prevent Post-Spinal Hypotension during Cesarean Delivery**

During Cesarean delivery, similar pressor requirements and hemodynamic indices were observed in women receiving sequential compression devices vs. TED (anti-embolism) stockings. Alexander Butwick, M.B.B.S., F.R.C.A., M.S., Lou Lou Zheng, M.D., Brendan Carvalho, M.B.B.Ch., F.R.C.A.; Stanford University School of Medicine, Stanford, CA, New York Medical College, Valhalla, NY.

**OB A4203**

**The Efficacy of Sugammadex for the Reversal of Rocuronium-induced Neuromuscular Blockade in Women during Cesarean Section**

Magnesium sulfate (MgSO<sub>4</sub>), which is used for uterine relaxation in pregnant women, inhibits recovery from muscle relaxation caused by non-depolarizing neuromuscular blocking agents. Sugammadex, which forms an extremely strong binding complex with rocuronium, could be a highly effective reversal agent for rocuronium-induced muscle relaxation in the obstetric patients treated with MgSO<sub>4</sub>. MgSO<sub>4</sub> -pretreated or -untreated patients of cesarean section under general anesthesia were retrospectively investigated. The time required for the train-of-four ratio more than 0.9 (TOF > 0.9) from sugammadex administration was comparable between two groups. Our results suggest that sugammadex is useful for reversal of rocuronium-induced muscle relaxation in obstetric patients treated with magnesium. Katsutoshi Nakahata, M.D., Hiromichi Kurosaki, M.D., Tadashi Tanioku, M.D., Yoshinori Kanda, M.D., Tomoyuki Kawamata, M.D.; Anesthesiology, Wakayama Medical University, Wakayama City, Japan.

**OB A4204**

**Determination of the ED<sub>50</sub> of Intrathecal Hydromorphone in Cesarean Section Using the Up-and-Down Sequential Allocation Method**

The primary objective of this study was to determine the dose of intrathecal hydromorphone that results in a pain score of less than 3 out of 10 twelve hours after intrathecal injection in 50% of women undergoing cesarean section. Of the patients reporting adequate analgesia at 12 hours, the average dose of hydromorphone was 5.75 mcg (range 2-8 mcg). There were no adverse outcomes. There was no statistical difference between 1 and 5 minute Apgar scores. There were no reported cases of pruritus, nausea, or hypotension requiring treatment. Grant Lynde, M.D.; Department of Anesthesiology, Emory University, Atlanta, GA.

**OB A4205**

**General Anesthesia and Endotracheal Intubation Experience from an Academic Labor & Delivery Service**

This retrospective descriptive analysis of 220 general anesthetics on an academic labor and delivery service examined the risk factors and incidence of aspiration, difficult intubation and difficult ventilation. Adam J. Sachs, M.D., Richard M. Smiley, M.D., Ph.D., Marie-Louise Meng, M.D.; Anesthesiology, Columbia University, New York, NY.

**OB A4206**

**Intrathecal Bupivacaine Dose for Cesarean Delivery Is Not Reduced in Obese Compared to Non-Obese Parturients**

The optimal dose of local anesthetic for obese parturients undergoing spinal anesthesia for cesarean delivery (CD) is controversial due to concerns about exaggerated block spread with doses used in non-obese patients. The purpose of this study was to investigate the hypothesis that standard doses of hyperbaric bupivacaine for CD do not cause an increased risk of high spinal block in the obese parturient. Our findings suggest that at standard spinal doses of hyperbaric bupivacaine for CD, there is no significant difference between obese and non-obese patients in the risk of developing high spinal block; therefore, spinal dose reductions are not required in this patient population. Lisa M. Einhorn, M.D., Igor Akushevich, Ph.D., Ashraf S. Habib, M.B.,B.Ch., M.Sc., FRCA; Anesthesiology, Center for Population Health and Aging, Duke University, Durham, NC.

**OB A4207**

**The eNOS Gene Polymorphism Is Associated With Ergometrine-Induced Myocardial Ischemia During Cesarean Delivery**

Nitric oxide regulated by the endothelial nitric oxide synthase (eNOS) plays an important role in coronary vasoconstriction. And Methylergometrine maleate has adverse effect of coronary vasospasm. But the role of eNOS for coronary vasoconstriction caused by metylergometrine maleate is controversial. In this study, we could clinically reveal a part of the complex mechanism of coronary vasoconstriction caused by metylergometrine maleate in terms of gene polymorphism. Kohei Kawashima, M.D., Katsutoshi Nakahata, M.D., Tadashi Tanioku, M.D., Tomoyuki Kawamata, M.D., Ph.D.; Anesthesiology, Wakayama Medical University, Wakayama, Japan.

**OB A4208**

**Baseline Hemoglobin and Preterm Gestation Predict the Need for Blood Transfusion After Cesarean Section**

Low baseline hemoglobin and preterm gestation (<36 weeks) are two characteristics of obstetric patients that may help predict the need for blood transfusion. By extrapolating from our data, only 30% of patients had hemoglobin <10g/dL and/or were less than 36 weeks gestation. Therefore, targeting patients that are identified as higher risk for needing blood transfusion will result in substantial cost-savings. Grant Lynde, M.D., Anne M. Winkler, M.D., M.P.H., Linda J. Demma, M.D., Ph.D.; Department of Anesthesiology, Emory University, Atlanta, GA.

**OB A4209**

**Preoperative Acupuncture Enhances Postcesarean Analgesia with Intrathecal Morphine While PONV or Pruritus Are Unaffected**

Preoperative acupuncture at P6 and LI4 for average 17 hours enhanced postcesarean analgesia with intrathecal morphine in 72 patients undergoing elective cesarean section in this prospective observational study. VAS at 12 hours postoperatively was significantly decreased from 54 to 29mm, while PONV or pruritus are not affected. Rie Inoue, M.D., Mayumi Soga, M.D., Yusuke Mazda, M.D., Yuko Handa, M.D., Sayuri Nagashima, M.D., Katuo Terui, Ph.D.; Saitama Medical Center, Kawagoe, Japan.

**PO16-5 REGIONAL ANESTHESIA AND ACUTE PAIN  
10 a.m.-12 p.m. | Hall B1-Area B**

**RA A4210**

**Loss of Resistance Method for Clinical Study of Fascia Iliaca Compartment Block**

The key of fascia iliaca compartment block success and complete block was the liquid accurate injection into the iliac fascia space, while the traditional loss of resistance method can be used to locate iliac fascia space, but the accuracy is not ideal. Liangjing Yuan, M.D.; Beijing Jishuitan Hospital, Beijing, China.



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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### RA A4211

#### Multimodal Analgesic Protocol Decreases Opioid Consumption and Facilitates Ambulation After Total Knee Arthroplasty: A Retrospective Study

This retrospective study demonstrates the efficacy of a multimodal analgesic regimen for total knee arthroplasty. A combination of pregabalin, gabapentin, acetaminophen, celecoxib, single and continuous peripheral nerve blocks results in decrease opioid use and facilitates ambulation in the early postoperative period. **Raul R. Montague, M.D., Hailey H. Dizay, D.O., Kenneth S. Heeringa, D.O., Dennis S. Ahmad, D.O., M.P.H., David S. Monge, M.D., Phillip R. Hage, D.O., Molly O’Kane, D.O., Erik C. Hedlund, D.O.**; Anesthesia Practice Consultants, PC, Orthopedic Resident, Metro Health Hospital, Wyoming, MI, Orthopaedic Associates of Michigan, Wyoming, MI.

### RA A4212

#### Reduction in After-Discharge Postoperative Pain Severity After Inpatient Surgery

The incidence of moderate-to-extreme pain in patients after discharge following inpatient surgery has been greatly reduced in the last 10 years, perhaps due to more consistently applied pain management protocols. **Asokumar Buvanendran, M.D., Jacqueline Fiala, M.D., Karishma Patel, M.S., Alexandra D. Golden, M.S., Mario Moric, M.S., Jeffrey S. Kroin, Ph.D.**; Anesthesiology, Rush University Medical Center, Chicago, IL.

### RA A4213

#### Biomechanics of Epidural Loss-of-Resistance: An Observational Study

This study of the dynamic biomechanics of epidural insertion with loss-of-resistance showed that investigation with pressure measurement and high-resolution video proved acceptable in the clinical situation, maintaining sterility while interfering minimally with the time and technique of epidural insertion. Even within this small pilot study, we found a large variation in loss-of-resistance injection volumes, flows, and forces. **William P. McKay, M.D., Pavan Kumar, M.D., Andrew Frost, Andrew Wang, Brendan Kushneriuk, B.Sc., Jayden Cowan, B.Sc.**; Anesthesia, University of Saskatchewan, Saskatoon, SK, Canada.

### RA A4214

#### Continuous Subcostal Oblique Transversus Abdominis Plane Block for Postoperative Analgesia in Living Liver Donors

There have been only a few reports describing the analgesic efficacy of continuous subcostal transversus abdominis plane (TAP) block. In this retrospective study, 22 consecutive living liver donors were classified into either the continuous subcostal TAP block group (TAP group) or intravenous (IV) fentanyl based analgesia group (F group). The TAP group donors received bilateral continuous subcostal TAP infusion of 0.125% levobupivacaine 6 ml/h. Mean (SD) cumulative postoperative fentanyl consumption for 48 h was 51.8 (49.6) mcg in the TAP group (n = 10) and 110.3 (52.3) mcg in the F group (n = 12) (P = 0.02). Continuous subcostal TAP block provided an opioid-sparing analgesic effect for living liver donors. **Akihiko Maeda, M.D., Sho C. Shibata, M.D., Ph.D., Yuji Fujino, M.D., Ph.D.**; Department of Anesthesiology and Intensive Care Medicine, Graduate School of Medicine, Osaka University, Suita, Osaka, Japan.

### RA A4215

#### Comparison of Analgesic Efficacy of Preoperative and Postoperative Thoracic Paravertebral Block in Patients Undergoing Thoracotomy

Thoracic paravertebral block (TPVB) is beneficial for post-thoracotomy pain relief. This randomized double-blind clinical trial was designed to observe the analgesic efficacy of ultrasound-guided unilateral preoperative and postoperative percutaneous TPVB with ropivacaine in patients undergoing thoracotomy. Forty-two patients were included. Both preoperative and postoperative TPVB could serve as effective analgesia adjuncts in patients undergoing thoracotomy during early postoperative hours. And preoperative TPVB appeared to be more effective and have longer block duration. **Li Xu, M.D., Huihua Lin, B.S., Geng Wang, M.D.**; Department of Anesthesiology, Beijing Jishuitan Hospital, Beijing, China.

### RA A4216

#### Novel Use of the Spring Loaded Veress Surgical Insufflation Needle for Transversus Abdominis Plane Block in Morbidly Obese Patients

We propose the Veress Surgical Insufflation needle be used as an alternative when performing a TAP block in a patient where precise fascial planes are difficult to visualize with Ultrasound. This may also offer an additional margin of safety as well as provide an increased rate of success with this technique. **Flower Austin, D.O., Sanjib D. Adhikary, M.D., Patrick McQuillan, M.D.**; Anesthesia, Penn State Milton S. Hershey Medical Center, Hershey, PA.

### RA A4217

#### Evaluation of Local Effects Following Continuous Epidural Anesthesia With MRI

MRI (Magnetic Resonance Imaging) is regarded as the golden standard for the diagnosis of intraspinal hematoma or infection. However, there are concerns that the high sensitivity of MRI might lead to the interpretation of local irritation as signs of infection and lead to surgical exploration. Therefore, to evaluate the local effects of a continuous epidural catheterization, spinal MRI was performed prior to and after epidural catheterization in 12 patients and compared to controls without epidural catheters. No signs of local irritation could be found. None of the patients showed signs of an intraspinal or a systemic infection. **Harold T. Groeben, M.D., Christian Peters, Daniela Gräbing, Rolf Dappen, M.D., Jens-Albrecht Koch, M.D.**; Klinik für Anästhesiologie, Klinik für Radiologie, Kliniken Essen-Mitte, Essen, Germany.

### RA A4218

#### Echo-Guided Interscalene Brachial Plexus Block with Superficial Cervical Plexus Block Improves Perioperative Analgesia for Shoulder Arthroscopy Surgery

We administered 2% lidocaine and bicarbonate to twenty patients scheduled shoulder arthroscopic surgery for a superficial cervical plexus block (SCB). We then administered 0.25% levobupivacaine with epinephrine plus 0.1 mg of buprenorphine for an interscalene brachial plexus block (ISB). If a patient experienced pain, we administered, as needed: fentanyl; local injection of 1% lidocaine; nitrous oxide. As a result, eight patients were administered 110±88 µg of fentanyl. SCB at the level of C4 can anesthetize the dorsal scapular and suprascapular nerves, establishing superior analgesia for the surgery. **Mitsuharu Kodaka, M.D., Takahito Marubuchi, M.D., Goro Kaneko, M.D., Junko Ichikawa, M.D., Makiko Komori, M.D.**; Anesthesia and Intensive Care, Tokyo Women’s Medical University Medical Center East, Tokyo, Japan.

### RA A4219

#### Epidural Anesthesia Reduced Postoperative Nausea and Vomiting in Laparoscopic Gynecological Surgery

In this prospective randomized controlled trial, we showed that epidural anesthesia combined with general anesthesia reduced the level of nausea and improved patients satisfaction with nausea management compared to general anesthesia alone after laparoscopic gynecological surgery. **Hiroyuki Seki, M.D., Ph.D., Kyoko Furumoto, M.D., Aya Kagoya, M.D., Yoshihiro Sekiguchi, M.D., Ph.D., Hiroka Hashimoto, M.D., Tomoko Oyaizu, M.D., Yuki Nakamori, M.D., Ikuko Kishi, M.D., Masato Sato, M.D., Itsuo Nakatsuka, M.D., Ph.D.**; Anesthesiology, Keio University, Tokyo, Japan, Saiseikai Central Hospital, Tokyo, Japan, Keiyu Hospital, Kanagawa, Japan.

### RA A4220

#### Usefulness and Safety of Contrast-Enhanced Ultrasonography with Sonazoid® for Peripheral Nerve Block

We evaluate the usefulness of contrast-enhanced ultrasonography (CEUS) with Sonazoid® for peripheral nerve block. A simulation study revealed that 100- to 300-fold diluted Sonazoid showed effective contrast enhancement for local use. A cadaver study revealed that CEUS with Sonazoid could estimate local anesthetic distribution same as radiography and agreed well with anatomical dissection. A histologic study showed the safety of Sonazoid administered around the nerve. CEUS has novel potential to perform many types of nerve blocks precisely. **Hideaki Sasaki, M.D., Masanori Yamauchi, M.D., Ph.D., Takafumi Ninomiya, Ph.D., Tomohisa Niiya, M.D., Ph.D., Michiaki Yamakage, M.D., Ph.D.**; Department of Anesthesiology, Department of Anatomy, Sapporo Medical University School of Medicine, Sapporo, Japan, Department of Anesthesiology, Tohoku University, Sendai, Japan.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain

**RA A4221****Color B-mode Imaging Improves Visualization of the Neuraxial Structures during Spinal Sonography in the Elderly**

Compared with conventional gray-scale, Color B-mode imaging improves visualization of the neuraxial structures during ultrasonography of the lumbar spine in the elderly. Liu Fei, M.D., Jia Wei Li, Ph.D., Branchobporn Songthamwat, M.D., Karmkar Manoj Kumar, M.D.; Department of Anesthesia and Intensive Care, The Chinese University of Hong Kong, Shatin, Hong Kong.

**RA A4222****Survey of Accidental Dural Puncture and Post-dural Puncture Headache With Perioperative Epidural Anesthesia in Non-obstetric Patients**

We investigated the incidence and characteristics of ADP to clarify the risk factors for the onset of PDPH in non-obstetric patients receiving epidural anesthesia. The incidence of ADP was 0.43% and the risk of ADP increased when the procedure was performed by residents, at the start of the academic year and when lower thoracic epidural approaches were used. PDPH after ADP developed in 32% patients. Younger patients, a smaller infusion volume, short surgical duration and withholding opioids in the postoperative period were thought to be risk factors for the development of PDPH after ADP. Yusuke Miyazaki, M.D., Yasushi Mio, M.D., Hiroshi Sunaga, M.D., Sachiko Ohmi, M.D., Shoichi Uezono, M.D.; Jikei University School of Medicine, Tokyo, Japan.

**RA A4223****Using Thromboelastography Perioperatively to Assess the Clinical Impact of Tranexamic Acid on Total Joint Arthroplasty**

Tranexamic acid is an antifibrinolytic medication used in cardiac and orthopaedic surgeries to help prevent surgical blood loss. In the orthopaedic population, preventing surgical blood loss is balanced by the potential for the increased risk of deep venous thrombosis with the use of these medications. By using biomarkers and thromboelastography, the clinical implications of tranexamic acid therapy will be further understood. Jordan F. Wicker, M.D., Yan Lai, M.D., Christina Jeng, M.D.; Anesthesiology, Mount Sinai Medical Center, New York, NY.

**RA A4224****Combined Superficial and Intermediate Cervical Plexus Block for Carotid Endarterectomy**

Carotid endarterectomy is a well-established surgical treatment for significant carotid stenosis for which both general and regional anaesthetic techniques have been shown to be effective. The regional anaesthesia has been preferred in high-risk patients as it avoids the systemic complications of general anaesthetic. Although the multi centre, international GALA trial failed to show superiority of regional over general anaesthesia for carotid endarterectomies but in our experience from the series of patients who under went awake carotid endarterectomy at our institution we found that the ultrasound guided intermediate cervical plexus block reduces the risk of life-threatening complications and achieves technical feasibility, efficacy, and safety. Dipali Verma, Jr., F.R.C.A.; Anaesthetics, University Hospital of North Staffordshire, Stoke-on-Trent, United Kingdom.

**RA A4225****Regional Anesthesia, Time to Hospital Discharge, and In-Hospital Mortality: A Propensity Score Matched Analysis**

This study evaluated the impact of regional anesthesia compared to general anesthesia on the amount of time between leaving the operating Room and hospital discharge and the odds of in-hospital mortality. Jesse M. Ehrenfeld, M.D., M.P.H., Matthew Shotwell, Ph.D., Rajnish K. Gupta, M.D., Warren S. Sandberg, M.D., Ph.D., Michaelene Johnson, B.B.A., Catherine Bulka, M.S.; Vanderbilt University, Nashville, TN.

**PO02-2 ANESTHETIC ACTION AND BIOCHEMISTRY: MOLECULAR INSIGHTS INTO ANESTHETIC MECHANISM OF ACTION, SAFETY AND TOXICITY**

1-3 p.m. | Hall B1-Area C

**FA A4226****Differential Effect of Propofol and Isoflurane on Macrophage 1 Antigen**

Isoflurane inhibited the binding of ICAM-1 to both LFA-1 and Mac-1, which is likely to augment its effect on leukocyte binding to the blood vessel. However, propofol inhibited the binding of LFA-1 to ICAM-1, but increased the binding of Mac-1 to ICAM-1. This may suggest that propofol may not have significant impact on leukocyte adhesion to the blood vessel compared to isoflurane. In vivo significance needs to be confirmed in the future. Koichi Yuki, M.D., Jia-Ren Liu, M.D., Ph.D., Sulpicio G. Soriano, M.D.; Boston Children's Hospital/Harvard Medical School, Boston, MA.

**FA A4227****An Analysis of the Entropy of Vaporization of Five Newer Inhaled Anesthetics**

This study is the first analysis of the entropy of vaporization of volatile anesthetics. The entropy values indicate the presence of intermolecular forces which affect the vapor pressure. The adoption of the MAC oil-gas correlation as indicative of a lipid site of anesthetic action and the Meyer-Overton Rule is challenged by this analysis of the entropy of vaporization of five newer inhaled anesthetics. Mitchel Sosis, M.D., Ph.D., Anesthesiology, Holy Redeemer Hospital and Medical Center, Lafayette Hill, PA .

**FA A4228****Changes in Urinary Prostaglandin Metabolites Affected by General Anesthesia**

The major urinary metabolites of prostaglandin D2 and prostaglandin E2 are tetranor PGDM and tetranor PGEM. Urinary tetranor PGDM is increased in asthma and allergic diseases. Urinary tetranor PGEM is increased in inflammatory conditions, including chronic obstructive pulmonary disease. In this study, we investigated the effect of general anesthesia on these metabolites. In asthmatic patients, urinary tetranor PGDM concentrations are temporarily elevated by general anesthesia. In patients with a smoking history, urinary tetranor PGEM concentrations are low under general anesthesia. This suggests that anesthetic agents affect local inflammation in the lungs. Junko Nakahira, M.D., Ph.D., Toshiyuki Sawai, M.D., Ph.D., Toshiaki Minami, M.D., Ph.D., Department of Anesthesiology, Osaka Medical College, Takatsuki, Osaka, Japan.

**FA A4229****Reliability of the Calcium Channel Function Testing in Infants**

In Japan the diagnostic technique of choice is based on the measurement of calcium-induced calcium release (CICR) rate on skinned muscle fibers. A small muscle sample is enough for making diagnostic test using skinned fibers. However, one should also consider that preparing skinned muscle fibers is technically problematic especially in breastfeeding infants, whose muscle fibers are thin and less likely to attain the strain necessary for the test. Yasuko Ichihara, M.D., Ph.D., Hirosato Kikuchi, M.D., Keiko Mukaida, M.D., Carlos A Ibarra M, M.D., Ph.D., Kohji Fujio, M.D., Ph.D., Anesthesiology, Kikkoman General Hospital, Noda-shi, Chiba, Japan, Anesthesia, Abiko Toho Hospital, Abiko City, Chiba Pref, Japan, Hiroshima University, Hiroshima, Japan, Anesthesia, Hadassah Ein Kerem Medical Center, Jerusalem, Israel.

**FA A4230****GABA-A Modulation by Phenyl Ring Compounds Is Associated With a Water Solubility Cut-off**

The molar water solubility cut-off for GABAA receptor modulation by phenyl ring compounds lies between 0.10 and 0.46 mM. Data suggest volatile hydrocarbons, including inhaled anesthetics, might modulate GABAA receptors by displacing water from one or more amphipathic binding sites capable of inducing conformational changes in the channel that affect ion conductance in the open state. Robert Brosnan, D.V.M., Ph.D., Trung L. Pham, B.S., Department of Surgical and Radiological Sciences, University of California, Davis, Davis, CA.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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### FA A4231

#### Cryptoids May Competitively Inhibit Rocuronium -Cucurbituril Complexes

Modified cucurbiturils may not be as discriminatory as cyclodextrins . They may bind both neuromuscular blockers and narcotics. **Raymond Glassenberg, M.D.**; Anesthesiology, Northwestern University Feinberg School of Medicine, Chicago, IL .

### FA A4232

#### Effect of Propofol on Apoptosis and the Production of IL-10 and TNF-α in Rat Alveolar Macrophages

Anesthetic propofol exerts protective effects against acute lung injury/acute respiratory distress syndrome (ALI/ARDS). Alveolar macrophages (AMs) are the first line of pulmonary defense against pathogenic microorganisms and lung injury. The main finding of the study showed that when the administered concentration reached 300μM, propofol would cause AMs apoptosis, which is related to the activity of caspase-3. In addition, we also discovered that 1-300μM propofol have no effect on the production of TNF-α and IL-10 in rat AMs. **Zi-wen Zhong, MMed, Zhi-xun Lan, MMed, Si Zeng, MMed, Tong Liu, MMed, Xue-wen Lv, MMed, Xiao-lin Yang, M.D., Lin Jing Yan, M.D.**; Department of Anaesthesiology, Affiliated Hospital of North Sichuan Medical College, Nanchong, China, Department of Anesthesiology, Sichuan Provincial People's Hospital, Sichuan Provincial Academy of Medical Science, Chengdu, China.



### FA A4233

#### Desflurane as Well as Sevoflurane Inhibits Endothelium-dependent Vasodilation by a Different Mechanism

Endothelial nitric oxide synthase (eNOS) acts in regulation of vascular tone. The effect of volatile anesthetics on control of vascular tone is complex. To determine the effects of desflurane and sevoflurane on endothelium-dependent vasodilation, changes in isometric tension and eNOS-Ser1177 phosphorylation were examined with or without desflurane or sevoflurane. Endothelium-dependent vasodilation was significantly inhibited by both anesthetics. Sevoflurane significantly inhibited eNOS-Ser1177 phosphorylation, whereas desflurane did not inhibit it. The signaling pathways by which the two anesthetics control vasodilation are different. **Satoshi Kazuma, M.D., Yasuyuki Tokinaga, M.D., Yukimasa Takada, M.D., Shunsuke Hayashi, Michiaki Yamakage, M.D., Ph.D.**, Department of Anesthesiology, Sapporo Medical University, Sapporo, Japan.

### FA A4234

#### Ketamine Inhibits Substance P-Induced Mitogen-Activated Protein Kinases Activation by Suppressing NF-κB Pathway in U373 MG Human Astrocytoma Cells

Ketamine inhibits SP-induced MAPKs activation via NF-κB. **Keisuke Yamaguchi, M.D., Ph.D., M.B.A.**, Department of Anesthesiology and Pain Medicine, Juntendo University School of Medicine, Bunkyo-Ku, Japan.

### FA A4235

#### Epigenetic Enhancement of BDNF Signaling in Dorsal Root Ganglia Contributes to Opioid-Induced Hyperalgesia

Our study demonstrates that the epigenetic enhancement of BDNF signaling in the dorsal root ganglia is involved in OIH development. **Yu Chieh Chao, M.D., Rui Juan Guo, M.D., Jing Wu, M.D., Fang Xie, M.D., Rong Shi, M.D., Meng Meng Bao, M.D., Yun Guan, M.D., Ph.D., Yun Yue, M.D., Yun Wang, M.D., Ph.D.**, Beijing Chaoyang Hospital, Beijing Friendship Hospital, Beijing, China, Department of Neurosurgery, University of North Carolina, Chapel Hill, NC, Johns Hopkins University School of Medicine, Baltimore, MD .

### FA A4236

#### Responses to in Vitro Malignant Hyperthermia Bioassays Are Temperature Dependent

Malignant hyperthermia (MH) diagnosis is based on an in vitro contracture bioassay performed on a skeletal muscle biopsy. In a previous in vitro study performed on MH susceptible (MHS) swine B lymphocytes, adenosine response to 4-chloro-m-cresol (4CmC) stimulation (a measure of ATP turnover) was significantly greater compared to B cells from normal swine, suggesting the use of B cells as a surrogate to muscle testing. We hypothesize that responses to diagnostic bioassays for MH are temperature dependent. Preliminary data indicate that in vitro MH diagnostic bioassays are temperature dependent. **Andrew M. Parsons, M.D., Saiid Bina, Ph.D., Eugene R. Smith, III, B.S., John F. Capacchione, M.D., Sheila M. Muldoon, M.D.**; Anesthesiology, Walter Reed National Military Medical Center, Dept. C-102, Uniformed Svcs Univ. of Health Science Anesthesiology, Bethesda, MD .

### FA A4237

#### Characterization of Cytochrome P450 Reductase Mutants that Control its Activity with Cytochrome P450

Biochemical and structural characterization of cyt P450 reductase mutants suggests that the hydrogen bond between the 1-electron-reduced SQ form of the FMN cofactor and the protein prevents not only reduction of cyt P450 but also reactive oxygen species formation in the liver during drug metabolism. Consequently, the 2-electron-reduced HQ form of FMN reduces cyt P450. **Lucy A. Waskell, M.D., Ph.D., Freeborn Rwere, Ph.D., Chuanwu Xia, Ph.D., Sangchoul Im, Ph.D., Jung-Ja P. Kim, Ph.D.**, Anesthesiology, University of Michigan Medical School, Ann Arbor, MI, Biochemistry, Medical College of Wisconsin, Milwaukee, WI .

### FA A4238

#### Molecular Mechanisms of Ketamine Resistance in Ndufs4-KO Mice

Ketamine resistance in Ndufs4 KO mice is associated with altered trafficking of the NMDA glutamate receptor. The altered trafficking is likely the result of decreased efficiency of phosphorylation of the receptor. **Philip G. Morgan, M.D., Sangwook Jung, Ph.D., Margaret M. Sedensky, M.D.**; Anesthesiology and Pain Medicine, University of Washington, Center for Developmental Therapeutics, Seattle Children's Research Institute, Seattle, WA.

## PO04-4 CLINICAL CIRCULATION: BLOOD/COAGULATION

1-3 p.m. | Hall B1-Area D

### CA A4239

#### Potential Use of Heparin in Presence of Protamine Overdosage

Over dosage of protamine leads to inhibition of coagulation. We present an in vitro study using rotational thromboelastometry to detect and to differentiate heparin and protamine effects as well as an reversal of protamine over dosage effects by re-heparinization. **Alexander A. Hanke, M.D., Ines Severloh, M.S., Sebastian Zens, M.D., Ulrich Molitoris, M.D., Felix Floericke, M.D., Niels Rahe-Meyer, M.D.**; Department of Anaesthesiology and Intensive Care Medicine, Hannover Medical School, Hannover, Germany.

### CA A4240

#### Role of Coagulation and Fibrinolysis Disorder in Acute Lung Injury of Acute Aortic Dissection

We analyzed the role of D-dimer (DD), fibrin degradation product (FDP), tissue factor(TF), tissue factor pathway inhibitor(TFPI) and plasminogen activator inhibitor-1(PAI-1) and acute lung injury (ALI) of 53 acute aortic dissection (AAD) patients in perioperative period. The conclusions we drew were: 1.The AAD patients can be attacked with preoperative ALI; 2 The severity of ALI had a gradually increasing trend throughout the procedure. DD, FDP, TF, TFPI and PAI-1 had a higher level in AAD patients with preoperative ALI, and present a negative correlation with PaO2/FiO2. **Zhi-feng Gao, M.D., Jia-kai Lu, M.D., Wei-Ping Cheng, M.S.**, Anesthesiology, Capital Medical University, Beijing Anzhen Hospital,, Beijing, China.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain

**CA A4241****Effects of Acute Hypervolemic Haemodilution With Hydroxyethyl Starch 6%, Cardiac Output and Systemic Oxygenation**

Hypervolemic hemodilution may be a safe alternative in the trans-surgical period, in situations that have limited use of blood products. Determining cardiac output behavior of the body during hypervolemic haemodilution, determine whether or not tissue hypoxia takes place during hemodilution with 6% HES. This is an observational, descriptive and prospective study, 40 patients scheduled for major surgery, with the possibility of blood loss equal to or greater than 20 % of circulating blood volume. **Erica Diaz, M.D.; Anesthesiology, Hospital Civil de Guadalajara, Guadalajara, Mexico.**

**CA A4242****ROTEM Is Not Appropriate for Hemostatic Assessment of Patients With Liver Cirrhosis**

ROTEM®-based clot firmness is not appropriate for monitoring coagulation in patients with liver cirrhosis. ROTEM expresses an hypocoagulability which is not confirmed by thrombin generation, normal in these patients. **Claude Lentschener, SrStaff Anesthetist; Anesthesia and Critical Care, Cochin Hospital, Paris, France.**

**CA A4243****Anesthesia of Cytoreductive Surgery with Hyperthermic Intra Peritoneal Chemotherapy- A Tertiary Center Experience**

Anesthetists face numerous peri-operative challenges when patients undergoing cytoreductive surgery with hyperthermic intra peritoneal chemotherapy. Optimal anesthetic management of those critically-ill patients treated with this maneuver requires control of a complex integration of pathophysiologic derangements, including major fluid shift, hyperthermia, coagulopathy, and electrolyte disturbances. We analyzed our center's experience data to elucidate future optimal peri-operative management. **Hamed Elgengy, M.D., Ph.D., Amany El Daidamony, M.D., Tariq Jilani, M.D., Ahmad Banjar, M.D., Abdulaziz Al Zahrani, M.D.; Anesthesia, King Abdullah Medical City, Umm Al Quraa Univeristy, Makkah, Saudi Arabia.**

**CA A4244****Hemolysis-Mediated Hypercoagulability in Hemodialysis Patients: Role of Hemoxygenase-1**

In this study we hypothesized hemodialysis (HD) patients would have evidence of increased carboxyhemoglobin (CO-Hb) concentrations and plasmatic hypercoagulability concurrent with increased carboxyhemefibrinogen (COHF) formation. Forty-five patients requiring chronic HD without inherited coagulation disorders were studied. We found that the majority of HD patients were found to have increased CO-Hb levels, COHF formation, and significantly increased clot strength (as measured by thrombelastography), resulting in hypercoagulability. **Ryan W. Matika, M.D., Vance G. Nielsen, M.D., Vangie Steinbrenner, C.C.R.C.; Anesthesiology, The University of Arizona College of Medicine, Tucson, AZ.**

**CA A4245****Autologous Transfusion in Radical Prostatectomy: Assessment of Coagulability by Rotaional Thromboelastometry**

In this study, we aimed to evaluate the clinical efficacy of transfusing preserved autologous whole blood during radical prostatectomy on coagulation activity as assessed by rotational thromboelastometry (ROTEM). Transfusion of autologous whole blood did not improve ROTEM parameters during the intraoperative period. **Nozomi Yashima, M.D., Tomofumi Watanabe, M.D., Misato Kurota, M.D., Airi Kumasaka, M.D., Futaba Kato, M.D., Kei Otaki, M.D., Shinya Oda, Ph.D., Kaneyuki Kawamae, Professor; Yamagata University, Yamagata, Japan.**

**CA A4246****Fluid Balance During Pancreaticoduodenectomy and Postoperative Renal Dysfunction**

Relatively "drier" fluid administration during pancreaticoduodenectomy was associated with renal dysfunction. **Rieko Oishi, M.D., Issei Morimoto, M.D., Midori Mogami, M.D., Tsuyoshi Imaizumi, M.D., Atsuyuki Hosono, M.D., Takahiro Hakozaaki, M.D., Shinju Obara, M.D., Tsuyoshi Isosu, M.D., Shin Kurosawa, M.D., Masahiro Murakawa, M.D.; Fukushima Medical University, Fukushima, Japan.**

**CA A4247****Comparison of Thromboelastography-Derived Fibrinogen Values at Rewarming and Following Cardiopulmonary Bypass**

Re-warming and post-bypass TEG FF values are not statistically different, suggesting that rewarming samples could be utilized for ordering Factor I specific therapies prior to discontinuation of CPB. This may allow for more timely administration of the appropriate products without additional delay for product preparation. **Michael Fabbro, D.O., Jacob T. Gutsche, M.D., John G. Augoustides, M.D., Prakash A. Patel, M.D.; Department of Anesthesiology and Critical Care, University of Pennsylvania, Philadelphia, PA.**

**CA A4248****Association Between Red Blood Cell Storage Duration and Clinical Outcome in Patients Undergoing Off-pump Coronary Artery Bypass Graft Surgery: A Retrospective Study**

In patients undergoing OPCAB, the oldest age of transfused RBCs were associated with a postoperative negative base excess, increased wound complications, and a longer hospital stay, but not with the other in-hospital outcomes or long-term MACCEs. **Jae Woo Ju, M.D., Youn Joung Cho, M.D., Jeong Jin Min, M.D., Bae Jun Yeol, M.D., Tae Kyong Kim, M.D., Deok Man Hong, M.D., Ph.D., Jeong-Hwa Seo, M.D., Ph.D., Jae-Hyon Bahk, M.D., Ph.D., Yunseok Jeon, M.D., Ph.D., Department of Anesthesiology and Pain Medicine, Seoul National University Hospital, Seoul, Korea, Republic of.**

**CA A4249****Impact of Packed Red Blood Cell Age on Postoperative Morbidity and Mortality After Cardiac Surgery**

This retrospective study conducted in 285 patients undergoing cardiac surgery, showed that transfusion of leuko-reduced packed red blood cell with a storage duration below 14 days was associated to a lower frequency of postoperative complications as compared to older PRBC. **Sarah Laroche, M.D., Guillaume Flicoteaux, M.D., Chrystelle Vidal, M.D., Laurent Bardiaux, M.D., Sidney Chocron, M.D., Ph.D., Sebastien Pili-Floury, M.D., Ph.D., Emmanuel Samain, M.D., Ph.D., Anesthesiology, Clinical Investigation Center, University Hospital of Besancon, French Transfusion Center, Cardiac Surgery, University Hospital of Besancon, Besancon, France.**

**CA A4250****Invasive Renal Cell Carcinoma With Right Atrial Tumor Thrombus: A Novel Two-day, Two-phase Approach**

Renal cell carcinoma with tumor thrombi resection (RCC with IVTT) has a high operative morbidity and mortality. RCC with IVTT considerations and management techniques are extensively discussed in the literature. Optimal management of high level tumor thrombi remains controversial. This is a case presentation of a surgical nephrectomy and removal of tumor thrombus with right atrial extension, which was completed over two days in a two-phase operative plan - the first ever, to our knowledge. The detailed two-phase approach may implicate both general and specialized anesthesiologists in the perioperative management of this complex patient. **Anjana Dwivedi, M.D., Amir Samir, M.D., Ahmed Khan, M.D., Lebron Cooper, M.D.; Anesthesiology, Henry Ford Hospital, Detroit, MI.**

**CA A4251****A Case of Fat Embolism During Artificial Head Bone Replacement: Verified Bone Marrow Tissues into Pulmonary Artery by Microscopy**

During artificial head bone replacement acute pulmonary embolism was happened. Necropsy was performed, and bone marrow tissue into pulmonary artery was verified by microscopy. **Takashi Yamamoto, M.D., Akihide Kurita, M.D., Takumi Taniguchi, M.D.; Anesthesiology and Intensive Care Medicine, Kanazawa University Hospital, Kanazawa, Japan.**

**CA A4252****LAA Occlusion with LARIAT® Device: A Rare, Unexpected and Potentially Lethal Complication**

Percutaneous suture ligation of the left atrial appendage is an emerging procedure frequently performed in cath labs. Complications are rare. This case presents a tear in a branch of the marginal artery, a complication not previously reported to our knowledge. Immediate resuscitation and quick surgical intervention led to a successful patient outcome. **Margaret D. Stachurski, D.O., Paul Polyak, M.D., Lebron Cooper, M.D.; Anesthesiology, Henry Ford Hospital, Detroit, MI.**

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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### CA A4253

#### Comparison of TEG® and RoTEM® Thromboelastographic Variables with Routine Laboratory Measurements during Cardiac Surgery

We compared the the changes of TEG and RoTEM and the changes in routine laboratory coagulation tests before and after cardiac surgery. For a proper assessment of postoperative coagulation it is not necessary to compare the measurement with preoperative values. **Lieneke Venema, M.D., Hans De Vries, M.D., Ph.D., Anesthesiology, UMCG, Groningen, Netherlands.**



### CA A4254

#### Effectiveness of Tranexamic Acid Versus e-Aminocaproic Acid in Reducing Blood Product Utilization in Cardiac Surgery Patients

The national shortage of e-aminocaproic acid in 2012-2013 forced a protocol change at our institution requiring the use of tranexamic acid for all patients undergoing cardiopulmonary bypass. This study intended to determine whether a clinically relevant difference in decreasing perioperative bleeding and blood product utilization exists between these agents in cardiothoracic surgical patients. **Jan P. Sliwa, M.D., Kenneth K. Lau, M.D., Pharm.D., Christopher D. Press, M.D., Kevin P. Blaine, M.D., Charles C. Hill, M.D.; Anesthesiology, Stanford University Medical Center, Stanford, CA .**

### PO08-4 EQUIPMENT, MONITORING AND ENGINEERING TECHNOLOGY: ANESTHESIA DEPTH AND ECLECTIC ASSORTMENT OF COOL STUFF

1-3 p.m. | Hall B1-Area B



### FA A4255

#### Modified Tricuspid Annular Plane Systolic Excursion Using Transesophageal Echocardiography for Assessment of Right Ventricular Function

Tricuspid Annular Plane Systolic Excursion (TAPSE) has been reported as a simple and reproducible parameter for assessing right ventricular (RV) systolic function. We defined a modified TAPSE (m-TAPSE) measurement as apical systolic/diastolic shortening in the mid-esophageal four chamber view and investigated its clinical validity in comparison with right ventricular fractional area change (RV FAC). Modified TAPSE had a good correlation to RV systolic function as reflected by RV FAC. Modified TAPSE may be used as an alternative easier to measure parameter to evaluate RV systolic function. Its validity needs to be confirmed by further studies. **Yoshihisa Morita, M.D., Koichi Nomoto, M.D., Gregory W. Fischer, M.D.; Department of Anesthesiology, Indiana University, Indianapolis, IN, Department of Anesthesiology, Mount Sinai Medical Center, New York, NY.**

### FA A4256

#### Effects of Remifentanyl Dose on Hemodynamics and Perfusion Index at the Onset of Pneumoperitoneum

The aim of this study was to investigate whether changes in the perfusion index (PI) correlate with non-invasive hemodynamic parameters (i.e., heart rate, systolic blood pressure, and diastolic blood pressure) following pneumoperitoneum under moderate dose or high dose remifentanyl and to assess the reliability of this method for detecting the stress response. PI may be a reliable and easier to use alternative to conventional hemodynamic parameters for detecting the stress response to pneumoperitoneum during remifentanyl anesthesia in adults. **Makoto Sato, M.D., Atsushi Kurosawa, M.D., Tomoki Sasakawa, M.D., Takayuki Kunisawa, M.D., Ph.D., Osamu Takahata, M.D., Ph.D., Hiroshi Iwasaki, M.D., Ph.D.; Department of Anesthesiology and Critical Care Medicine, Asahikawa Medical University, Asahikawa, Hokkaido, Japan.**

### FA A4257

#### Effect of Extracranial Blood Flow on Cerebral Oximetry: A Comparison of Three Cerebral Oximetry devices, NIRO-200NX, INVOS 5100S and TRS

The purpose of this study was to determine if NIRS guided rSO2 measurements from several cerebral oximeters, NIRO-200NX and TRS-30 are able to accurately account for extracranial contamination compared to INVOS-5100. Fourteen healthy volunteers had three NIRS devices randomly applied to the forehead. Hypoxia-ischemia would be produced by a head cuff in the extracranial scalp tissue beneath the NIRS cerebral oximeters. rSO2 measured by INVOS, not by NIRO and TRS, was influenced by extracranial contamination. This study indicated that the measurements of rSO2 by INVOS included the extracranial cerebral blood flow. **Kuniko Morishima, M.D., Kenji Yoshitani, M.D., Shinya Kato, M.D., Yosuke Kubota, M.D., Yoshihiko Ohnishi, M.D.; Department of Anesthesiology, The National Cerebral and Cardiovascular Center, Suita, Osaka, Japan.**

### FA A4258

#### Clinical Availability of Physicochemical Stewart Approach to Acid Base Balance Evaluation on Weaning From Cardiopulmonary Bypass

Traditional bicarbonate-centered approach can't explain complex acid-base abnormality including dilutional acidosis, whereas Stewart approach is known to allow the cause of such abnormalities to be uncovered. Method: Acidosis of 60 cardiac cases treated using sodium bicarbonate during cardiopulmonary bypass were reevaluated by Stewart approach. Result: The number of cases defined as acidosis using traditional and Stewart approach on pre-weaning period were 53 and 55, whereas these on post-weaning period were 9 and 37, respectively. Conclusion: Stewart approach can detect residual acid-base disturbances which were undetectable using traditional approach. **Takashi Ota, M.D., Takeshi Nomura, M.D., Tamiko Endo, M.D., Kosaku Toyota, M.D., Yasuhiro Koide, M.D., Toshiyuki Oda, M.D.; Anesthesiology, Shonan Kamakura General Hospital, Kamakura city, Japan, Anesthesiology, Hayama Heart Center, Hayama, Japan.**

### FA A4259

#### Modified Leukocyte Filter Removes Tumor Cells From the Salvaged Blood

This study was to test the effectiveness of a modified leukocyte depletion filter to remove tumor cells in intraoperative blood salvage. Through in vitro and in vivo study, we drew a conclusion that the modified leukocyte filter removed and destroyed the cancer cells in the salvaged blood, and neither malignant nor proliferative cells were found after the treatment. Therefore, the effectiveness of this M-LDF to remove tumor cells can be trusted in blood salvage. **Chunling Jiang, Ph.D.; Department of Anesthesiology, West China Hospital, Sichuan University, Chengdu, China.**

### FA A4260

#### Validation of Electrical Cardiometry in Patients Undergoing Percutaneous Transmitral Commissurotomy

Reliable non invasive estimation of hemodynamics may be helpful in decision making in critically ill patients and to improve outcome in patients undergoing intervention cardiac catheterization procedures. EC accurately determines CO in awake, spontaneously breathing patients undergoing Percutaneous Transmitral Commissurotomy, showing good correlation with the gold standard Pulmonary Artery Catheterization (PAC) both before and after the procedure. It provides a noninvasive, low-cost alternative to PAC derived hemodynamic measurements and is a novel monitoring technique ideally suited for use in cardiac catheterization laboratory. **Jitin Narula, M.D., Usha Kiran, M.D., Sandeep Chauhan, M.D., S. Ramakrishnan, D.M., Arindam Chowdhary, M.D.; Department of Cardiac Anaesthesiology, Cardiology, All India Institute of Medical Sciences, New Delhi, India.**



### FA A4261

#### Reduction of Propofol Influence on the qNOX Pain/nociception Index

The objective of this study was to design a qNOX model which the influence of propofol effect is minimal or nonexistent. **Erik Weber Jensen, Ph.D., Patricia Pineda Vidal, M.S., Pedro L. Gambus, M.D., José Fernando Valencia, Professor, Hugo Vereecke, Ph.D., Michel M. Struys, M.D., Ph.D.; Quantum Medical, Barcelona, Spain, Anesthesiology, CMA-Section, Hospital CLINIC de Barcelona, Barcelona, Spain, Department of Electronic Engineering, Universidad de San Buenaventura, Cali, Colombia, University of Groningen, Groningen, Netherlands.**

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
OB Obstetric Anesthesia	PN Pain Medicine	PD Pediatric Anesthesia	PI Professional Issues	RA Regional Anesthesia and Acute Pain

**FA A4262****Measuring the AC Component (Height) of the Photoplethysmographic Signal**

The present investigation compared the influence of digital filters with different frequency ranges on measurements of plethysmographic height (AC). Using a 0.5 to 10 Hz band filter, we then showed that the consistency of AC was comparable to that of stroke volume measurements obtained with serial echocardiography. Siqin Nie, M.D., I-Hsun Liang, M.D., Feng Dai, Ph.D., Nick Florio, B.S., Vicki Z. Bing, B.S., Kirk H. Shelley, M.D., Ph.D., Aymen A. Alian, M.B.,B.Ch., M.D., David G. Silverman, M.D.; Anesthesiology, First Affiliated Hospital of Guangzhou University of Chinese Medicine, Guangzhou, China, Anesthesiology, Yale University School of Medicine, New Haven, CT, Stony Brook University School of Medicine, Stony Brook, NY.

**FA A4263****An Estimation of Catheter Insertion Depth During Ultrasound-Guided Subclavian Venous Catheterization**

In conclusion, the appropriate length of a CVC inserted through the SCV can be estimated by means of a simple formula using ultrasound images and CXR. Young-Tae Jeon, Ph.D., Byung-Gun Kim, M.D., Hyun-Jung Shin, M.D., Jung-Won Hwang, Ph.D., Hee-Pyoung Park, Ph.D., Young-Jin Lim, Ph.D.; Department of Anesthesiology and Pain Medicine, Seoul National University Bundang Hospital, Seongnam, Korea, Republic of.

**FA A4264****Evaluation of the Relationship Between Depth of Anesthesia Displayed on the SmartPilot™ View (SPV) and Bispectral Index (BIS) Value**

SmartPilot™View (SPV) calculates the drug effect based on PK models and the drug interaction based on PD models, but there is no guarantee that SPV predicts anesthetic depth in all individuals. Therefore, we investigated the relationship between NSRI (Noxious Stimulation Response Index) calculated by SPV and BIS value. NSRI and BIS value showed a relatively good correlation ( $r=0.656$ ,  $p<0.0001$ ). With increase in the level of anesthetic depth predicted by SPV, sedation depth based on the BIS value increased. A correlation was found between depth of anesthesia based on the probability of response to noxious stimuli and BIS, suggesting that the NSRI may be a useful indicator of the depth of sedation. Mai Shimada, M.D., Ami Sugawara, M.D., Takayuki Kunisawa, M.D., Hiroshi Tanaka, M.D., Atsushi Kurosawa, M.D., Hiroshi Iwasaki, M.D.; Anesthesiology and Critical Care Medicine, Asahikawa Medical University, Asahikawa, Japan.

**FA A4265****Synergic Effect of Warm Humidified CO2 Insufflation and Forced Air External Warming on Central Temperature During Laparoscopy: A Randomized Controlled Study in Pigs**

This study compared central temperature trends in laparoscopic surgery between insufflation with heated and humidified CO2 (HH), standard insufflation with dry and cold CO2 associated with external forced air warming (WB), and their combination. 4 pigs with each acting as its own control, were studied, in randomized sequence. The core temperature decrease in HH and WB groups didn't differ from the SHAM group. Their combination may provide superior temperature maintenance. Jean-Pierre Rameau, Resident, Sophie Diemunsch, Resident, Eric Noll, M.D., Antoine Charton, M.D., Julien Pottecher, M.D., Pierre A. Diemunsch, M.D.; Haute-pierre, University Hospital of Strasbourg, Strasbourg, France.

**FA A4266****The Effect of Cardiopulmonary Bypass on the Accuracy of Non-Invasive Hemoglobin Measurement by Pulse Co-Oximetry**

A non-invasive continuous measurement of hemoglobin with pulse co-oximetry (SpHb) using New Radical-7® was accurate before cardiopulmonary bypass (CPB), but affected by CPB irrespectively of peripheral perfusion. The actual hemoglobin measurement using blood samples may remain to be necessary after cardiac surgery using CPB. Kentaro Tokuda, M.D., Ken Yamaura, M.D., Ph.D., Midoriko Higashi, M.D., Ph.D., Marina Saito, M.D., Sumio Hoka, M.D., Ph.D.; Intensive Care Unit, Department of Anesthesiology and Critical Care Medicine, Kyushu University Hospital, Fukuoka, Japan.

**FA A4267****New Simple and Cost Effective Device for Experimental Lateral Fluid Percussion Model**

This easy to ensemble and cost effective device produces a standard fluid percussion and provides similar damage in all experiments. Rovnat Babazade, M.D., Pervin Sutas-Bozkurt, M.D., Sebnem Batur, M.D., Oznur Inan, Ph.D., Gurcan Gungor, M.D., Cem Sayilgan, M.D.; Outcomes Research / Anesthesiology Institute, Cleveland Clinic Foundation, Cleveland, OH, Anesthesiology and Reanimation, Pathology, Istanbul University, Cerrahpasa Medical Faculty, Istanbul, Turkey, Research Center, Istanbul Mehmet Akif Cardiovascular Hospital, Istanbul, Turkey.

**FA A4268****Potential of Noxious Stimulus Response Index on SmartPilot™ View as a New Indicator of Anesthetic Depth**

SmartPilot View (SPV) predicts anesthetic depth using PK and PD (including drug interaction) and displays it on an isobologram. Therefore, BIS values in patients managed with sedative-based anesthesia (SBA) may be different from those in patients managed with analgesic-based anesthesia (ABA). A correlation was observed between the NSRI (anesthetic effect calculated by SPV) and BIS values. However, there was a significant difference in BIS values between in patients managed with SBA and with ABA with the same anesthetic depth. NSRI can be an indicator of anesthetic depth, but, we need to know which anesthetic-based anesthetic management is performed in addition to BIS values and hemodynamics. Ami Sugawara, M.D., Takayuki Kunisawa, M.D., Mai Shimada, M.D., Hiroshi Tanaka, M.D., Chika Kikuchi, M.D., Atsushi Kurosawa, M.D., Hiroshi Iwasaki, M.D.; Asahikawa Medical University, Asahikawa, Japan.

**FA A4269****HRV Analysis Showed the Time Course of Autonomic Nervous System Dynamics During Modified-Electroconvulsive Therapy (m-ECT)**

We performed a study revealing the dynamics of autonomic nervous system during m-ECT by using HRV analysis. Kohshi Hattori, M.D., Masaaki Asamoto, M.D., Satoshi Kasahara, M.D., Mieko Chinzei, M.D., Ph.D., Nobuko Ito, M.D., Ph.D., Yoshitsugu Yamada, M.D., Ph.D.; Anesthesiology, Neuropsychiatry, University of Tokyo, Faculty of Medicine, Tokyo, Japan, The Institute of Medical Science, Tokyo, Japan.

**FA A4270****Clinical Evaluation of Spot-OnR , a New Non-invasive and Continuous Temperature Monitoring System**

Clinical evaluation of Spot-OnR , a new non-invasive and continuous temperature monitoring system Adequate core temperature monitoring is required for appropriate management of patients undergoing surgery. In 34 patients undergoing a variety of surgical procedures with general anesthesia a Spot On sensor was placed on the lateral forehead and an esophageal temperature probe was inserted. Temperature measured by SpotOn system agrees with esophageal temperature, producing a bias (SpotOn-Esophageal) of  $-0.35^{\circ}\text{C}$  and 95% limits of agreement of  $\pm 0.41$ . SpotOn is a clinically acceptable system to non-invasively measure core temperature in the perioperative period. Juan M. Zaballos, M.D., Ph.D., Unai Salinas, M.D.; Anesthesiology and Perioperative Medicine, Policlinica Guipuzcoa, San Sebastian, Spain.



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**FA A4271**

**The Incidence of Recurrence After Surgery May Change in Differential Lung Ventilation Procedures During Surgery for Esophageal Cancer - Double Lumen Tube and Bronchial Blocker**

Differential lung ventilation is essential for video-assisted thoracic surgery for esophageal cancer. Although a double-lumen tube (DLT) has extensively been used for differential lung ventilation, its stiffness limits the mobility of No. 106 lymph node around the carina, making its surgical removal difficult. We have substituted a reinforced tracheal tube with a bronchial blocker (BB) for a DLT for differential lung ventilation. After complete curative surgery (42 in a DLT and 29 in a BB group), cancer-free time was significantly longer in the BB group than in the DLT group ( $p = 0.05$ ), although there were no differences in the survival rate. Our result may suggest an improvement of prognosis by using a reinforced tube with a bronchial blocker instead of a double-lumen tube. **Daisuke Arashi, M.D., Ryu Okutani, M.D., Yutaka Oda, M.D., Yukiko Komatsu, M.D.;** Osaka City General Hospital, Osaka, Japan.

**FA A4272**

**Risk Factor Analysis for Emergence Delirium in Dental Special Needs Patients Receiving Outpatient Treatments**

Emergence agitation rate was around one fifth in dental special needs patients. Autism was the most important risk factor for emergence agitation prediction. **Chi-Hsiang Huang, M.D., Yi-Chia Wang, M.D., Hsing-Hao Huang, M.D., Hui-Hsun Huang, M.D.;** Anesthesiology, National Taiwan University Hospital, Taipei, Taiwan.

**FA A4273**

**Dementia in Chronic Wound Patients**

Recognition of risk factors for dementia or cognitive decline including age and inflammation may influence the choice of anesthesia techniques. Regional anesthesia may offer an advantage over inhalational general anesthesia for female diabetic wound patients which could be studied more rigorously in the future. **Daniel K. O'Neill, M.D., Richard P. Kline, Ph.D., William Rifkin, B.S., Germaine Cuff, Dr.PH., Michael Haile, M.D., Mony J. de Leon, Ed.D., Harold Brem, M.D.;** Anesthesiology, Psychiatry, NYU Langone Medical Center, New York, NY, Winthrop University Hospital, Mineola, NY.

**FA A4274**

**Risk Factor Analysis of Post-operative Pain for Radiofrequency Ablation in Liver Tumors**

Post-operative opioid requirement and VAS score after radiofrequency ablation for liver tumor were associated with the number and size of liver tumor. Pre-operative image evaluation may help with preemptive analgesics use. **Chi-Hsiang Huang, M.D., Yi-chia Wang, M.D., Hsing-Hao Huang, M.D., Wei-Han Chou, M.D.;** Anesthesiology, National Taiwan University Hospital, Taipei, Taiwan.

**FA A4275**

**The Impact of Parental Presence for Pediatric Inhalation Induction on Operating Room Time**

Parental presence during induction of general anesthesia for pediatric patients is a debated and widely varying practice throughout the United States. While much discussion on parental presence have revolved around the medical and psychological risks and benefits for pediatric patients, assessing the impact of parental presence on operating Room (OR) time and efficiency has not been addressed in the literature. We conducted a novel retrospective study comparing the duration of anesthesia and surgical start times between patients who had parental presence versus no parental presence for induction of anesthesia at a large academic children's hospital over the past 2 years. **Jonathan M. Tan, M.D., M.PH., Jamie Artman, M.S.N., C.R.N.A., Patrick M. Callahan, M.D., Franklyn P. Cladis, M.D.;** Anesthesiology, Children's Hospital of Pittsburgh, Pittsburgh, PA.

**FA A4276**

**Changes in the Distribution of ASA Physical Status in the Surgical Patient Population: The Influence of the type of Anesthesia Record - Paper Record Versus Electronic Anesthesia Record**

The distribution of ASA PS at our hospital appeared to differ from national comparison data after the introduction of AIMS. We examined the data from 17,676 paper anesthesia records and compared these data with that from a second 17,676 consecutive AIMS records after transition. There was a 6.1% (absolute) increase in the fraction of ASA PS 1 & 2 classifications following the implementation of AIMS. The transition of anesthesia record keeping at our hospital resulted in observable and statistically significant shift in the recording of ASA PS and 'E' classification - but without any change in the actual characteristics of the patients being cared for or the surgical procedures being performed. **Anil Marian, M.B.B.S., M.D., F.R.C.A., Michael M. Todd, M.D., Emine Bayman, Ph.D.;** Department of Anesthesia, University of Iowa Hospitals and Clinics, University of Iowa College of Medicine, Iowa City, IA.

**FA A4277**

**Incidence of Hypotension Related to the Use of Intraoperative Intravenous Clonidine**

We sought to assess the impact of off-label intravenous clonidine, given as an analgesic, on perioperative hypotension, defined as systolic blood pressure of less than 70 mmHg. After examining 43,092 anesthetics over a two year period, we found that intravenous clonidine was associated with a relative risk of 3.00 for intraoperative hypotension and 3.64 for postoperative hypotension. We conclude that clinicians should avoid intravenous clonidine as an analgesic given the risk of significant hypotension. **Robert E. Freundlich, M.D., M.S., Jessica Newman, M.D., Sara W. Brown, Pharm.D., Deborah S. Wagner, Pharm.D, Satya-Krishna Ramachandran, M.D., F.R.C.A.;** Department of Anesthesiology, University of Michigan, College of Pharmacy, University of Michigan, Ann Arbor, MI.

**FA A4278**

**Recurrence After Primary Breast Cancer Surgery: Comparison of Anesthetic Agents, Propofol or Sevoflurane**

This retrospective survey did not show that propofol did not reduce the potential risk of cancer recurrence or metastasis for breast cancer surgery compared with sevoflurane for anesthetic maintenance combined with opioids. **Shinnosuke Shiono, Bachelor of Medical Doctor, Sho C. Shibata, M.D., Chiho Ohta, M.D., Tatsuyuki Imada, M.D., Yuji Fujino, M.D., Masanori Kawaguchi, M.D., Tom iei Kazama, M.D., Yukio Hayashi, M.D.;** Anesthesiology, National Defense Medical College Hospital, Saitama, Japan, Osaka University Hospital, Osaka, Japan, Department of Anesthesiology, Sakurabashi-Watanabe Hospital, Sakurabashi, Japan.

**FA A4279**

**Ultrasound Guided Supraclavicular Brachial Plexus Block Improves Flow Characteristics and Arteriovenous Fistula Patency Rate in End Stage Renal Disease Patients Requiring Hemodialysis: A Prospective Randomised Study**

In this prospective, randomized open level study, we have compared two regional anaesthetic techniques( supraclavicular brachial plexus block vs local anesthetic infiltration) and to evaluate their effects on AVF blood flow and patency rate in Indian population with ESRD patients. **Nitasha Mishra, M.D. Anesthesia, Shyam Meena, M.D. Anaesthesia, Virender Kumar Arya, M.D. Anaesthesia, Indu Mohini Sen, M.D. Anesthesia, Mukut Minz, M.S.;** General Surgery; Department of Neuroanesthesia and Critical Care, AIIMS, New Delhi, India, Department of Anesthesia and Intensive Care, Department of Renal Transplant Surgery, PGIMER, Chandigarh, India.



AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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**FA A4280**

**A New Self-Warming Blanket or Forced-air Warming Are Equally Effective in Preventing Postoperative Hypothermia in Mid-duration Surgery: A Multinational Non-Inferiority Trial**

Perioperative hypothermia accounts for increased risk of infection, hemorrhage, cardiovascular complications and patient discomfort. Anesthesia-related redistribution hypothermia may be prevented by prewarming patients. EasyWarm (new self-warming blanket) may be advantageous for that purpose. In an open label randomized parallel group non-inferiority trial with 60 patients scheduled for surgery up to 2 hours under general anesthesia EasyWarm was equally effective in preventing postoperative hypothermia compared with forced-air warming used intraoperatively. Thus it should be further tested in routine clinical practice. Alexander Torossian, M.D., Ph.D., John C. Andrzejowski, M.D., Johan C. Raeder, Ph.D.; Anesthesiology & Critical Care, University Hospital of Marburg, Marburg, Germany, Hallamshire Hospital C Floor Anesthesia, Sheffield, South Yorkshire, United Kingdom, Ullevål University Hospital, Oslo, Norway.

**FA A4281**

**Factors Associated With Prolonged Prothrombin Time-International Normalized Ratio and Decreased Platelet Count After Hepatectomy**

Factors associated with prolonged prothrombin time-international normalized ratio and decreased platelet count after hepatectomy is not underlying liver disease, but long operation time, blood loss, and lobectomy. Moe Koide, M.D., Kazuyoshi Ishida, Akira Kuriyama, M.D., Kimio Yokota, M.D., Shigeki Yamashita, M.D., Akitomo Yonei, M.D.; Anesthesiology, Internal Medicine, Kurashiki Central Hospital, Kurashiki, Japan, Anesthesiology, Yamaguchi University Graduate School of Medicine, Ube, Japan.

**FA A4282**

**Burden of Medication Errors in Anesthesia: Findings from a Literature Review**

Research on medication errors in the perioperative setting is worthy of targeted focus, due to the frequency of errors reported by anesthesiologists, as well as the potential for harm with the high-risk medications involved. In this review of the literature, error rates were 1:133 to 1:203 anesthesia cases in similarly designed prospective studies, with wrong drug and wrong dose as the types of error cited most often. Future efforts could target development of standard definitions for the types of errors and outcomes and exploring prevention strategies. Sonia Pulgar, M.P.H., Robyn Mays, Pharm.D., Dipen Patel, Ph.D., Jennifer Stephens, Pharm.D., Sandra Gill, Pharm.D.; Becton, Dickinson and Company, Franklin Lakes, NJ, Pharmert North America LLC, Bethesda, MD, University of Pittsburgh School of Pharmacy, Pittsburgh, PA.

**FA A4283**

**Sedation Related Complications of Deep Sedation with Propofol for Therapeutic Endoscopic Procedures from a High Volume Endoscopy Center**

Patients selected for MAC anesthesia with propofol for Endoscopic Retrograde Cholangiopancreatography generally tolerated it well, with only 6 patients out of 3040 ERCPs being admitted for gastric aspiration. Compared to conscious sedation, it provides greater patient comfort, reduced procedure failure rate, decreased ERCP complications, and decreased cardiopulmonary complications related to anesthesia. Therefore, deep sedation with propofol is generally safe in ERCP patients and should instituted more often in the appropriate setting. Julie Ma, M.D., Ali Siddiqui, M.D., Richard H. Epstein, M.D., Richard R. Bartkowski, M.D., Ph.D., Marc D. Fiscaro, M.D.; Anesthesiology, Gastroenterology, Thomas Jefferson University, Philadelphia, PA.

**FA A4284**

**Characteristics of Perioperative Injectable Medication Errors: Severity of Harm Associated with Setting of Care**

In this study, we performed a cross-sectional analysis of injectable medication errors (IMEs) reported to the MEDMARX database from 2006-2011. Our analysis found that IMEs reported in the perioperative setting were more likely to be associated with harm than those reported in the nonperioperative setting. This trend was observed across various hospital types, levels of staff initiating error, and among IMEs occurring at the administering process node. Monika Parisi, M.P.H., Sonia Pulgar, M.P.H., Stephen Jarrett, Pharm.D., Randall Jones, M.D., Mark J. Rice, M.D.; Becton, Dickinson and Company, Franklin Lakes, NJ, Carolina HealthCare System, Charlotte, NC, University of Florida, Gainesville, FL.

**FA A4285**

**The Routine Use of Central Venous Pressure Monitoring and Its Effect on Intraoperative Blood Loss During Hepatic Resection**

The routine use of CVP Monitoring and its effect on intraoperative blood loss during hepatic resection. Shannon B. Hancher, M.D., Jose Soliz, M.D., Barbara Speer, D.O., Mike Hernandez, M.S., Jean-Nicolas Vauthey, M.D., Thomas Aloia, M.D., Conrad Claudius, Ph.D., M.D., Vijaya N. Gottumukkala, M.B.,B.S.; MD Anderson Cancer Clinic, Houston, TX.

**FA A4286**

**Trends in Adult Congenital Heart Surgery at an Adult Academic Center: Congenital or Non-Congenital Surgeon?**

It is common for both pediatric cardiac (congenital) and adult cardiac (non-congenital) surgeons to operate on adult congenital heart disease patients at an adult hospital. Differences in patient characteristics and transfusion requirements between these groups of surgeons reveal that congenital surgeons are more likely to have younger patients, more repeat sternotomies, and less overall plasma use. However, many postoperative outcomes are not statistically different between the two groups. Clare Ridley, M.D., Giovanni Rivera, B.A., Stephanie Fuller, M.D., Christopher S. Mascio, M.D., Prakash A. Patel, M.D.; Department of Anesthesiology and Critical Care, University of Pennsylvania, Department of Cardiothoracic Surgery, Children's Hospital of Philadelphia, Philadelphia, PA.



**PO15-4 PEDIATRIC ANESTHESIA**

1-3 p.m. | Hall B1-Area E

**PD A4287**

**Safety Concerns During Intra-arterial Chemotherapy Injections: Allergic Reactions, Anaphylaxis**

We report a case series with safety concerns related to intra-arterial (IA) chemotherapy. IA chemotherapy is becoming a preferred therapy for many cancers and increasingly used globally. It has established a high cure rate for retinoblastoma therapy, but for interventional neuroradiologists and anesthesiologists at some centers, reports of cardiac arrest can be common and little is reported in the literature about the mechanisms. We follow a patient through several procedures which highlight the risks of allergic responses notably anaphylaxis, bronchospasm and morbidity. Franklin B. Chiao, M.D., Rohan Panchamia, M.D.; Anesthesiology, New York Presbyterian Medical Center- Cornell University, New York, NY.



**PD A4288**

**The Development of a Pain Stewardship Program in a Tertiary Children's Hospital**

Using a report developed from our hospitals electronic medical record, we developed a pain stewardship program. The report looks for patients with average pain scores of 7 over the preceding 12 hours. A review of the patients discovered by the report initiates a tiered action plan. Our pain stewardship program proactively identifies patients with pain issues in order to improve outcomes and satisfaction. B. R. Brenn, M.D., Dinesh Choudhry, M.D., F.R.C.A., Karen Sacks, M.S.N., P.N.P., Sandra P. Como-Fluehr, M.S.N., R.N., PNP-BC, Robert J. Strain, B.S.N., R.N.; Anesthesia and Critical Care, Alfred I duPont Hospital for Children, Wilmington, DE, Nemours Health Informatics, Wilmington, DE.

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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### PD A4289

#### BMI and Musculoskeletal Pain Among Hispanics and Non-Hispanic Whites: Evidence From the National Longitudinal Study of Adolescent Health, 1994

Despite the fast demographic growth of Hispanics in the U.S. and the group's increasing obesity rates, no documented analysis has examined the role of BMI in Hispanics' report of musculoskeletal pain and the extent to which it differs from non-Hispanic Whites. Hispanic adolescents exhibit, on average, a higher BMI than non-Hispanic Whites but report lower frequencies of musculoskeletal pain. Here we examine whether acculturation, identified with the language spoken at home, could explain this racial/ethnic gap. **Evelyn C. Monico, M.D., Anna Zamora-Kapoor, Ph.D., Nathalia Jimenez, M.D., Adam Omidpanah, M.S.; Anesthesiology & Pain Medicine, Seattle Children's Hospital, Seattle, WA, Centers for Studies in Demography and Ecology, University of Washington, Seattle, WA.**

### PD A4290

#### Multi-Specialty Educational Programing at a Free Standing Children's Hospital - Challenges of Supply and Demand

Academic Children's Hospitals are challenged with the educational demands of anesthesiology and non-anesthesiology learners from multiple specialties. At our center, non-anesthesiology learners are the majority of trainees - seeking experiential learning in airway management skills. Anesthesiology faculty must consider the diverse needs of both both learner groups when developing educational programs. Future studies of this complex educational issue are necessary to understand the impact and explore the best strategies for integration of multi-specialty learners into busy clinical environments. **Ronald B. Easley, M.D., David Young, M.D., M.Ed., Carlos L. Rodriguez, M.D., Rahul G. Bajjal, M.D., Priscilla J. Garcia, M.D., Chris Glover, M.D., Thomas L. Shaw, M.D., Mark J. Harbott, M.D., Dean B. Andropoulos, M.D.; Pediatric Anesthesiology, Baylor College of Medicine/Texas Children's Hospital, Houston, TX.**

### PD A4291

#### Pediatric Outpatient Outcomes and Satisfaction: Data From the Postoperative Phone Call

Quality and patient/parent satisfaction are goals for pediatric peri-operative services. The goal of this initiative was to determine the overall incidence of common postoperative complications and identify reasons for patient/parent dissatisfaction. We wished to determine whether these complications had a bearing on satisfaction as reported by parents in the days after pediatric outpatient surgery. We found that satisfaction with our perioperative services was not related to the incidences of reported complications. While reducing complications is of utmost importance, we observed that improvements in wait times and other operational issues would yield greater improvements in satisfaction. **B. R. Brenn, M.D., Dinesh Choudhry, M.D., F.R.C.A.; Anesthesia and Critical Care, Alfred I. duPont Hospital for Children, Wilmington, DE.**

### PD A4292

#### The Impact of Systemic Illness on Postoperative Pain in Children Undergoing Laparoscopic Appendectomy

We hypothesized that systemic inflammation in acute appendicitis could impact post-operative pain. A retrospective review found patients who underwent surgery during the same admission as diagnosis had more inflammation at the time of surgery, increased pain medication administration and longer postoperative length of stay than those discharged and operated later. Interval appendectomy may provide a safe operative environment with less pain and shorter postoperative hospital length of stay. **Richard Applegate, II, M.D., Gunjan Kumar, M.D., Amgad Hanna, M.D., Mohammad Hassanian, M.D., Michael Um, B.S., Paul Davis, B.S., Christopher Daum, B.S., Rebekah Romanu, B.S., Rachel Stoelk, B.S., Edward Tagge, M.D.; Anesthesiology, Pediatric Surgery, Loma Linda University School of Medicine, Loma Linda, CA.**

### PD A4293

#### A Comparison of the Incidence of Perioperative Respiratory Adverse Events (PRAE) in the African American Pediatric Population Versus Other Ethnic Groups

Perioperative respiratory adverse events (PRAE) account for a major cause of morbidity and mortality in pediatric patients receiving anesthesia. Through clinical experience, it is our impression that there is a higher incidence of these events in the African American pediatric population when compared to other ethnic groups. A retrospective chart review including 847 patients was conducted after IRB approval. We observed a twofold higher incidence of PRAE in African American group vs other ethnic groups. Establishment of increased risk and specific risk factors potentially leading to respiratory complications can guide decision making during preoperative assessment especially for elective procedures. **Madiha Syed, M.B.B.S, Sarah Tariq, M.D.; Anesthesiology and Critical Care Medicine, University of Arkansas for Medical Sciences, Little Rock, AR, Arkansas Children's Hospital, Little Rock, AR.**

### PD A4294

#### Survey Says: What Do Pediatric Clinicians Really Know About the "Sedation or Anesthesia" Required When Ordering an MRI "With Sedation"?

The number of anesthetics given in the radiology suite and use of magnetic resonance imaging (MRI) has dramatically increased in recent years. Because most young children cannot cooperate for a MRI, physicians refer them for anesthesia to obtain imaging. Although MRI itself poses little risk, many pediatric clinicians do not appreciate the challenges and anesthetic needs for MRI. This study was done to identify the level of awareness among clinicians regarding anesthetic requirements for MRI in children. **Glenn E. Mann, M.D., Scott Lipson, M.D., Jerry Chao, M.D., Terry-Ann Chambers, M.D., Madelyn Kahana, M.D.; Anesthesiology, Montefiore Medical Center, Albert Einstein College of Medicine, Bronx, NY, Anesthesiology, Mount Sinai Hospital, New York, NY.**

### PD A4295

#### A Single-Pass Tympanostomy Tool for Tympanostomy Tube Placement - Initial Experience in Children

This is a report of initial experience with a new single pass tympanostomy tool for tympanostomy tube placement in 101 children aged 6 to 106 months. General anesthesia was used in 51 children. In 35 children the device allowed the placement of PE tubes with moderate sedation. The placement of PE tubes was significantly faster with this device ( $14 \pm 16$  secs). There were no immediate complications. The delayed adverse events were minor. With increase in experience more children can have PE tubes under moderate sedation. **Kumar G. Belani, M.B.B.S., M.S., David S. Beebe, M.D., Chandra J. Castro, M.D., Abby C. Meyer, M.D., Frank L. Rimell, M.D., James D. Sidman, M.D.; Anesthesiology, Otolaryngology, University of Minnesota, Minneapolis, MN.**

### PD A4296

#### Antibioprophylaxis for Child's Appendicitis, Are We Correctly Aiming at the Targets? A French Retrospective Survey

Antibiotics play a key role in the management of surgically-treated appendicitis in children. The aim of this study was 1) to assess the local epidemiology and the practice of antibiotic prophylaxis 2) to assess the relevance of the institutional protocol in view of the bacteriological results, and to estimate the need for making adjustments. **Pierre Bentzinger, M.D., Chloe Chauvin, M.D., Claire Bopp, M.D., Georgio Carrenard, M.D., Laurent Marcoux, M.D., Jean-François Jf Mayer, M.D., Claudine Schwaab, M.D., Barth Calon, M.D., Pierre A. Diemunsch, Ph.D.; Strasbourg University Hospital, Strasbourg, France.**

AM Ambulatory Anesthesia	CA Cardiac Anesthesia	CC Critical Care Medicine	FA Fund. of Anesthesiology	NA Neuroanesthesia
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**PD A4297****The Renal Safety of Low-flow Sevoflurane Anesthesia in Pediatric Cancer Patients**

The determination of urinary NAG provides a very sensitive and reliable indicator of renal damage and renal tubular impairment. This study showed no evidence of significant renal injury due to low-flow sevoflurane anesthesia in pediatric cancer patients during surgery of duration  $\geq 2$  hours and MAC hours was  $3.6 \pm 0.9$ . It points towards renal safety of low-flow sevoflurane anesthesia. Urinary biomarkers of renal toxicity; NAG, and proteinuria and serum biomarkers blood urea and serum creatinine exhibited transient increase one day after surgery which returns back towards the preoperative levels by day 5 of the study. **Wafaa T. Gharibe, M.D., Ayman A. Ghoneim, M.D., Hossam Z. Ghobrial, M.D., Iman A. Abdelgawad, M.D., Mostsfs A. Awad, M.D.**; Anesthesia and Pain Relief, Clinical Pathology Department, NCI Cairo University, Cairo, Egypt.

**PD A4298****Total Pancreatectomy with Islet Cell Autotransplantation in Children: Anesthetic Implications**

Children with chronic, severe pancreatitis can undergo total pancreatectomy with islet cell transplantation without hemodynamic instability. **David S. Beebe, M.D., Navneet Kaur, M.B.B.S., Ashley Tollefson, B.A., Harpreet Singh, M.B.B.S., M.H.A., Srinath Chinnakotla, M.D., Kumar G. Belani, M.B., B.S., M.S.**; Anesthesiology, Surgery, University of Minnesota, Minneapolis, MN.

**PD A4299****Paper or Plastic? A Survey of Anesthesia Trainees in the Use of Different Versions of the Society for Pediatric Anesthesia Critical Events Checklist during Simulated Critical Events**

The Society for Pediatric Anesthesia Critical Event checklist is designed to assist peri-operative teams in the management of intraoperative critical events. Following simulated critical events, anesthesia trainees felt more prepared to manage intraoperative events when using the checklist. They found the content of the SPA emergency checklist to be useful, relevant and comprehensive for the management of intraoperative critical events. **Scott Watkins, M.D., Anna Clebone, M.D., Elisabeth M. Hughes, M.D., Vikram P. Patel, M.D., Yaping Shi, Ph.D., Mathew Shotwell, Ph.D., Laura N. Zeigler, M.D.**; Anesthesiology, Vanderbilt University Medical Center, Nashville, TN, University Hospital, Youngstown, OH.

**PD A4300****Pediatric Anesthesia Practice at Two Tertiary Care Hospitals in Freetown, Sierra Leone**

We conducted a prospective observational study of pediatric anesthesia practice in two hospitals in Sierra Leone. A review of current practice was used to guide implementation of system changes to improve patient outcomes and engage local providers in an austere environment. **Camila B. Lyon, M.D., Benjamin H. Lee, M.D., John B. Sampson, M.D., Eric V. Jackson, Jr., M.D., M.B.A., Adaora Chima, M.B.B.S., M.P.H., Michael Koroma, M.B.B.S., O. Ogbuagu, M.B.B.S., M.P.H., Michael Rosen, Ph.D., Megan Marx, R.N., Rahul Koka, M.D., M.P.H.**; Anesthesiology and Critical Care Medicine, Austere Anesthesia Health Outcomes Research Group, Armstrong Institute of Quality and Patient Safety, Johns Hopkins University, Baltimore, MD, Department of Anesthesia, Ministry of Health and Sanitation, Freetown, Sierra Leone.

**PD A4301****Spinal Muscular Atrophy: A New Category of Difficult Airways in the Pediatric Population**

Spinal muscular atrophy (SMA) is a rare, inherited neuromuscular disease. Case reports suggest that some SMA patients have a difficult airway. We retrospectively identified pediatric SMA patients who underwent posterior spinal fusion from 1995 to 2014. We identified a significantly high rate of difficult intubations in patients with SMA Type 2 from two busy tertiary pediatric hospitals. Additional centers will be recruited help to determine the true prevalence and etiology of difficult airway in these patients. **Jessica A. Cronin, M.D., M.B.A., Sabina DiCindio, D.O., Mary C. Theroux, M.D., Jonathan Preminger, B.S., Paul Sponseller, M.D., Dolores B. Njoku, M.D.**; Johns Hopkins University, Baltimore, MD, Al DuPont Hospital for Children, Wilmington, DE.

**PD A4302****Do Children With Learning Disabilities Get the Perioperative Hospital Care They Need?**

All professionals did not feel confident in communicating with children who use other methods of communication. Junior doctors showed the least confidence; there was limited confidence in using other communication methods and a surprising lack of awareness of these methods. There is the need for regular provision of LD training opportunities for medical and nursing staff but this training needs to be effective and real to life for it to have the best success. **Sandeep Saxena, M.B.B.S., D.A., M.D. (Anaesth), F.R.C.A., Zoe Shipley, Medical Student (M.B.B.S.); Anaesthetics, Scunthorpe General Hospital, Scunthorpe, United Kingdom.**

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**ORAL PRESENTATIONS**

**OR13-5 OUTCOMES AND DATABASE RESEARCH - BLOOD & TRANSFUSIONS**

8-9:30 a.m. | Room 245

**FA A5000**

**Blood Product Use in Cardiac Surgery: An Online Survey of Cardiac Surgeons and Cardiac Operating Room Nurses**

We conducted a cross-sectional online survey of a panel of cardiac surgeons and cardiac OR nurses to explore their practices of blood product use and excess in complex cardiac surgeries. Surgeons and nurses combined indicated that more blood was ordered than needed 39-45% of the time and that the extra blood was used unnecessarily 22% and discarded 28% of the time respectively (mean percent) across different types of cardiac surgery. Using excess blood unnecessarily or discarding it may affect both health care costs and patient clinical outcomes. These results indicate that there is still great opportunity to manage and control blood and blood product use during complex cardiac surgeries. **Arthur S. Zbrozek, M.S., M.B.A., Susan Brennenman, Ph.D., Angela Belland, M.S., Joanna L. Whyte, M.S., PH.; Global Health Economics, CSL Behring LLC, King of Prussia, PA, Optum, Minneapolis, MN.**

**FA A5001**

**Prophylactic Preoperative Platelet Transfusions: Can We Stop the Bleeding?**

The effects of prophylactic platelet transfusion for the treatment of preoperative thrombocytopenia on perioperative bleeding and RBC requirements remains uncertain. This large, single-center retrospective review of patients undergoing non-cardiac surgery shows increased rates of intraoperative and early postoperative RBC transfusion with preoperative platelet counts < 100 x 10<sup>9</sup>/L. However, prophylactic platelet transfusions do not attenuate this risk. Rather, preoperative prophylactic platelet administration is associated with increased rates of intraoperative and early postoperative RBC transfusion, suggesting that more conservative management of preoperative thrombocytopenia may be warranted. **Matthew A. Warner, M.D., Gregory Wilson, R.R.TDarrell R. Schroeder, M.S., Daryl J. Kor, M.D.; Mayo Clinic College of Medicine, Rochester, MN.**

**FA A5002**

**Comparison of Institution-Specific Blood Order Schedule to Surgeons' Recommendations**

An institution-specific blood order schedule for the University of California Irvine Medical Center was created based on an algorithm published by Frank et al. This schedule was compared to the preoperative blood ordering practices of the institution's surgeons to determine whether current practices were consistent with blood usage and whether any Room for improvement or cost savings might exist. Preliminary data shows an increase in hospital charges of \$791,857 per year when using the blood order schedule compared to the recommendations of the institution's surgeons. This data suggests possible under-ordering preferences by the institution's surgeons, an unexpected finding when compared to those of Frank et al(1). **Kayleigh H. Kaneshiro, B.A., Tiffany Lee, B.A., Coral Sun, M.D., Minh-Ha Tran, D.O., Joseph B. Rinehart, M.D.; University of California, Irvine School of Medicine, Irvine, CA.**

**FA A5003**

**Incremental Measures of Transfused Red Blood Cell Units Are Associated with Acute Kidney Injury in Cardiac Surgery Patients**

We investigated the implications of red blood cells (RBC) transfusion in cardiac surgery patients. We found that RBC transfusions greater than 3 units were significantly associated with relatively higher risk of AKI. **Vwaire J. Orhurhu, B.A., M.PH., Khurram Owais, M.D., Jeffrey Hubbard, M.D., M.S., Amit Bardia, M.D., Anam Pal, M.D., Mario Montealegre, M.D., Emmanuel Akintoye, M.D., John Mitchell, M.D., Feroze Mahmood, M.D., Robina Matyal, M.D.; Epidemiology and Biostatistics, Harvard School of Public Health, Department of Anesthesia, Critical Care and Pain Medicine, Beth Israel Deaconess Medical Center, Department of Surgery, Division of Cardiac Surgery, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA.**

**FA A5004**

**Optimizing Pediatric Preoperative Blood Orders Using Data from an Anesthesia Information Management System: A Guideline for Practitioners**

Using AIMS-derived blood utilization data, we created an institution-specific blood order strategy for pediatric surgical patients. Implementing these new guidelines has the potential to reduce unnecessary laboratory testing and the associated costs, goals which align nicely with the Choosing Wisely Campaign. **Jessica A. Cronin, M.D., M.B.A., Steven M. Frank, M.D., Linda Resar, M.D., Eugenie Heitmiller, M.D., Sybil Klaus, M.D.; Johns Hopkins Hospital, Baltimore, MD.**

**FA A5005**

**Impact of Transfusion Delay on Cardiac Surgery Outcomes**

This retrospective analysis investigated the impact of transfusion delays on adverse outcomes following cardiac surgery. Delay in transfusion was associated with adverse outcomes. Identifying a hematocrit threshold below which to transfuse during cardiac surgery may help reduce delays in transfusion and decrease the incidence of adverse outcomes. **Chang H. Park, M.D., Hung-Mo Lin, Sc.DGregory W. Fischer, M.D.; Anesthesiology, Health Evidence and Policy, Icahn School of Medicine at Mount Sinai, New York, NY.**

**OR14-4 PATIENT SAFETY AND PRACTICE MANAGEMENT**

8-9:30 a.m. | Room 244

**PI A5006**

**Adherence to Continuous Positive Airway Pressure (CPAP) Therapy**

Obstructive Sleep Apnea (OSA) represents a perioperative risk. Continuous positive airway pressure (CPAP) therapy has demonstrated its ability to reduce this risk. However, many patients don't adhere to this treatment. Our results clearly isolate 4 criteria that every anesthesiologist should seek during the preoperative visit. **Eric P. Deflandre, M.D., F.C.C.P., Stephanie Degey, M.H.SVincent Bonhomme, M.D., Ph.D., Anne-Francoise Donneau, Ph.D., Robert Poirrier, M.D., Ph.D., Jean F. Brichant, M.D., Ph.D., Pol Hans, M.D.; Cabinet Medical ASTES & Clinique Saint-Luc de Bouge, Namur, Belgium, Cabinet Medical Astes, Jambes, Belgium, CHR de la Citadelle University, Medical Informatics and Biostatistics, Universite de Liege, Cetes, Universite de Liege, University Hospital of Liege, Department of Anesthesia & ICM, University, Liege, Belgium.**

**PI A5007**

**A Survey of Anesthesia Providers and PACU RN's to Assess Satisfaction with Postoperative Handoff Processes**

Accurate, organized postoperative handoff exchanges are an important component of patient safety. Anesthesia providers and PACU RN's at a large academic hospital were surveyed to determine their level of satisfaction with their current handoff processes. Overall low satisfaction scores suggested a need for a new formal protocol. PACU RN's were less satisfied than anesthesia providers which may have more relevance since they are assuming care of the patient. Such surveys provide opportunity for feedback and baseline measurements of satisfaction as part of any quality improvement project. **Jens Tan, M.D., Ron Purugganan, M.D., Joseph R. Ruiz, M.D.; Anesthesiology, MD Anderson Cancer Center, Houston, TX.**



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**PI A5008**

**Adverse Patient Events Related to Surgery in the Prone Position; a 10-year Audit of a QA/QI Database**

We analyzed perioperative adverse events related to surgery in the prone position self-reported over 10 years to the QA/QI database of a large academic medical center. Among 73 patients identified, there were 75 adverse events, including 5 mortalities; 28 adverse events were classified as severe. An adverse event was defined as severe (major) if it required an unplanned change in position or an ICU admission. Death was caused by hemodynamic events in 3 spine surgery patients. Two patients had fatal respiratory events; 1 during an ERCP under MAC and 1, after spine surgery. Spine surgery cases contribute most of the non-respiratory adverse events related to the prone position; prone events involving the endotracheal tube and iv access have severe outcomes. **Elisabeth Abramowicz, M.D., Shamantha Reddy, M.D., Angelika M. Kosse, M.D.; Anesthesiology, Albert Einstein College of Medicine, Montefiore Medical Center, Bronx, NY .**

**PI A5009**

**The Ambulatory Handoff: Fast-paced, High-stakes Patient Care Transitions**

Effective handoff communication includes transference of relevant information, removal of barriers to information exchange, and optimization of workflow efficiency. The intersection of thorough handoff communication and efficient translation of critical data is especially relevant in a fast-paced, high-volume ambulatory surgery center. This study characterizes the quality of postoperative handoffs in an ambulatory setting. **Erin W. Pukenas, M.D., Edward R. Deal, D.O., Elaine Allen, Ph.D., Amanda R. Burden, M.D., Elizabeth Mburu, M.D., Erin McIntosh, B.S., Brittany Scarpato, B.S., Irwin Gratz, D.O.; Anesthesiology, Cooper Medical School of Rowan University, Camden, NJ, Epidemiology and Biostatistics, University of California San Francisco, San Francisco, CA.**



**PI A5010**

**Statin and Perioperative Beta Blocker Usage in Vascular Surgical Patient Population - Room for Improvement?**

Our study showed that the usage of perioperative Statin and Beta blocker therapy among vascular surgical patients at our institute during 2005-2013 was 57.2% and 39.8% respectively. Despite incontrovertible evidence of benefits of Statin therapy in PAD patients, there are lags in implementation of guidelines. Measures need to be instituted with the involvement of the Vascular Surgeons, PCPs and Anesthesiologists. The importance of having a "surgical home" model with better integration and communication between the perioperative specialties to improve patient outcomes is paramount. **Varun Rimmalapudi, M.D., Peggy B. James, M.D.; Anesthesiology, University of Florida, Jacksonville, FL, Anesthesiology, University of Florida - Jacksonville, Jacksonville, FL .**



**PI A5011**

**A Survey of Naloxone Use in Hospital Personnel as an Assessment of Safety**

We utilized a survey to assess the knowledge base for naloxone use in an academic hospital setting. A variety of healthcare providers were surveyed to determine their ability to effectively and safely use naloxone. There appears to be significant knowledge gaps in the appropriate use of naloxone that may lead to improper administration. Anesthesiology residents and attendings appear to be more knowledgeable and could be key in further educational initiatives. **Steven W. McGrath, M.D., Jaime L. Baratta, M.D., Kishor Gandhi, M.D., M.P.H., Eugene R. Viscusi, M.D.; Anesthesiology, Thomas Jefferson University Hospital, Philadelphia, PA.**

**POSTER DISCUSSIONS**

**PD08-3 EQUIPMENT, MONITORING AND ENGINEERING TECHNOLOGY: MONITORING SEDATION AND CEREBRAL EFFECTS OF ANESTHESIA**

8-9:30 a.m. | Room 243

**FA A5012**

**A Comparison of Changes in Regional Cerebral Oxygen Saturation and Parameters of Arterial Blood Analysis During Cardiopulmonary Bypass**

In cardiopulmonary bypass (CPB), regional cerebral oxygen saturation (rSO2) is a key indicator of brain ischemia during anesthesia. We retrospectively analyzed correlations between parameters measured using an arterial blood gas analyzer, and resultant rSO2 values during CPB. rSO2 values were measured at the following 2 time points: the time within 30 min after aortic clamping and 30 min after the first time point. A correlation existed between hemoglobin levels and rSO2 values at both time points. Percent changes in rSO2 were significantly correlated with percent changes in pH and PaCO2. Changes in rSO2 during reflected autonomic responses of cerebral vessels to PaCO2. **Seishi Sakamoto, M.D., Shiro Fukuda, M.D., Manabu Yoshimura, M.D., Takashi Toriumi, M.D.; Tokuyama Central Hospital, Shunan, Japan.**

**FA A5013**

**Performance of Dynamic Variations of ANI (Analgesia/Nociception Index) to Predict Intraoperative Hemodynamic Reactivity: A Prospective Observational Study**

The performance of ANI to predict hemodynamic reactivity was poor (ASC = 0.5), this of ANI1min was significantly better (ASC = 0.77) and the best performance was observed with ΔANI (ASC = 0.89), showing 84% sensitivity and 85% specificity for ΔANI ≤ -19%. In our population, a decrease of ANI >19% in 1 min exhibited better performance than static indexes to predict hemodynamic reactivity during desflurane/remifentanyl general anesthesia. **Emmanuel Boselli, M.D., Ph.D., Régis Logier, Ph.D., Gérard Bégou, M.D., Lionel Bouvet, M.D., Ph.D., Rabia Dabouz, M.D., Julien Davidson, M.D., Jean-Yves Deloste, M.D., Najia Rahali, M.D., Abbès Zadam, M.D., Bernard Allaouchiche, M.D., Ph.D., Anesthesiology and Intensive Care, Édouard Herriot Hospital, HCL, Lyon, France, CIC-IT INSERM, CHRU de Lille, Lille, France.**

**FA A5014**

**Effects of Hyperventilation on Regional Cerebral Oxygen Saturation During Propofol or Sevoflurane Anesthesia**

We compared the changes in rSO2 between propofol anesthesia and sevoflurane anesthesia under hyperventilation. Patients who were scheduled to undergo elective abdominal surgery were included. rSO2 should reflect cerebral blood flow, because rSO2 decreased with hyperventilation and increased with normalization of ventilation. Although propofol and sevoflurane act differently on cerebral vessels, change in rSO2 was comparable between propofol anesthesia and sevoflurane anesthesia under hyperventilation. **Tadahiko Ishiyama, M.D., Ph.D., Nobumasa Asano, M.D., Kazuha Mitui, M.D., Yosuke Nakadate, M.D., Taishi Masamune, M.D., Ph.D., Takashi Matsukawa, M.D., Ph.D., Surgical Center, Anesthesiology, University of Yamanashi, Chuo, Japan.**

**FA A5015**

**Effect of Propofol, Sevoflurane and Desflurane on Regional Cerebral Blood Flow Measured by Near Infrared Spectroscopy**

In human, very few previous reports measured CBF directly using argon gas in the operating room due to lack of the convenient methodology of direct measurement of CBF in bedside. Recently NIRO-200NX (Hamatsu Photonix, Hamamatsu, Japan), near infrared spectroscopy device, enables to measure regional cerebral blood flow as blood flow index (BFI) in the operating room. Therefore, we conducted a study to evaluate the effect of propofol, sevoflurane and desflurane on CBF in human during anesthesia using BFI. **Yosuke Kubota, M.D., Kenji Yoshitani, M.D., Shinya Kato, M.D., Yoshihiko Ohnishi, M.D.; National Cerebral and Cardiovascular Center Anesthesiology, Osaka, Japan.**



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## FA A5016

### Breath Gas Propofol Concentration Measurement - The Next Generation for Anesthesia Monitoring

The Propofol Sensor Module assess the propofol breath gas concentration within an identical range as the reference device. The propofol anesthesia profile selected here - especially with respect to steady states and recovery of anesthesia - can be displayed. **Hartmut Gehring, M.D., Ph.D., Dammon Ziaian, M.S., Andreas Hengstenberg, Ph.D., Lutz Duembgen, Ph.D., Stefan Zimmermann, Ph.D., Martin Grossherr, M.D., Astrid E. Berggreen, M.D.;** Anesthesiology and Intensive Care Unit, University Medical Center Schleswig-Holstein, Research Unit, Draegerwerk AG, Research Unit, Draegerwerk AG, 22 Luebeck, Germany, Department of Mathematics and Statistics, University of Bern, Bern, Switzerland, Institute of Electrical Engineering and Measurement Technology, Leibniz University Hannover, Hannover, Germany.

## FA A5017

### Interest of Instant Variability of Pupil Diameter for Assessment of Postoperative Pain in Conscious Patients

Pupil diameter fluctuations measured over 10 seconds are more strongly correlated with assessed pain using VAS than simple variation of pupil diameter in a bright flash. This parameter, used at the bedside, could allow a simple evaluation of the nociception-antinociception balance in conscious patients. **David Charier, M.D., Daniel Zantour, M.D., Serge Molliex, M.D., Ph.D;** Anesthesiology, University Hospital, Saint-Etienne, France.

## FA A5018

### Use of Supraglottic Airways in Patients Undergoing Brain Tumor Surgery in Eloquent Areas and Intraoperative Neurological Mapping and Monitoring with an Asleep-awake-asleep Technique

"Asleep-awake-asleep" technique is frequently performed in patients undergoing brain tumor surgery in eloquent areas that require intraoperative neurological mapping and monitoring of neurological functions. We evaluated the use of supraglottic airways during awake craniotomies in 600 patients. The LMA allowed for effective controlled ventilation in all patients. **David Z. Ferson, M.D., Ian Lipski, M.D., Roxana M. Grasu, M.D., Anh Q. Dang, M.D., Charles E. Cowles, M.D., Linh T. Nguyen, M.D., Anh-Thuy T. Nguyen, M.D., Radha Arunkumar, M.B.B.S., Frederick Lang, M.D., T. Linda Chi, M.D.;** MD Anderson Cancer Center, Houston, TX, M. D. Anderson Cancer Center, Houston, TX, Neurosurgery, M. D. Anderson Cancer Center, Houston, TX, Diagnostic Imaging, M. D. Anderson Cancer Center, Houston, TX.

## FA A5019

### Interest of Instant Pupil Diameter Variability to Assess Pain During Uterine Contractions in Obstetrical Labor

PD fluctuations measured over 10 seconds is strongly correlated with the assessed pain using the VAS scale. This parameter, used in bedside, could allow an assessment of the antinociception-nociception balance. **David Charier, M.D., Daniel Zantour, M.D., Serge Molliex, M.D., Ph.D.,** Anesthesiology, University Hospital, Saint-Etienne, France.

## PD05-1 CLINICAL NEUROSCIENCES: INTRAOPERATIVE MONITORING

10-11:30 a.m. | Room 245

## NA A5020

### Cerebral Oximetry During Sinus Endoscopy

Deliberate hypotension, patient positioning, and potentially mild hypoxapnea are important towards maintenance of a "bloodless" surgical field during functional endoscopic sinus surgery. However, these maneuvers may make patients vulnerable to cerebral desaturation. In a prospective, blinded, observational trial of thirty-one patients undergoing functional endoscopic sinus surgery, we were able to measure cerebral oximetry and found significant deviations from baselines in many patients. **Joshua A. Heller, M.D., Samuel DeMaria, M.D., Satish Govindaraj, M.D., Gregory W. Fischer, M.D., Menachem M. Weiner, M.D.;** Anesthesiology, Otolaryngology, Icahn School of Medicine at Mount Sinai, New York, NY.

## NA A5021

### Somatosensory Deficits From Steep Trendelenburg Positioning During Gynecologic Robotic Surgery

Urologic robotic surgery in steep Trendelenburg position (STP) is associated with neurologic deficits in lithotomy position. We monitored patients having gynecologic robotic surgery in STP with SSEP's to detect nerve conduction deficits and clinical symptoms. Ten of 15 patients had significant attenuation of amplitude and latency during STP. All but one of these changes resolved during emergence. We were unable to detect postoperative symptoms or deficits associated with these SSEP changes in this small cohort. **Frank J. Overdyk, MSEE, M.D., Oonagh Dowling, Ph.D., Joseph Danto, Ph.D., David M. Glatt, D.O., Eugene Gillman, M.D., MacKenzie Schleicher, B.A., John DiCapua, M.D.;** Anesthesiology, Hofstra North Shore-LIJ School of Medicine, New Hyde Park, NY, Bowdoin College, Brunswick, ME.

## NA A5022

### The Influence of EEG Pattern and Artefacts on Calculated EEG Index Values - An Analysis of 4 Different DOA Monitors

Visual analysis of EEG signals recorded during induction and emergence from general anesthesia showed that they often contain high frequency signals and eye blink artefacts. These artefacts possibly influence the calculated index values of some of the commercially available DOA monitor devices (Aspect A2000; BIS®; Entropy™ Module; CSM; Narcotrend®). A higher error rate was found for both artefacts during unconsciousness, in contrast to only minor differences during consciousness. This may be due to the influence of high frequency signals and eye blink artefacts, shifting EEG analysis towards "conscious" index values. **Veliko Karatchiev, M.D., Gerhard Schneider, M.D., Ph.D., Matthias Kreuzer, M.D., Eberhard F. Kochs, M.D., Stefanie Pilge, M.D.;** Department of Anesthesiology, Witten/Herdecke University, Wuppertal, Germany, Department of Anesthesiology, Technische Universität München, München, Germany.

## NA A5023

### Evaluation of Feasibility and Reliability of Intraoperative Visual Evoked Potential Monitoring During Craniotomy

In the present study, we investigated feasibility and reliability of intraoperative visual evoked potential (VEP) monitoring during craniotomy. The success rate of recording control VEP was 94.4 % (85 of 90 cases). As a result, the false positive, false negative and accuracy of intraoperative VEP monitoring during craniotomy were 9.4%, 1.2% and 89%, respectively. Intraoperative VEP monitoring may be feasible with satisfying reliability to predict postoperative visual dysfunction during craniotomy under general anesthesia. **Yuka Akasaki, M.D., Hironobu Hayashi, M.D., Masahiko Kawaguchi, M.D.;** Anesthesiology, Nara Medical University, Kashihara, Nara, Japan.

## NA A5024

### Systematic Review of Motor Evoked Potentials Monitoring with Transcranial and Direct Motor Cortex Stimulation in Patients Undergoing Intracranial Aneurysm Surgery

Systematic review of the literatures indicated that the reliability of motor evoked potentials monitoring using transcranial and direct motor cortex stimulation was comparable in patients undergoing intracranial aneurysm surgery, although further improvement would be required to reduce false negative rates to predict postoperative motor dysfunction. **Kie Yoshimura, M.D., Mitsuru Ida, M.D., Yuu Tanaka, M.D., M.B.A., Hironobu Hayashi, M.D., Masahiko Kawaguchi, M.D.;** Department of Anesthesiology, Nara Medical University, Nara Medical University, Kashihara, Nara, Japan.

## NA A5025

### Intraocular Pressure in Lumbar Spine Fusion Patients - A Prospective, Randomized Study

Postoperative visual loss is a rare but devastating complication in spine surgery. The aim of this study was to evaluate the effect of head positioning on IOP in prone lumbar spine fusion patients in the neutral position and elevated 10 degree position. Ten degree elevation of the head in the anesthetized prone position for adult lumbar spine fusion patients resulted in significantly lower IOP measurements compared to controls. **Matthew B. Ellison, M.D., Brian W. Grose, M.D., John C. France, M.D., Scott D. Daffner, M.D., Manuel C. Vallejo, Jr., M.D., D.M.D., Ralph E. Harding, D.O., David F. Graf, M.D., Nina B. Clovis, None, Sanford Emery, M.D.;** Anesthesiology, Orthopaedics, West Virginia University, Morgantown, WV, Surgery, Carl Vinson VA Medical Center, Dublin, GA.



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**NA A5026**

**Detection of Elevated Intracranial Pressure in Robot Assisted Laparoscopic Radical Prostatectomy Using Ultrasonography of Optic Nerve Sheath Diameter**

Ultrasonography of optic nerve sheath diameter was used to detect elevated intracranial pressure in 25 patients undergoing robotic assisted laparoscopic radical prostatectomy at the Medical University of South Carolina. **Joseph R. Whiteley, D.O., Jason M. Taylor, M.D., Mark E. Henry, M.D., Thomas I. Epperson, M.D., William R. Hand, M.D.;** Department of Anesthesia and Perioperative Medicine, Medical University of South Carolina, Charleston, SC .

**NA A5027**

**Cerebral Blood Flow Measurement by Near Infrared Spectroscopy in Carotid Endarterectomy**

BFI as regional cerebral blood flow of the diseased side significantly decreased during clamping the common carotid artery, even if high blood pressure was maintained. **Shinya Kato, M.D., Kenji Yohitani, M.D., Yoshihiko Ohnishi, M.D.;** Anesthesiology, National Cerebral and Cardiovascular Center, Suita, Japan.

**PD16-3 REGIONAL ANESTHESIA AND ACUTE PAIN**

10-11:30 a.m. | Room 244

**RA A5028**

**Evaluating the Opioid Reduction Effect of Transversus Abdominal Plane Blocks for Bariatric Surgery Patients: A Single-Blinded Randomized Controlled Study**

No studies have been published confirming the utilization of TAP blocks in the morbidly obese patient population to reduce narcotic requirements. Our study revealed a statistically significant difference in pain score in patients in the PACU. However, the opioid requirements and other secondary outcomes did not demonstrate a statistically significant difference. Due to the lack of evidence of additional analgesia and outcome differences between the two groups, the added benefit and cost-effectiveness of transverse abdominal plane blocks for patients undergoing laparoscopic bariatric surgery may be questionable. **William M. Caldwell, D.O., Karina Gritsenko, M.D., Naum Shaparin, M.D., Jolie Narang, M.B.B.S.,** Anesthesiology, Montefiore Medical Center, Montefiore Pain Center, Bronx, NY.

**RA A5029**

**Interscalene Block - Is Injection Below the Paraneural Sheath Superior to Injection Outside the Paraneural Sheath?**

This prospective randomized controlled clinical trial evaluates two different injection endpoints for performance of ultrasound guided interscalene nerve blocks. Needle positioning and injection within the paraneural sheath resulted in similar block characteristics as injection just outside the sheath with the exception of faster block onset for the axillary nerve. In addition, patients receiving injections within the sheath reported significant higher incidence of transient paresthesia. **Joni Maga, M.D., Alexandru Visan, M.D., Andres Missair, M.D., Juan Gutierrez, M.D., Annika Jain, M.D., Ralf Gebhard, M.D.;** Anesthesiology, University of Miami, Executive Cortex Consulting LLC, Miami, FL.

**RA A5030**

**Prospective, Randomized, Double-blinded, Controlled Study Comparing TAP vs. Sham Blocks After C-Sections in Uganda**

This prospective, randomized, double-blind, sham controlled, single center trial examines the efficacy of ultrasound-guided transversus abdominis plane versus sham blocks in providing analgesia after caesarean section in resource limited sub-Saharan Africa. Significant improvement in numeric rating scale scores is clearly demonstrated over the first 24 hours following placement of the TAP blocks. **Sadic Kagwa, M.D., Mark A. Hoefft, M.D., Paul G. Firth, M.B.B.Ch., Stephen Ttendo, M.D., Vicki E. Modest, M.D.;** Anesthesia, Critical Care, and Pain Medicine, Massachusetts General Hospital, Boston, MA, Anesthesia, Mbarara Regional Referral Hospital, Mbarara, Uganda.

**RA A5031**

**The PK Profile of SABER®-Bupivacaine in Humans Across Surgical Models Demonstrates Sustained 72-Hour Drug Delivery**

SABER®-Bupivacaine is a long-acting depot formulation that provides immediate and continuous, 72-hour delivery of bupivacaine without burst or dose dumping across a variety of surgical models. SABER-Bupivacaine may fulfill an unmet need for a true 72-hour postoperative local anesthetic. **Jaymin Shah, Ph.D., Neil Verity, Ph.D., Alex Yang, M.D.;** Durect CorpCupertino, CA, Xelay Acumen, Belmont, CA .

**RA A5032**

**Femoral Infusion with Either Sciatic Block or Intra-articular Analgesics for Total Knee Arthroplasty**

Patients receiving femoral nerve infusion with and without preoperative sciatic block, and with or without intra-operative injection of intra-articular analgesic were compared. No significant difference in opioid use or pain with activity were observed, pain at rest on the operative day was more likely to be reported above two by VAS scoring in patients who received femoral infusion only. The addition of preoperative sciatic block and/or intra-articular injection can therefore be supported as they provide improvement in analgesia compared to femoral infusion alone. **Branden J. Yaldou, M.D., Craig T. Hartrick, M.D., Mark H. Mounayer, M.D., Cecile Pestano, B.S.N., Susan Hartrick, B.S.N., Guangzhi Qu, Ph.D.,** Beaumont Health System, Troy, MI, Department of Anesthesiology, Detroit Medical Center, Detroit, MI, Oakland University, Rochester, MI.



**RA A5033**

**Concurrent Reductions in Postoperative Pain and Opioid Use in Patients Receiving SABER®-Bupivacaine; Evaluation of CROPIRS Scores**

This analysis evaluates the combination of opioid reduction and pain intensity reduction with an extended-release formulation of bupivacaine (SABER®-Bupivacaine) following surgery. Use of SABER-Bupivacaine reduces both pain intensity and opioid use compared to SABER-placebo in bony (shoulder) and soft-tissue (hernia) surgeries. This analysis demonstrates the utility of SABER-Bupivacaine as a potential foundation of a multimodal regimen, which should not only reduce pain intensity but also concurrently reduce opioid use. **Richard W. Watts, M.D., Hinnerk F.w. Wulf, M.D., Ph.D., Neil Verity, Ph.D., Alex Yang, M.D., Anders Ekelund, M.D., Ph.D.,** The Queen Elizabeth Hospital, Woodville, Australia, Universitätsklinikum Giessen, Marburg, Germany, Durect CorpCupertino, CA, Xelay Acumen, Belmont, CA, Capio St Görans Hospital, Stockholm, Sweden.

**RA A5034**

**The Effect of Lidocaine on Natural Killer Cell Cytotoxicity Against Liquid and Solid Tumor Cells**

Lidocaine is a widely used local anesthetic with immune-modulatory effects. Natural killer (NK) cells play an important role in tumor and metastasis surveillance. The effect of lidocaine at concentrations used during continuous intravenous or epidural infusions on NK cells cytotoxicity has so not been study so far. We conducted a series of experiments with the goal of testing the effect of lidocaine at clinically relevant plasma concentrations on NK cell cytotoxic activity against different cancer cell lines. Our experiments indicate that lidocaine stimulates the function of NK cells against different cancer cell lines. This effect appears to be mediated through activation of the degranulation pathway. **Maria Ramirez, M.D., Peter Tran, B.S., Juan P. Cata, M.D.;** Anesthesiology, MD Anderson Cancer Center, Houston, TX.



**RA A5035**

**SABER®-Bupivacaine Reduces Postoperative Pain Intensity and Opioid Use for 72 Hours in Soft-Tissue and Bony Surgeries**

There is an unmet need for a local anesthetic that effectively reduces pain intensity across multiple surgery types over the first 72 hours, particularly for 24 to 72 hours after surgery. SABER®-Bupivacaine was tested in 2 clinical trials in patients undergoing either soft-tissue or bony surgery. SABER-Bupivacaine decreased post-op pain for 72 hours after surgery, including the critical 24-72 hour post-op time, and reduced opioid use in both trials. **John Moodie, M.BCh.B., FRCA, FANZCA, Oliver C. Radke, M.D., Ph.D., D.E.A.A., M.H.B.A., David J. Ellis, Ph.D., Neil Verity, Ph.D., Alex Yang, M.D., Sten Rasmussen, M.D., Ph.D.,** Waikato Clinical Research and Braemer Hospital, Hamilton, New Zealand, Carl Gustav Carus an der Technischen University, Dresden, Germany, Durect CorpCupertino, CA, Xelay Acumen, Belmont, CA, Aalborg University Hospital, Aalborg, Denmark.



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 Christopher Foglesong B.S.  
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Joel Gunter M.D.  
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Rui Juan Guo M.D.  
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Dong Hailong M.D.  
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Sedat Hakimoglu M.D.  
Takahiro Hakozaki M.D.  
Thomas Halaszynski D.M.D., M.D., M.B.A.  
Omar Halawa M.D. M.S.  
Constantin Halchini M.D.  
Oliver Hall B.S. (expected)  
Katherine Hallock B.S.  
Ashraf Hamada M.D.  
Hiroshi Hamada Ph.D.  
Taku Hamada M.D.  
Craig Hamilton M.D.  
Laura Hammel M.D.  
Mohamed Hamza M.D.  
Jung Hee Han M.D.  
Wei Han M.D.  
Woong Ki Han Resident  
Xue Han M.P.H.  
Yun hee Han M.D.  
Motohiko Hanazaki M.D., Ph.D.  
Shannon Hancher M.D.  
William Hand M.D.  
Yuko Handa M.D.  
Alexander Hanke M.D.  
Veronika Hanko M.S.  
Amgad Hanna M.D.  
David Hanna B.S.  
Medhat Hannallah M.D., F.F.A.R.C.S.  
Pol Hans M.D.  
Neil Hanson M.D.  
Shehnaz Hansoti M.D.  
Qi Hao Ph.D.  
Shuanglin Hao M.D., Ph.D.  
Yang Hao M.Med.  
Masato Hara M.D., Ph.D.  
Tetsuya Hara M.D.  
Shuto Harada M.D.  
Toshiaki Haraki Ph.D.  
Mark Harbott M.D.  
Ralph Harding D.O.  
Jeremy Harnden M.D.

Priscilla Harrell M.D.  
 Fred Harrington M.D.  
 Michael Harris M.D.  
 Thomas Harrison M.D.  
 William Hart M.D.  
 Scott Harter M.D.  
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 Susan Hartrick B.S.N.  
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 Tetsutaro Hase M.D.  
 Tetsutarou Hase M.D.  
 Saori Hashiguchi M.D.  
 Mohamad Hashim M.B., B.Ch.  
 Hiroka Hashimoto M.D.  
 Tomoki Hashimoto M.D.  
 Toshikazu Hashimoto M.D., Ph.D.  
 Rifat Hasina M.D.  
 Stephen Haskins M.D.  
 Melanie Hasler -  
 Mohammad Hassanian M.D.  
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 Toshiyuki Hatano M.D.  
 Kohshi Hattori M.D.  
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 Jeana Havidich M.D.  
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 Leif Havton M.D., Ph.D.  
 Katie Hawthorne M.D.  
 Kengo Hayamizu M.D.  
 Tomo Hayase M.D.  
 Haruko Hayashi M.D.  
 Hironobu Hayashi M.D.  
 Miyako Hayashi M.D.  
 Shunsuke Hayashi -  
 Yukio Hayashi M.D.  
 Masakazu Hayashida M.D.  
 Gemma Hayek M.D.  
 Salim Hayek M.D., Ph.D.  
 Kent HayGlass Ph.D.  
 Mora Hazlett-ONeill C.R.N.A.  
 Lijun He M.S.  
 Shu-fang He Ph.D.  
 Xiang He M.D.  
 Zhaoping He Ph.D.  
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 Shinichiro Kato M.D.  
 Shinya Kato M.D.  
 Takao Kato M.D.  
 Yoshiko Kato M.D.  
 Takasumi Katoh M.D.  
 Nobuyuki Katori M.D.  
 Azusa Katou M.D.  
 Takayuki Katsuragawa M.D.  
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 Aki Kawasaki M.D.  
 Hirokazu Kawase M.D.  
 Kohei Kawashima M.D.  
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 Aaron Kaye B.S. (expected)  
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 Kamal Khabbaz M.D.  
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 Nazia Khan M.B.B.S.  
 Omar Khan M.D.  
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 Shilpa Khanna M.D.  
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 Hyuck-goo Kim M.D.  
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 Il Seok Kim M.D.  
 Jae Hwan Kim Ph.D.  
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 Won Ho Kim M.D.  
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 Hiroki Kimura M.D.  
 Satoshi Kimura M.D.  
 Tetsuro Kimura M.D.  
 Yoshinobu Kimura M.D.  
 Yusuke Kimura M.D.  
 David King M.D.  
 Michael King M.D.  
 Adam Kingeter M.D.  
 Sakura Kinjo M.D.  
 Hiroyuki Kinoshita M.D.  
 Michael Kinsky M.D.  
 Usha Kiran M.D.  
 Nathan Kirkpatrick n/a  
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 Mai Kishi M.D.  
 Joseph Kisslo M.D.  
 Hiroshi Kitahata M.D.  
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 Eberhard Kochs M.D.  
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 Bhavani Kodali M.D.  
 Mitsuyoshi Kodama M.D.  
 Matthew Koff M.D.  
 Yasuhiro Kogure M.D.  
 Matthias Kohlhauser D.V.M., M.Sc.  
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 Moe Koide M.D.  
 Yasuhiro Koide M.D.  
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 Takashi Kondoh M.D.  
 Myoung Hoon Kong M.D., Ph.D.  
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 Lana Kuang M.D.  
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 Yosuke Kubota M.D.  
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 Taftan Kuhl M.D.  
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 Xin Li M.D., Ph.D.  
 Xuehan Li M.D.  
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 Ya-Wei Li M.D.  
 Yize Li Master  
 Yu Li M.D.  
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 Yue Li M.D.  
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