Count on Teleflex Anesthesia:
FOR INTUITIVE, MORE SECURE PLACEMENT
FOR ONE-LUNG VENTILATION

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Learning Track Codes

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

AM ________________ Ambulatory Anesthesia
CA _________________ Cardiac Anesthesia
CC _________________ Critical Care Medicine
FA _________________ Fundamentals 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)

Making their debut at ANESTHESIOLOGY 2012, all Poster Discussion Sessions and preselected scientific poster presentations will be presented and displayed on flat screen monitors. E-Posters will be located in a designated area in Hall C, lower level. Poster Discussion sessions will be located in the South Building of the Convention Center in rooms 101, 103A and 103b. Additional computer kiosks will be located throughout the convention center for viewing e-Posters on demand which will allow the attendee an opportunity to view full resolution posters at their leisure. These on-demand computer kiosks will be located in the West Salon Pre-function area in the Grand Lobby in the South Building (street level), the concourse area of the North Building on the street level near room 152 and the Concourse level right above Exhibit Hall C.

Scientific Abstract Sessions

Providing an in-depth and informative discussion between authors and attendees consisting of Oral Presentations, Poster Discussions and Poster Sessions, authors will present a summary of their study hypothesis, methods, data and conclusions. Questions and comments from the audience are welcome and encouraged at the conclusion of the presentation. Poster authors will be available for discussion during designated periods throughout ANESTHESIOLOGY 2012.

Late-Breaking Abstracts

These scientific presentations will focus on highly significant and timely findings showcasing ground-breaking data and high-impact results. Viewing times will be available during ANESTHESIOLOGY 2012.

Accreditation/Designation

The American Society of Anesthesiologists is accredited by the Accreditation Council for Continuing Medical Education (ACCMCE) to provide continuing medical education for physicians. The American Society of Anesthesiologists designates this live activity for a maximum of 42.5 AMA PRA Category 1 Credit(s)™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Disclosure Statement

Disclosure information for all abstract authors can be found at www.asa-abstracts.com.

Photography/Videotaping Policies

No photography, videotaping or audio taping is permitted in the scientific abstract sessions, instructional courses, exhibit hall or committee meetings.
Joy L. Hawkins, M.D., Chair
Steven Roth, M.D., Vice-Chair
Douglas R. Bacon, M.D.
Ansgar M. Brambrink, M.D.
Daniel R. Brown, M.D.
Asokumar Buvanendran, M.D.
Mark A. Chaney, M.D.
William R. Furman, M.D.
Peter A. Goldstein, M.D.
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Andrea M. Kurz, M.D.
Jacqueline Leung, M.D.
Stephen T. Robinson, M.D.
Brett A. Simon, M.D., Ph.D.
Susan T. Verghese, M.D.
Cynthia A. Wong, M.D.
Monday, October 15, 8-10 a.m.
Room 144C

FA
BOS01 Effects of Forebrain HCN1 Channels Contribute to Hypnotic Actions of Ketamine

Xiangdong Chen, M.D., Ph.D., Douglas A. Bayliss, Ph.D., Department of Anesthesiology, West China Hospital of Sichuan University, Chengdu, China, Department of Pharmacology, University of Virginia, Charlottesville, VA. Understanding how and where anesthetics act is critical for modern medicine. We recently showed that the hyperpolarization-activated HCN1 channels are inhibited by ketamine and could be an important target for ketamine action. In this study, we employed forebrain-specific HCN1 knockout mice to examine which neuronal HCN channels contribute to ketamine anesthesia. After validating HCN1 deletion and loss of ketamine actions on HCN1 channels in cortical neurons, we tested the hypnotic action of ketamine in these mice. We found ketamine action was dramatically reduced in forebrain HCN1 knockout mice. These data suggest that selective inhibition of HCN1 channels in forebrain neurons contributes to hypnotic action of ketamine.

FA
BOS02 Assessment of Homology Templates and the Anesthetic Binding Site Within the GABA Receptor

Edward Bertaccini, M.D., James R. Trudell, Ph.D., Department of Anesthesia, Stanford University and Palo Alto VA Hospital, Palo Alto, CA. Given the newly released NMR structures of the alpha 4 and beta 2 nAChR subunits, it is clear where discrepancies exist in the intermediate resolution structure (2BG9) of the torpedo nAChR structure derived from cryoelectron microscopy. Consensus structural alignment based on the 5 remaining homologous templates (2LLY, 2LM2, 1RIA, 3EAM, 2VL0) reveals an intersubunit anesthetic binding cavity that has characteristics that allow reasonable correlation of ligand docking scores with experimentally derived ligand-binding affinities.

NA
BOS03 Specific Hypersensitivity to Volatile Anesthetics in a Mouse Lacking Ndufs4, a Subunit of Mitochondrial Complex I.

Margaret M. Sedensky, M.D., Albert Quintana, Ph.D., Richard D. Palmiter, Ph.D., Phil G. Morgan, M.D., Anesthesiology and Pain Medicine, Seattle Children’s Research Institute, HHMI, Biochemistry, University of Washington, Anesthesiology and Pain Medicine, University of Washington, Seattle, WA. Our data indicate that, as in worms and humans, complex I dysfunction can significantly sensitize mice to the effects of volatile anesthetics. Surprisingly, this same mutation leads to a resistance to ketamine. The change in VA sensitivity is perhaps all the more surprising in view of its specificity.

NA
BOS04 Antisense Inhibition of De Novo Pkmζ Synthesis: A Novel Highly-Specific and Potent Amnestic Agent

Panayiotis Tsokas, Ph.D., Changchi Hsieh, M.A., Ira S. Kass, Ph.D., Todd C. Sacktor, M.D., James E. Cottrell, M.D., Anesthesiology; Physiology and Pharmacology, SUNY Downstate Medical Center, Brooklyn, NY. In response to spatial memory consolidation, PKMζ is synthesized de novo, in the vicinity, or within activated synapses, and is specifically required for consolidation of new memories. Antisense oligodeoxynucleotide treatment blocks PKMζ synthesis during active place avoidance and prevents spatial memory consolidation, without affecting short-term memory or basal levels of PKMζ. Optimization of this approach may lead to the development of a new class of highly specific amnestic agents.

CA
BOS05 Trig Signaling Contributes to Myocardial Ischemia-Reperfusion Injury by Mediating Cardiomyocyte Apoptosis

Chan Chen, M.D., Yan Feng, M.D., Ph.D., Lin Zou, M.D., Ph.D., Howard H. Chen, Ph.D., Jun-Mei Xu, M.D., Ph.D., Jia-Yan Cai, B.S., David Sosnovik, M.D., Wei Chao, M.D., Ph.D., Department of Anesthesia, Critical Care and Pain Medicine, Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Harvard Medical School, Boston, MA, Department of Anesthesiology, the Second XiangYa Hospital, Central South University, Changsha, Hunan, China. Myocardial infarction and apoptosis were significantly attenuated in Trig mice compared with WT mice subjected to I/R as indicated by ex vivo fluorescent annexin-V imaging, caspase-3 activity, and DNA laddering. This study suggests that Trig signaling may contribute to myocardial ischemia/reperfusion injury and subsequent LV dysfunction likely by mediating cardiomyocyte apoptosis.

CA
BOS06 Unlike Opioids, Ischemic Preconditioning and Isoflurane, Intralipid is Able to Protect Caveolin-3 Knockout Mice Against I/R Injury

Siamak Rahman, M.D., Heidi Fridolfsson, Ph.D., David M. Roth, M.D., Ph.D., Hemal H. Patel, Ph.D., Mansoureh Eghbali, Ph.D., Anesthesiology, UCLA, Los Angeles, CA, UCSD, San Diego, CA. Our results suggest that Cav-3 is not required for ILP cardioprotection, or ILP cardioprotection is not solely through Cav-3.
**NA**

**BOS07 Functional Neural Connectivity of the Macaque Sensorimotor Network Under Propofol Anesthesia**

Yumiko Ishizawa, M.D., Ph.D., Demetrio Sierra, Ph.D., Ayako Uchida, B.S., John T. Gale, Ph.D., Emery N. Brown, M.D., Ph.D., Emad N. Eskandar, M.D., Anesthesia, Critical Care & Pain Medicine, Neurosurgery, Massachusetts General Hospital, Boston, MA. Single neuron activities and local field potentials were recorded from a sensorimotor network in macaque monkey in the awake-anesthetized continuum under propofol. Coherence analyses demonstrate disruption of beta oscillation between distant areas and alteration in local coherence at the animal’s loss of response, suggesting disruption of functional neural connectivity under propofol.

**NA**

**BOS08 Anesthetics Interfere with Axon Guidance and Growth Cone Function in Developing Neocortical Neurons via a GABAA Receptor Mechanism**

1st Place Resident Research Award Winner

Cyrus D. Mintz, M.D., Ph.D., Kendall M. S. Barrett, Student, Sarah C. Smith, M.D., Deanna L. Benson, Ph.D., Neil L. Harrison, Ph.D., Anesthesiology, Columbia University Medical Center, New York, NY, Neuroscience, The Mount Sinai School of Medicine, New York, NY. Pediatric exposure to general anesthetics may cause learning disability. Previous work in this field has focused on the potential for anesthetics to cause neuronal cell death. We show that anesthetic agents disrupt axon guidance via activity at GABAA receptors, thus defining a new potential mechanism for harmful effects of anesthetics on the developing brain.

**NA**

**BOS09 The Subsequent Memory and Subsequent Forgetting Effects of Propofol Revealed With Event-Related Functional Magnetic Resonance Imaging (fMRI)**

Michael T. Alkire, M.D., Hiroki Hayama, Ph.D., Kristin Drumheller, M.S., Chris Reist, M.D., Larry Cahill, Ph.D., Long Beach VA Healthcare System & University of California, Irvine, CA. Using event-related fMRI techniques in humans, it was determined that both cortical subsequent forgetting effects and attenuated hippocampal subsequent memory effects contribute to the amnesia produced by low-dose propofol.

**FA**

**BOS10 The Effects of Disparities in Disease Prevalence on Type I Error Rates When Comparing Mortality Between Populations Matched on Imperfect Markers of Disease: A Database Simulation Study**

Robert B. Schonberger, M.D., Todd A. Gilbertsen, B.S., Feng Dai, Ph.D., Department of Anesthesiology, Yale University School of Medicine, Yale-New Haven Hospital System, Yale Center for Analytical Sciences, Yale School of Public Health, New Haven, CT. This Monte Carlo simulation study demonstrates the degree to which studies using administrative data are vulnerable to residual confounding by imperfectly measured confounders, particularly when the populations being studied carry large baseline differences in the prevalence of the confounding conditions.

**FA**

**BOS11 Naloxone Blocks Lipid Rescue of Bupivacaine-induced Cardiotoxicity in a Dose-Dependent Manner**

Parisa Partownavid, M.D., Soban Umar, M.D., Ph.D., Siamak Rahman, M.D., Mansoureh Eghbali, Ph.D., Anesthesiology, UCLA, Los Angeles, CA. Opioid receptor antagonist naloxone abolishes lipid rescue of bupivacaine-induced cardiotoxicity.

**PN**

**BOS12 The Mu Opioid Receptor Promotes Opioid and Growth Factor-Induced Epithelial Mesenchymal Transition (EMT) in Human Non-Small Cell Lung Cancer**

Jonathan Moss, M.D., Ph.D., Frances E. Lennon, Ph.D., Tamara Mirzapoiazova, M.D., Ph.D., Bolot Mambetsariev, Ph.D., Ravi Salgia, M.D., Ph.D., Patrick A. Singleton, Ph.D., University of Chicago, Chicago, IL. This study demonstrates that the mu opioid receptor promotes epithelial-mesenchymal transition in human NSCLC cells, a crucial process for cancer progression.
**BOC01 Prefrontal White Matter and Functional Network Changes After Cardiac Surgery**

Gina C. Badescu, M.D., Jeffrey N. Browndyke, Ph.D., Todd B. Harshbarger, Ph.D., Tiffany Bisanar, R.N., Monique Fontes, B.A., Mihai V. Podgoreanu, M.D., Mark E. Newman, M.D., Joseph P. Mathew, M.D., Anesthesiology, Psychiatry, Duke University, Durham, NC. Regional differences in white matter patency after cardiac surgery were correlated with postoperative cognitive dysfunction.

**BOC02 High-Sensitive Troponin T in Prediction and Diagnosis of Perioperative Myocardial Infarction**

Peter Nagele, M.D., M.S., Frank Brown, B.S., Mitchell Scott, Ph.D., Brian Gage, M.D., M.S., Phil J. Miller, Ph.D., Department of Anesthesiology, Department of Pathology and Immunology, Department of Internal Medicine, Biostatistics, Washington University, St. Louis, MO. Preoperative hsTNT concentrations can be detected in most adult patients with or at risk for coronary artery disease before surgery and may be useful in preoperative risk-stratification for postoperative myocardial infarction.

**BOC03 Epidural Blockade Affects the Predictive Accuracy of a Target Controlled Infusion With Propofol**

Eliske Sitsen, M.D., Agnes Lesman, M.D., Erik Olofsen, M.Sc., Albert Dahan, M.D., Ph.D., Jaap Vuyk, M.D., Ph.D., Anesthesiology, Leiden University Medical Center, Leiden, Netherlands. Central neuraxial blockade (CNB) affects propofol pharmacodynamics. This study evaluated in a double blind manner the influence of epidural blockade with ropivacaine 0, 50, 100 and 150 mg on propofol pharmacokinetics, in particular on the predictive accuracy of propofol target controlled infusion. We conclude that with increasing epidural blockade level, the predictive accuracy of a target controlled infusion system (TCI) decreases such that the measured blood propofol concentrations increasingly exceed those predicted by TCI.

**BOC04 Optimizing Preoperative Blood Ordering for Low Blood Loss Surgical Procedures Using Data Acquired From an Anesthesia Information Management System**

James Rothschild, M.D., Courtney G. Masear, M.D., Will J. Savage, M.D., Paul M. Ness, M.D., Steven M. Frank, M.D., Anesthesiology/Critical Care Medicine, Pathology, The Johns Hopkins Medical Institutions, Baltimore, MD. Data collected from an anesthesia information management system were used to identify surgical procedures that very rarely required blood transfusion, yet were often ordered for type and screen or type and cross-match. This list of procedures can be used to develop algorithms to reduce or eliminate unnecessary preoperative blood orders.

**BOC05 The Effect of Intensive Glucose Control on Outcomes Following Major Non-Cardiac Surgery (DeLiT Trial)**

Basem B. Abdelmalak, M.D., Ankit Maheshwari, M.D., Jing You, B.A., Angela Bonilla, M.D., Daniel I. Sessler, M.D., Departments of General Anesthesiology and Outcomes Research, Anesthesiology Institute, Quantitative Health Science, Outcomes Research, Cleveland Clinic, Cleveland, OH. Our randomized trial did not show any evidence that intraoperative tight glucose control reduces serious surgical outcomes following major noncardiac surgery.

**BOC06 Beta Blockade and Clinical Outcomes in Aneurysmal Subarachnoid Hemorrhage**

Melody M. Chang, M.D., Jessie J. Southerland, M.D., Dare Adewumi, M.D., Rafeek Woods, M.D., Olaide Ajayi, M.D., Rajeev Samuel, B.S., Bryan S. Lee, B.S., Frank Hsu, M.D., Richard L. Applegate, II, M.D., Ihab Dorotta, M.D., Anesthesiology, Neurosurgery, Loma Linda University Medical Center, Loma Linda, CA. Aneurysmal subarachnoid hemorrhage (aSAH) may be complicated by hypertension, neurogenic myocardial stunning, and cerebral vasospasm. Management often involves beta blockade. Adults with aSAH were retrospectively analyzed for any relationship between beta blockade and clinical outcomes, including vasospasm, infarction, death, and discharge status. The use of beta blockers in aSAH is associated with increased incidence of radiographic cerebral vasospasm. However, despite the increased rate of vasospasm, the use of beta blockers was associated with improved discharge characteristics.
Is Recovery From Acute Kidney Injury Associated With Improved Survival?

Milo Engoren, M.D., Cynthia Arslanian-Engoren, Ph.D., Thomas A. Schwann, M.D., Sachin Kheterpal, M.D., Robert H. Habib, Ph.D., Anesthesiology, University of Michigan, Ann Arbor, MI, University of Toledo, Toledo, OH, American University of Beirut, Beirut, Lebanon. Recovery from acute kidney injury is associated with some improvement in perioperative survival. However, it is not associated with improved long-term survival.

Temporal Trends and Predictors of Severe Maternal Sepsis and Mortality During Hospitalization for Delivery

Melissa E. Bauer, D.O., Brian Bateman, M.D., Amy Shanks, M.S., Jill Mhyre, M.D., Anesthesiology, University of Michigan, Ann Arbor, MI, Massachusetts General Hospital, Boston, MA. Sepsis is currently the leading cause of direct maternal death in the UK; the population-level incidence and temporal trends in the U.S. are unknown. Admissions for delivery were extracted and analyzed from the Nationwide Inpatient Sample for 1998-2008. Of 9,245,079 admissions, delivery-related sepsis complicated 1:3351 deliveries, and the rate of death and severe sepsis among parturients with sepsis increased between 1998 and 2008. Chronic renal insufficiency, chronic liver disease, stillbirth, retained products of pregnancy and cesarean delivery were the strongest predictors of severe sepsis during hospitalization for delivery.

Administration of Propofol After Learning Improves Memory Performance in Human Subjects Via Loss of Competitive Consolidation: Evidence That Propofol Amnesia Occurs at the Induction of Consolidation

Kane Pryor, M.D., Anne S. Blackstock-Bernstein, B.A., Daniel Feiler, B.A., Eugene Vortsman, B.A., James C. Root, Ph.D., Anesthesiology, Weill Cornell Medical College, New York, NY, University of Rochester Medical School, Rochester, NY, New York College of Osteopathic Medicine, Old Westbury, NY. The exact temporal phase of the memory consolidation cascade at which propofol acts is unresolved. We used a word learning and recall paradigm to assess possible models in human subjects. We found that at amnestic doses, propofol exhibits no retrograde amnesia and does not degrade the early consolidation of previously learned material. Propofol blocks interference from competing consolidation events, and also appears to block reconsolidation events. Our findings strongly support a model in which propofol’s critical target is an initiation / induction event in the consolidation cascade.

Genetic Polymorphisms in the Dopamine Receptor D2 are Associated With Acute Pain Severity After Motor Vehicle Collision

Yayar J. Qadri, M.D., Ph.D., Andrey V. Bortsov, M.D., 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., University of North Carolina, Chapel Hill, NC, William Beaumont Hospital, Royal Oak, MI, Massachusetts General Hospital, Boston, MA, Spectrum Health - Butterworth Campus, Grand Rapids, MI, Baystate Medical Center, Springfield, MA, North Shore University Hospital, Manhasset, NY, St. Joseph Mercy Hospital, Ann Arbor, MI, University of Florida-Jacksonville, Jacksonville, FL. This study looks at the association between acute pain reporting and genetic variations in the Dopamine Receptor 2 gene using a cohort of 969 patients who were involved in minor motor vehicle collisions and presented to the emergency department.

Chronic Pain Syndrome After Knee Arthroscopy in Young Veterans With and Without Posttraumatic Stress Disorder (PTSD)

Irene Rozet, M.D., Issuta Nishio, M.D., Ph.D., Reinette Robbertze, M.D., Adrian Vladimir Hernandez Diaz, M.D., Ph.D., Anesthesiology and Pain Medicine, University of Washington, Seattle, WA, Health Outcomes and Clinical Epidemiology, Cleveland Clinic, Cleveland, OH. A chart review of 145 Veterans who underwent ambulatory Knee Arthroscopy revealed a 32% incidence of post-traumatic stress disorder (PTSD), which was associated with higher preoperative and perioperative use of opioids, compared to non-PTSD. Any preoperative use of opioids was a strong predictor for developing of postoperative chronic pain syndrome.

Use of Ultrasound Guidance for Peripheral Nerve Blockade is Associated With a Reduced Incidence of Local Anesthetic Systemic Toxicity

Michael J. Barrington, FANZCA, Roman Kluger, FANZCA., Department of Anaesthetics, St. Vincent’s Hospital, Melbourne, Australia. We analyzed 24,191 peripheral nerve blocks (PNB) from the Australian and New Zealand Registry of Regional Anaesthesia to determine factors associated with Local Anesthetic Systemic Toxicity (LAST). There were 21 episodes of LAST giving an incidence of 0.87 per 1000 PNB (95% CI, 0.54 - 1.3:1000). Paravertebral and upper limb blocks and increasing local anesthetic dosage were associated with an increased risk of LAST. Importantly, this large series provides the strongest evidence to date that ultrasound-guidance significantly decreases the incidence of LAST with an odds ratio of 0.21 (95% CI, 0.08 - 0.53, P = 0.001).
**FA JS01** Association of Preoperative Oximetry Parameters With Postoperative Adverse Events

Frances Chung, M.B., B.S., Limei Zhou, Ph.D., Pu Liao, M.D., Anesthesia, University Health Network, Toronto, ON, Canada. Preoperative mean SpO2, ODI, and CT90 are significant indicators for postoperative adverse events. Preoperative nocturnal oximetry may be useful in stratifying patients for the risk of postoperative adverse events.

**FA JS02** Perioperative Auto-CPAP Treatment Improved Oxygen Saturation in Patients With Moderate or Severe OSA

Pu Liao, M.D., Frances Chung, M.B., B.S., Anesthesia, Toronto University Health Network, Toronto, ON, Canada, Anesthesia, University Health Network, University of Toronto, Toronto, ON, Canada. The randomized controlled trial showed that perioperative Auto-CPAP treatment significantly improved oxygen saturation in patients with moderate and severe OSA.

**FA JS03** Differential Effects of Co- and Pre-Administration of Picrotoxin With Flumazenil on Diazepam-Induced Hypoglossal Nerve Inhibition

Shinichi Nakamura, M.D., Ph.D., Masahiko Suzuki, Pharm.D, Masaaki Nishida, M.D., Ph.D., Tsutomu Mieda, M.D., Kimie Terayama, M.D., Hiroshi Nagasaka, M.D., Ph.D., Toshiharu Azma, M.D., Ph.D., Akira Kitamura, M.D., Ph.D., Nobuyuki Matsumoto, M.D., Ph.D., Division of Anesthesia, JA Kumagaya General Hospital, Kumagaya, Japan, Pharmacology, Saitama Medical University, Hidaka, Japan, Hanyu General Hospital, Hanyu, Japan, SMU International Medical Center, Hidaka, Japan, Meikai University, Sakado, Japan, Saitama Medical University, Moroyama, Japan. We examined the effects of flumazenil and/or picrotoxin on the diazepam-induced hypoglossal nerve inhibition using vagotomized, paralyzed, anesthetized and ventilated rabbits. Flumazenil with pre-administered picrotoxin, but not by itself or with picrotoxin, evoked excitation in the hypoglossal nerve activity post-inhibited by diazepam in our experimental condition.

**FA JS04** Predictors of the Ability to Protect the Airway in Long-Term Ventilated Patients

Hooman Mirzakhani, M.D., June-Noelle Williams, M.Sc., Jennifer Mello, M.Sc., Feifei Xue, M.D., Emer M. Kelly, M.D., Sharma Joseph Emma, M.D., Matthias Eikermann, M.D., Speech, Language, Swallowing Disabilities, Anesthesia, Critical Care and Pain Medicine, Pulmonary and Critical Care Unit, Massachusetts General Hospital, Boston, MA. Fiberoptic endoscopic evaluation of swallowing is being used as bedside assessment to predict a patient’s ability to protect the airway, but the test is time and resource consuming and cannot be applied for routine screening of long term ventilated patients. Long-term ICU treatment is associated with muscle weakness which in turn may affect a patient’s ability to protect the airway. Our data suggest that muscle strength measurement might be a viable tool to predict a patient’s ability to protect the airway.

**FA JS05** Development and Validation of the MGH Postoperative Respiratory Complications Prediction Score (PORCS)

Britta Brueckmann, M.D., Jonathan Wanderer, M.D., Brian T Bateman, M.D., Martina Grosse Sundrup, M.D., Christopher L Schlett, M.D., M.P.H., Matthias Eikermann, M.D., Ph.D., Department of Anesthesia, Critical Care and Pain Medicine, Department of Radiology, Massachusetts General Hospital, Boston, MA. The developed and validated MGH Postoperative Respiratory Complications Prediction Score (PORCS) predicts severe postoperative respiratory complications based on information readily available at the time of preadmission evaluation.

**FA JS06** Risk Factors for Opioid-Induced Respiratory Depression Deduced From 30 Years of Case Reports

Albert Dahan, M.D., Ph.D., Marieke Niesters, M.D., M.S., Leon Aarts, M.D., Ph.D., Frank Overdyk, M.D., Ph.D., Anesthesiology, Leiden University Medical Center, Leiden, Netherlands, Anesthesiology, Hofstra University School of Medicine, Hempsted, NY. A systematic analysis of case reports on opioid-induced respiratory allowed isolation of specific risk factors for opioid-induced respiratory. Most important risk factors include age, sleep-related breathing disorders, renal failure and co-medication either causing pharmacokinetic but more importantly pharmacodynamic interactions.
Nocturnal Oxyhemoglobin Desaturation Predicts Spontaneous Pain in Subjects With Sleep-disordered Breathing, Independently of Sleep Fragmentation and Systemic Inflammation

Anthony Doufas, M.D., Ph.D., Lu Tian, Ph.D., Frances Davies, Ph.D., Department of Anesthesia, Health Research and Policy, Health Research and Policy, Stanford University School of Medicine, Stanford, CA. We used sleep phenotypes data collected in the Cleveland Family Study (CFS) to examine the effect of nocturnal desaturation on the severity of different types of pain reported by the participants, independently of sleep fragmentation and systemic inflammation. Our findings show that nocturnal desaturation may promote pain behavior in subjects suffering for SDB independently of disturbances in their sleep continuity and the presence of systemic inflammation.

Ketamine to Avoid Hypoventilation in Patient Undergoing Deep Sedation: A Randomized, Controlled, Double-Blinded Study

Gildasio S. De Oliveira, Jr., M.D., M.S., Paul Fitzgerald, M.S., Robert McCarthy, Pharm.D., Anesthesiology, Northwestern University, Chicago, IL. This randomized, double-blinded, placebo-controlled trial showed that ketamine reduces intraoperative hypoventilation and the need for rescue airway maneuvers in patients undergoing deep sedation.

Evaluation of the Accuracy of a Continuous, Non-Invasive System for Monitoring Tidal Volume, Respiratory Rate and Minute Ventilation in Non-Intubated Patients

Jenny E. Freeman, M.D., Nicole Yocum, M.A., Alexander Panasyuk, Ph.D., Michael Lalli, B.S., Svetlana Panasyuk, Ph.D., Darren Fahy, B.S., Elizabeth Messana, B.S., Christopher J. Voscopoulos, M.D., Respiratory Motion, Inc, Waltham, MA, Brigham and Women’s Hospital, Boston, MA. This study evaluated the accuracy and precision of a continuous, non-invasive respiration monitor in measuring minute ventilation, tidal volume, and respiratory rate over a 24-hour period. Respiratory parameters from 47 ambulatory subjects were compared against a handheld spirometer showing clinically relevant accuracy (accuracy of 13.0% (MV), 12.7% (TV), and 2.9% (RR); precision of 12.3% (MV), 11.9% (TV), and 2.9% (RR)). An additional study is under way in the perioperative setting to test utility and accuracy in sicker populations, which has potential to increase patient safety.

Accuracy of Acoustic Respiration Rate Monitoring in Pediatric Patients

Mario Patino, M.D., Mohamed Mahmoud, M.D., Dean Kurth, M.D., Daniel T. Redford, M.D., Thomas W. Quigley, M.D., Peter Szumuk, M.D., Anesthesia, Cincinnati Children’s Hospital Medical Center, Cincinnati, OH, Anesthesiology, University of Arizona, Tucson, AZ, Anesthesiology, Children’s Medical Center Dallas, Dallas, TX. Monitoring the respiratory rate of infants, children and adolescents during the perioperative care is critical for early detection of respiratory complications that alert the anesthesiologist for early interventions that avoid life-threatening events. Recently, Masimo developed a bio-acoustic sensor (Rainbow Acoustic Monitoring, RAM) that facilitates the respiratory rate monitoring. In this multicenter study we found that respiratory rate measured from noninvasive, acoustic monitoring had similar accuracy and precision as nasal capnography, the current standard of care in pediatric patients.
A004  Femoral Nerve Sheath Infusion With Fentanyl Causes a Local Analgesic Process

Enrico M. Camporesi, M.D., Devanand Mangar, M.D., Cong Wang, M.D., Rachel A. Karhnoski, M.D., Katheryne L. Downes, M.P.H., Surgery, University of South Florida, Florida Gulf to Bay Anesthesiology, Biostatistics Core, University of South Florida, Tampa, FL. Superior pain relief while ambulating occurred in subjects treated with a fentanyl infusion via a femoral nerve sheath catheter compared to the IV infusion group. We postulate that femoral nerve sheath catheter infusions of fentanyl may have a localized analgesic effect rather than systemic since serum levels were significantly lower.

A005  Binding, Binding Site and G Protein Activation of Mu Opioid Receptor

Xu Cui, Ph.D., Alexei Yeliseev, Ph.D., Renyu Liu, M.D., Ph.D., Department of Anesthesiology and Critical Care, University of Pennsylvania, Philadelphia, PA, NIAAA, NIH, Rockville, MD. In this study, we investigated whether the newly available crystal structural information nu receptor could provide insights into the biological functions of the receptor including ligand binding and G protein activation.

A006  Molecular Interactions Between General Anesthetics and the 5-HT2B Receptor

Felipe Matsunaga, B.A., Lu Gao, B.S., Xi-Ping Huang, Ph.D., Jeffrey G. Saven, Ph.D., Bryan L. Roth, M.D., Ph.D., Renyu Liu, M.D., Ph.D., Department of Anesthesiology and Critical Care, Perelman School of Medicine, Department of Chemistry, University of Pennsylvania, Philadelphia, PA, Department of Pharmacology and Division of Chemical Biology and Medicinal Chemistry, University of North Carolina Chapel Hill Medical School, Chapel Hill, NC. 5-HT receptors were screened for interactions with isoflurane and propofol to identify potential roles of 5-HT receptors in anesthetic-related pharmacological effects. The interactions between propofol and isoflurane with the 5-HT2B receptor were discovered and characterized.

A003  New Broad Spectrum Reversal Agent for Benzylisoquinoline and Steroidal Neuroumuscualr Blocking Agents

Martina Grosse-Sundrup, M.D., Ulrike Hoffmann, M.D., Leila Elamine, B.A., Da Ma, Ph.D., Ben Zhang, B.Sc., Katharina Eikermann-Haerter, M.D., Cenk Ayata, M.D., Lyle Isaacs, Ph.D., Matthias Eikermann, M.D., Anesthesia and Critical Care, Radiology, Neurology, Massachusetts General Hospital, Boston, MA, University of North Carolina, Chapel Hill, NC, Chemistry & Biochemistry, University of Maryland, College Park, MD. We developed and tested in rodents Calabadion, an acylic member of the family of Cucurbit[n]urils, as a broad spectrum reversal agent for steroidal (rocuronium) and benzylisoquinoline (cisatracurium) NMBA. Dose-dependent rapid and complete reversal from neuromuscular blockade with accelerated recovery of spontaneous breathing and Train of Four-ratio=0.9 compared to placebo was demonstrated in both groups. Calabadion is eliminated renally.

A002  Modulation of the Autonomic Nervous System in Nausea and Vomiting Induced by the Inhalation of 28% Xenon

Musa Sesay, M.D., Patrick Tazzin-Fin, M.D., Delphine Pena, M.D., Barbara Kolanek, M.D., Karine Nouette-Gaulain, M.D., Pierre Maurette, M.D., Anesthesiology, Pellegrin University Hospital, Bordeaux, France. Xe-induced nausea and vomiting is preceeded by vagal stimulation while sympathetic tone is enhanced at the onset of nausea.

A001  Intracerebroventricular Injection of Histamine Awakes the Rat Sedated by Systemic Administration of Propofol

Junko Takata, M.D., Hidetoshi Sakamoto, M.D., Shigejito Sawamura, M.D., Ph.D., Satoru Fukuda, M.D., Ph.D., Department of Anesthesiology, Teikyo University School of Medicine, Tokyo, Japan. As for the anesthetic mechanism of propofol, the histamine (HA) containing tuberomammillary nucleus has been shown to be one of target nuclei for propofol. We first evaluated the HA release from the rat cortex after intraperitoneal (i.p.) injection of propofol, and then examined whether intracerebroventricular (icv) injection of HA may reverse the sedative action of propofol in the rat. I.P. injection of propofol (10 and 30 mg/kg) decreased the cortical release of HA by 50.8% and 63.1% (p<0.01), respectively. However, the decreases in the HA release reached a plateau at 100 mg/kg (61.1%). Anesthetic scoring showed sedative states at 10 and 30mg/kg and anesthetic state at 100 mg/kg. ICV injection of HA awakened the rat from the sedative state induced by i.p. injection of 30 mg/kg propofol.
FKBP5 Variants Predict Neck Pain Persistence 6 Weeks After Motor Vehicle Collision

Jennifer Smith, B.S., Jacob Ulirsch, B.S., Andrey Bortsov, M.D., Ph.D., Robert Swor, D.O., David Peak, M.D., Jeffrey Jones, M.D., Niels Rathlev, M.D., Luda Diatchenko, M.D., Ph.D., Samuel McLean, M.D., M.P.H., Anesthesiology, UNC-Chapel Hill, Chapel Hill, NC, Emergency Medicine, William Beaumont Hospital, Royal Oak, MI, Massachusetts General Hospital, Boston, MA, Emergency Medicine, Spectrum Health System, Grand Rapids, MI, Emergency Medicine, Baystate Medical Center, Springfield, MA, Dental Surgery, UNC-Chapel Hill, Chapel Hill, NC. Several lines of evidence suggest that physiologic systems involved in the stress response may contribute to the development of whiplash-associated disorders (WAD). If this is the case, then genetic variants influencing stress system function, particularly those in the hypothalamic-pituitary-adrenal (HPA) axis, should predict WAD outcomes. This study demonstrates an association between FKBP5 polymorphisms and persistent pain six weeks after minor motor vehicle collision (MVC).

Sexually Dimorphic Influence of COMT Genotype on Peritraumatic Distress and Pain After Motor Vehicle Collision

Andrey Bortsov, M.D., Ph.D., Luda Diatchenko, M.D., Ph.D., Robert Swor, M.D., David Peak, M.D., Niels Rathlev, M.D., David Lee, M.D., Robert Domeier, M.D., Phyllis Hendry, M.D., Jeffrey Jones, M.D., Samuel McLean, M.D., M.P.H., Anesthesiology, UNC-Chapel Hill, Chapel Hill, NC, William Beaumont Hospital, Royal Oak, MI, Massachusetts General Hospital, Boston, MA, Baystate Medical Center, Springfield, MA, North Shore University Hospital, Manhasset, NY, St Joseph Mercy Hospital, Ann Arbor, MI, University of Florida, Jacksonville, FL. Prior studies of botulinum toxin type A (BoNT-A) for the treatment of myofascial pain remains unclear. We conducted a randomized, double-blind, placebo-controlled, enrichment trial to determine the efficacy of BoNT-A in treating myofascial pain. Our initial findings indicate that patients initially deemed responsive to BoNT-A therapy have a clinically and statistically significant improvement in number of headaches per week as well as quality of life in regards to general activity, sleep, and enjoyment. Patients responsive to BoNT-A also show a decrease in number of trigger points. Thus, BoNT-A is a successful therapy for the treatment of myofascial pain in patients deemed appropriate.

Aortic Aneurysm Repair

Outcomes in Patients Undergoing Endovascular Abdominal Aortic Aneurysm Repair

Minjae Kim, M.D., Guohua Li, M.D., Ph.D., Anesthesiology and Epidemiology, Anesthesiology and Epidemiology, Columbia University Medical Center, New York, NY. Recent studies suggest that patients undergoing endovascular abdominal aortic aneurysm repair (EVAR) with general anesthesia have increased morbidity and mortality compared to alternate techniques. We evaluated the effect of anesthetic technique on periprocedural acute kidney injury (AKI) in patients undergoing EVAR using data from the 2005-2010 ACS-NSQIP. We found that patients undergoing general anesthesia were a sicker cohort of patients but that there was no association between anesthetic technique and adverse perioperative AKI.
AO14 Does a Double Low of BIS and Mean Arterial Pressure Predict Worse Outcomes in Cardiac Surgical Patients?

Ankit Maheshwari, M.D., Andra E. Duncan, M.D., Jing You, M.S., Daniel I. Sessler, M.D., Outcomes Research and Anesthesiology Institute, Cardiothoracic Anesthesiology and Outcomes Research, Quantitative Health Sciences and Outcomes Research, Cleveland Clinic, Cleveland, OH. Our investigation did not find evidence that patients with a double low of low BIS and low mean arterial pressure were at higher risk for adverse post operative outcomes after cardiac surgery.

AO15 Anesthetic Induction With Etomidate, Rather Than Propofol, Is Associated With Increased 30-Day Mortality After Non-Cardiac Surgery

Ryu Komatsu, M.D., Jing You, M.S., Edward J. Mascha, Ph.D., Daniel I. Sessler, M.D., Alparslan Turan, M.D., Anesthesiology Institute, Departments of Quantitative Health Sciences and Outcomes Research, Department of Outcomes Research, Cleveland Clinic, Cleveland, OH. Use of etomidate for anesthetic induction is associated with 2.3 times higher 30-day post-operative mortality than when propofol is used. Etomidate is also associated with prolonged hospital stay, with etomidate patients 18% less to be discharged from hospital at any given postoperative time than patients induced with propofol.

AO16 Impact of Present-on-Admission Indicators on Risk-Adjusted Hospital Mortality Measurement

Jarrod Dalton, M.A., Laurent G. Glance, M.D., Edward J. Mascha, Ph.D., John Ehrlinger, Ph.D., Dongsheng Yang, M.S., Nassib Chamoun, M.S., Daniel I. Sessler, M.D., Departments of Quantitative Health Sciences and Outcomes Research, Department of Clinical Investigations, Cleveland Clinic, Cleveland, OH, Departments of Anesthesiology and Community and Preventive Medicine, University of Rochester, Rochester, NY. Benchmarking performance across hospitals requires proper adjustment for differences in baseline risk. We used data on 24 million California inpatient stays (2004-2009) to develop a risk index for in-hospital mortality using only POA diagnoses, principal procedures, and secondary procedures occurring before the date of the principal procedure. Hospital performance based on this model was compared against that arising from a model which used all diagnoses & procedures.

AO17 Major Morbidity and Mortality After Common Outpatient Surgical Procedures: A Study of Preoperative Risk Factors

Michael Mathis, M.D., Norah N. Naughton, M.D., Amy M. Shanks, M.S., Robert Freundlich, M.D., Yijia Chu, M.D., Jason Haus, M.D., Christopher Pannucci, M.D., Sachin Khetarpal, M.D., Anesthesiology, Surgery, University of Michigan, Ann Arbor, MI. Driven by improvements in perioperative care and ongoing economic pressures, the outpatient surgical population has increased in both size and complexity over the past three decades, necessitating improvements in patient screening. Through a prospective observational review of the National Surgical Quality Improvement Program database from 2005-2010, we identified independent risk factors for major morbidity and mortality following common outpatient surgical procedures. By identifying such risk factors, we hope improved preoperative patient screening will serve to reduce the incidence of morbidity and mortality in the outpatient setting.

AO18 External Validation of the Risk Stratification Index for Prediction of In-hospital Mortality and Utility in Pre-operative Risk Assessment

Jonathan P. Wanderer, M.D., Edward A. Bittner, M.D., Ph.D., Department of Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital, Boston, MA. The Risk Stratification Indices (RSI) have been proposed as a robust methodology for predicting duration of hospitalization and mortality in surgical patients based on administrative data. We have performed external validation of the in-hospital mortality RSI and explored the utility of this model in performing pre-operative risk assessment using “booked” rather than actual procedural and diagnostic codes and by incorporating data from prior surgical encounters. The in-hospital mortality RSI performed well using the validation dataset. As expected, the RSI performed less well when OR booking data rather than actual procedural data were used although it still has some predictive ability.

AO19 Cerebrovascular Autoregulation in Neonatal Hypoxic-Ischemic Encephalopathy

Abby C. Larson, B.S., Jessica L. Jamrogowicz, B.S., Jessica A. Howlett, M.D., Frances J. Northington, M.D., Maureen G. Gilmore, M.D., Chris U. Lehmann, M.D., Aylin Teker, M.D., Thierry A. Huisman, M.D., Eric Jackson, M.D., Jennifer K. Lee, M.D., Anesthesiology and Critical Care Medicine, Pediatrics, Division of Neonatology, Radiology, Johns Hopkins University, Baltimore, MD. Targeting a hemodynamic range where autoregulation is most robust with HVx monitoring may decrease the risk of cerebral ischemia. In a pilot study, neonates with HIE undergoing therapeutic hypothermia had autoregulation monitoring during hypothermia, rewarming, and 6 h of normothermia. Autoregulation monitoring was performed with an index derived from cerebral near-infrared spectroscopy (NIRS): the hemoglobin volume index (HVx). This technology promises to be a useful clinical tool to decrease neurologic injuries in neonatal HIE.

AO20 Monitoring Cerebrovascular Autoregulation in Pediatric Moya Moya Disease

Monica A. Williams, M.D., Edward S. Ahn, M.D., Abby C. Larson, B.S., Jessica Jamrogowicz, B.S., Jacky Jennings, M.D., Eugenie Heitmiller, M.D., Lori Jordan, M.D., Charles Hogue, M.D., Jennifer K. Lee, M.D., Anesthesiology and Critical Care, Pediatric Neurosurgery, School of Public Health, Johns Hopkins University, Baltimore, MD, Pediatric Neurology, Vanderbilt University, Nashville, TN. Autoregulation monitoring can identify goals that support cerebrovascular autoregulation perioperatively. Patients with Moyamoya, a disorder that results in progressive steno-occlusive changes, have a high risk of cerebral ischemic complications. Cerebral blood flow dysregulation and suboptimal hemodynamic management in the perioperative period likely play critical roles in developing ischemia. In this study, we sought to determine whether autoregulation monitoring using novel indices derived from cerebral NIRS would identify blood pressure ranges that optimize autoregulatory function.
Trendelenburg position. We found that not only rSO2 but also the baseline (supine position) and at 5 min after adopting the 20-degree human adults. In 10 healthy volunteers, the ONSD was measured at PN Pain Medicine PD Pediatric Anesthesia PI Professional Issues RA Regional Anesthesia and Acute Pain AM Ambulatory Anesthesia CA Cardiac Anesthesia CC Critical Care Medicine FA Fund. of Anesthesiology NA Neuroanesthesia OB Obstetric Anesthesia Room 103B

A021 Impact of Surgery Type on Postsurgical Changes in Cortical Volume
Richard P. Kline, Ph.D., Elizabeth Pirraglia, M.S., Yi Li, M.D., Michael Haile, M.D., Mony J. de Leon, Ed.D., Alex Bekker, M.D., Ph.D., Anesthesiology, Psychiatry, NYU Langone Medical Center, New York, NY, Anesthesiology, UMDNJ-New Jersey Medical School, Newark, NJ. After surgery, elderly subjects from the ADNI database experienced an increased rate of brain atrophy during the initial evaluation interval, a time associated with risk for postoperative cognitive dysfunction. We now examine orthopedic surgical subjects, a more homogeneous subset, and find that the atrophy recovers during the 2 six month follow up interval, suggesting a role for plasticity and surgery type in post surgical brain volume changes.

A022 Influence of Hyperosmolar Solution on Perifocal Tumor Edema: Evaluation With MRI
Angelika Langheinrich, M.D., Andrea Holzer, M.D., Brigitte Gatterbauer, M.D., Christian Nasel, M.D., Udo M. Illievich, M.D., Anesthesiology and General Intensivcare, Neurosurgery, Medical University of Vienna, Vienna, Austria, Radiology, State Clinical Center, Tulln, Austria, Anesthesiology and Intensivcare Medicine, Wagner Jauregg Hospital, Linz, Austria. We investigated the influence of hyperosmolar solution on perifocal tumor edema in patients with supratentorial metastasis by MRI. The differences in Tw at two different time points demonstrate a reduction in brain water content after infusion of Hyperhes®.

A023 Cerebral Tissue Oxygen Saturation Remains Stable During the Hypotensive Period Caused by Anesthesia Induction
Lingzhong Meng, M.D., Brenton S. Alexander, B.S., David L. McDonagh, M.D., Anesthesiology, Duke University Medical Center, Durham, NC, University of California, Irvine, CA. Cerebral tissue oxygen saturation remains stable during the hypotensive period caused by anesthesia induction. How anesthesia induction-related hemodynamic changes should be managed and what are the end-points of management need to be better defined.

A024 Effect of the Trendelenburg Position on the Optic Nerve Sheath Diameter and Cerebral Oxygen Saturation
Rie Yasumura, M.D., Yoshiro Kobayashi, M.D., Ph.D., Kana Miyagawa, M.D., Kyoasu Takahashi, M.D., Nanako Sato, M.D. National Hospital Organization Tokyo Medical Center, Tokyo, Japan. Ultrasonographic measurements of the optic nerve sheath diameter (ONSD) correlate with signs of elevated intracranial pressure (ICP). Further, the Trendelenburg position has been shown to increase ICP, thereby affecting cerebral oxygen saturation (rSO2). Thus, this study was designed to determine if there are any changes in the ONSD and rSO2 between the supine and Trendelenburg positions in healthy human adults. In 10 healthy volunteers, the ONSD was measured at baseline (supine position) and at 5 min after adopting the 20-degree Trendelenburg position. We found that not only rSO2 but also the ONSD increased immediately after adopting the Trendelenburg position, and therefore ONSD will be acceptable as a good and rapid indicator of ICP.

A025 Intestinal Mast Cell Activation Links Local Injury and Systemic Inflammation in Rat Model of Deep Hypothermic Circulatory Arrest
Jorn A. Karhausen, M.D., Ma Qing, M.D., Amelia Gibson, B.S., Adam J. Moeser, Ph.D., Soman N. Abraham, Ph.D., Burkhard G. Mackensen, M.D., Department of Anesthesiology, Departments of Pathology, Molecular Genetics and Microbiology, and Immunology, Duke University Medical Center, Durham, NC, College of Veterinary Health Medicine, North Carolina State University, Raleigh, NC. Intestinal ischemia/reperfusion injury was the primary pathology observed following deep hypothermic circulatory arrest in a rat model. Further characterization revealed that intestinal mast cell activation was not only important for local injury but also significantly influenced systemic inflammatory responses.

A026 The Role of Hyperglycemia-Generated Reactive Oxygen Species in the Attenuation of Anesthetic Preconditioning in Cardiomyocytes Derived From Patient-Specific Induced Pluripotent Stem Cells
Scott Canfield, B.S., Danielle Twaroski, B.S., Chika Kikuchi, M.D., Xiaowen Bai, M.D., Ph.D., Zeljko J. Bosnjak, Ph.D., Anesthesiology, Medical College of Wisconsin, Milwaukee, WI. Cardiomyocytes derived from diabetic and non-diabetic induced pluripotent stem cells and varying glucose levels has enabled us to investigate the role of high glucose-induced ROS generation and changes in mitochondria membrane potential in the inefficiency of diabetics to be preconditioned.

A027 Rapid Activation of G-protein Coupled Estrogen Receptor 1 Protects the Heart Against Ischemia/Reperfusion Injury by Inhibiting the mPTP Opening Via PKC/ERK/GSK-3β Pathway
Jean Chrisostome Bopassa, Ph.D., Rong Lu, M.D., Ph.D., Harpreet Singh, Ph.D., Bjorn Olde, Ph.D., Andree Krust, Ph.D., L.M. Fredrik Leeb-Lundberg, Ph.D., Ligia Toro, Ph.D., Enrico Stefini, M.D., Ph.D., Anesthesiology, University of California Los Angeles, Los Angeles, CA, Department of Experimental Medical Science, Lund University, Lund, Sweden, Institut de Genetique et Biologie Moleculaire et Cellulaire, Illkirch, France. Acute activation of GPER1 induces cardioprotection against ischemia/reperfusion injury. Estrogen effects through GPER1 are associated with phosphorylation of Akt, GSK-3 and ERK1/2, translocation of PKC, and inhibition of the mPTP opening. Akt, ERK1/2 and GSK- phosphorylation occur early within 5 min of estrogen treatment but only GSK-3 activation is sustained throughout reperfusion.
A028 Effect of Helium Induced Pre- and Postconditioning on P38 MAP Kinase in Patients Subjected to CABG Surgery
Kirsten Smit, M.D., Daniel Brevoord, M.D., Markus W. Hollmann, Ph.D., Wolfgang S. Schlack, Ph.D., Stef G. De Hert, Ph.D., Antoine H. Driessen, Ph.D., Bas A. De Mol, Ph.D., Nina C. Hauck-Weber, Ph.D., Benedikt Preckel, Ph.D., Anesthesiology, Cardiothoracic Surgery, Academic Medical Centre, Amsterdam, Netherlands, Anesthesiology, Gent University Hospital, Gent, Belgium. We investigated the effect of helium pre- and postconditioning on P38MAPK in myocardial tissue of patients undergoing coronary artery bypass graft surgery. Our data indicate that helium preconditioning most likely does not affect levels of phosphorylated P38MAPK in myocardial tissue from patients undergoing CABG surgery. We observed an increase in phosphorylated P38MAPK in our untreated controls. Further research is needed to elucidate the role of P38MAPK in CABG surgery in humans.

A029 Greater Myocardial Susceptibility to Ischemia/Reperfusion Injury in Late Pregnancy may in Part Be Due to Deactivation of Akt/ERK and STAT3 Signaling Pathways
Jingyuan Li, Ph.D., Andrea Iorga, Ph.D., Ji-Youn Youn, Ph.D., Hua Cai, Ph.D., Vera Regitz-Zagrosek, Ph.D., Mansoureh Eghbali, Ph.D., UCLA, Los Angeles, CA, Institute of Gender in Medicine and Center for Cardiovascular Research, Charité University Hospital, Berlin, Germany. Higher vulnerability of LP hearts to I/R injury is associated with reduced phosphorylation levels of Akt, ERK and STAT3.

A030 The Hibernator Cardioprotective Phenotype is Mediated in Part Through Attenuation of Reperfusion-Induced NF-Kb Regulated Myocardial Inflammation
Quinton J. Quinones, M.D., Ph.D., Qing Ma, M.D., Zhiqian Zhang, Ph.D., James Bain, Ph.D., Christopher Burkhard Newgard, Ph.D., Brian M. Barnes, Ph.D., Mihai V. Podgoreanu, M.D., Anesthesiology, Stedman Nutrition and Metabolism Center, Duke University, Durham, NC, Institute of Arctic Biology, University of Alaska at Fairbanks, Fairbanks, AK. The hibernator cardioprotective phenotype is associated with reduced NF-kB myocardial signaling.

A032 Femoral Nerve Block (FNB) for Total Knee Arthroplasty: Impact on Length of Hospital Stay
Chunyuan Qiu, M.D., Renato Ettata, M.D., Diana LaPlace, M.D., Vu Nguyen, M.D., David Rodriguez, Student, Kimberly Saldana, Student, Jessica Qiu, Student, Celine H. Jo, Student, Chandra Heyman, M.B.A., Anesthesiology, Kaiser Permanente Baldwin Park Medical Center, Baldwin Park, CA. We demonstrated that FNB did not prolong or reduce LHS as comparing to the conventional narcotic based pain management following TKA in our patient population.

A033 Preoperative Pain Catastrophizing Predicts Acute Pain After Total Knee Replacement
Asokumar Buvanendran, M.D., Mario Moric, M.S., Lia Vilaro, R.N., Sandra C. Toleikis, M.S., Jeffrey S. Kroin, Ph.D., Kenneth J. Tuman, M.D., Anesthesiology, Rush Medical College, Rush University Medical Center, Chicago, IL. Catastrophic thinking significantly predicted and was positively related with acute postoperative pain intensity.

A034 Safety of Low-Dose Ketamine Infusions on Non-Monitored Inpatient Wards: A Five Year Experience
Carlton Brown, M.D., Benjamin Daxon, M.D., Anesthesiology, WRNMMC-Bethesda, Bethesda, MD. Low-dose ketamine infusions are often used as non-opioid adjuncts for acute pain control. Many institutions restrict such infusions to ICU or PACU beds. We reviewed our five year (2007-2011) experience with ward-based ketamine infusions. 273 infusions (to 249 patients) administered over 1837 patient-days were analyzed. No elevations of patient care acuity or critical incidents resulted from any ketamine infusion. Two minor self-resolving safety incidents occurred in five years. We believe low-dose ketamine infusions can be safely administered on wards. Ward administration enhances both access to this treatment and reduces therapeutic costs. Copies of our protocols, training materials, and nursing competencies are available on request.

A035 Incision Pain Induces Learning and Memory Impairment Via Reduction in Synaptic NMDA Receptor
Xiaoxin Zhang, Ph.D., Zhipeng Xu, Ph.D., YuanLin Dong, M.D., YiYing Zhang, M.D., ZhongCong Xie, Ph.D., Geriatric Anesthesia Research Unit, Department of Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital and Harvard Medical School, Charlestown, Boston, MA. Post-operative pain contributes to learning and memory impairment by decreasing the expression of synaptic NR2B in cortex of mice.

A036 Pregabalin Reduces Long-Term Postoperative Pain Sensitization in Rat
Philippe G.m. Richebe, M.D., Ph.D., Raymond Koopmans, M.S., Mei Xu, M.D., Ph.D., Alex Cahana, M.D., Ph.D., Cyril Rivat, Ph.D., Anesthesiology and Pain Medicine, University of Washington, Seattle, WA. The actual study aimed at evaluating the ability of pregabalin given during and for 3 days after the first hind paw surgery to decrease long-term pain sensitization that is seen after a second contralateral hind paw surgery. Pregabalin treatment for a first surgery is able to oppose the long-term pain sensitization that was observed in the saline group. Nevertheless, no clear difference exists between preemptive and preventive use of perioperative pregabalin.

OR16-3 Regional Anesthesia and Acute Pain: Outcomes of Acute Postoperative Pain

RA
1-2:30 p.m.
Room 101
A040 Gaps Identified in Anesthesia Resident Intraoperative Handoff Communication: Results from Simulated Operating Room Scenarios

Erin W. Pukenas, M.D., Amanda Burden, M.D., Edward Deal, D.O., Marc Torjman, Ph.D., Keyur Trivedi, M.D., Irwin Gratz, D.O., Anesthesiology, Cooper University Hospital, Cooper Medical School of Rowan University, Camden, NJ. Handoff communication within the operating room environment is an understudied process. This study aimed to identify communication failures of anesthesia residents during simulated intraoperative handoffs.

A041 Effects of the Redesign of an OR-to-ICU Handover on Staff Workload

Noa Segall, Ph.D., Jonathan B. Mark, M.D., Alberto S. Bonifacio, B.S.N., Sharon R. Perfect, R.N., Atilio Barbeito, M.D., Rebecca A. Schroeder, M.D., Durham Veterans Affairs Medical Center and Duke University Medical Center, Durham, NC. We assessed the effects of a project to standardize the OR to surgical ICU handover on providers’ workload. Workload surveys were administered after 50 handovers before the redesign process and 50 additional handovers following the redesign. Workload decreased following the handover redesign. In part, this may be attributable to improved team behaviors that also resulted from the redesign.

A042 Redesigning the OR-to-ICU Handover: Effects on Information Omissions, Duration, Interruptions, and Team Behaviors

Noa Segall, Ph.D., Alberto S. Bonifacio, B.S.N., Rebecca A. Schroeder, M.D., Atilio Barbeito, M.D., Sharon R. Perfect, R.N., Jonathan B. Mark, M.D., Durham Veterans Affairs Medical Center and Duke University Medical Center, Durham, NC. To improve the quality of patient handovers at our institution, we standardized the handover process from the O.R. to the surgical ICU. We observed 50 handovers, assessing information transfer, teamwork, handover duration, and the number of interruptions. A redesigned handover process was then implemented and 50 additional handovers were observed. The information transfer score, handover duration, and number of interruptions were not significantly different pre- and post-implementation of the new handover process. However, the teamwork score improved significantly post-implementation.

POSTER DISCUSSIONS

All Poster Discussion sessions will be presented as e-posters.

PD10-1 Experimental Neurosciences - Toxicity & Development

A096 Prenatal Exposure to Anesthetics During the Peak of Neurogenesis Affects Cognitive Development

Vicko Gluncic, M.D., Ph.D., Jeffrey S. Kroin, Ph.D., Mario Moric, M.S., Amanda L. Persons, Ph.D., Sandra C. Toleikis, M.S., Kenneth J. Tuman, M.D., Anesthesiology, Rush University Medical Center, Rush Medical College, Neurology, Rush University Medical Center, Chicago, IL. Isoflurane and propofol anesthetics may affect neurogenesis in exposed embryos which subsequently results in postnatal behavioral abnormalities.
**A097** Prenatal Exposure to Anesthetics Impacts Neuronal Migration in Rats

Vicko Glunuc, M.D., Ph.D., Yaping Chu, M.D., Ph.D., Jeffrey S. Kroin, Ph.D., Jinluyan Li, M.D., Ph.D., Mario Moric, M.S., Kenneth J. Tuman, M.D., Anesthesiology, Rush University Medical Center, Neurology, Rush University Medical Center, Rush Medical College, Chicago, IL. Exposure to propofol or isoflurane during the peak of neuronal migration causes significant numbers of migrating neurons to fail to acquire their proper position and remain scattered within inappropriate cortical layers or in the subjacent white matter.

**A098** Cellular Mechanisms of Surgery-Induced Neuroinflammation, Aβ Accumulation, and Learning/Memory Impairment

Zhipeng Xu, M.D., Ph.D., Yuanlin Dong, M.D., M.S., Yiyi Zhang, M.D., M.S., Gregory Crosby, M.D., Zhongcong Xie, M.D., Ph.D., Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital and Harvard Medical School, Brigham and Women’s Hospital and Harvard Medical School, Boston, MA. Surgery without general anesthesia was able to induce neuroinflammation, Aβ accumulation, and learning/memory impairment in mice. The surgery-induced neuroinflammation may interact with the aging-induced elevation of Aβ levels via the IL-6-mitochondria-eIF2β-BACE pathway, leading to impairment of learning and memory.

**A099** Forced Wakefulness Enhances Neuroinflammation in Postoperative Mice

Susana Vacas, M.D., Vincent Degos, M.D., Ph.D., Mervyn Maze, M.B., Ch.B., Anesthesiology and Perioperative Care, University of California San Francisco, San Francisco, CA. With this work we aim to understand the effects of sleep deprivation in an operative setting and to what extent sleep deprivation is a contributing factor for postoperative cognitive dysfunction.

**A100** Sevoflurane Anesthesia in Pregnant Mice Induces Neurotoxicity in Fetal and Offspring Mice

Hui Zheng, M.D., Ph.D., Yuanlin Dong, M.D., M.S., Zhipeng Xu, M.D., Ph.D., Yiyi Zhang, M.D., M.S., Zhongcong Xie, M.D., Ph.D., Massachusetts General Hospital, Boston, MA. Sevoflurane anesthesia in pregnant mice increased IL-6 levels and reduced levels of PSD-95 and synaptophysin in the brain tissues of G14 fetal and P31 offspring mice. The sevoflurane anesthesia impaired learning and memory in the P31 mice. Moreover, in the neuron studies, IL-6 antibody mitigated the sevoflurane-induced reduction in PSD-95. Finally, environmental enrichment attenuated the sevoflurane-induced reduction of synapse markers and impairment of learning and memory.

**A101** Selectivity of Anesthesia Neurotoxicity in the Developing Brain

Xia Shen, M.D., Ph.D., Yuanlin Dong, M.D., M.S., Zhipeng Xu, M.D., M.S., Yiyi Zhang, M.D., M.S., Zhongcong Xie, M.D., Ph.D., Massachusetts General Hospital, Boston, MA. Anesthesia with 3% sevoflurane for two hours daily for three days increased levels of pro-inflammatory cytokines TNF-α and IL-6, promoted microglia activation, induced caspase-3 activation, and caused learning and memory impairment in young (P6) mice. In contrast, anesthesia with 3% sevoflurane for two hours daily for three days in adult mice (P60), anesthesia with 3% sevoflurane for two hours daily for one day in young (P6) mice, and anesthesia with 9% desflurane for two hours daily for three days in young mice (P6) did not lead to these detrimental effects. Finally, environmental enrichment attenuated the sevoflurane-induced learning and memory impairment.

**A102** Early Gestational Exposure to Isoflurane Does Not Cause Social Deficits in the Rodent Offspring

Arvind Palanisamy, M.D., F.R.C.A, Gregory Crosby, M.D., Deborah J. Culley, M.D., Department of Anesthesiology, Perioperative and Pain Medicine, Brigham and Women’s Hospital, Boston, MA. This rodent study demonstrates that in utero exposure to isoflurane does not cause social deficits in the offspring unlike postnatal exposure.

**A103** Propofol-Induced Apoptosis of Neurons and Oligodendrocytes in Neonatal Macaque Brain

Ansgar M. Brambrink, M.D., Ph.D., Greg A. Dissen, Ph.D., Lauren D. Martin, D.V.M., Catherine E. Creeley, Ph.D., John W. Olney, M.D., Dept of Anesthesiology and Perioperative Medicine, Oregon Health & Sciences University, Oregon National Primate Research Center, Portland, OR, Dept of Psychiatry, Washington University School of Medicine, St. Louis, MO. Neonatal rhesus macaques were exposed to a surgical plane of propofol anesthesia for 5 hours which resulted in cellular apoptosis involving neurons and glia. Propofol induced apoptosis was less pronounced than after isoflurane and quantitatively about the same as after ketamine in this model. The propofol-induced injury may have adverse long-term neurobehavioral consequences that require immediate investigation.

**PD15-1** Pediatric Anesthesia: Cardiac

**PD**

1-2:30 p.m.
Room 103A

**A104** Hypoalbuminemia at ICU Admission Predicts Postoperative Acute Kidney Injury in Children After Cardiac Surgery

Kentaro Sugimoto, M.D., Yuchiro Toda, M.D., Tatsuo Iwasaki, M.D., Kazuyoshi Shimizu, M.D., Tomoyuki Kanazawa, M.D., Noriko Ishii, M.D., Hirokazu Kawase, M.D., Kiyoshi Morita, M.D., Anesthesiology, Okayama University Hospital, Okayama, Japan. Acute kidney injury (AKI) is recognized as a complication after cardiac surgery in adults and children. In this time, we show about the possibility of serum albumin as AKI predictive marker in children after cardiac surgery. Albumin at ICU admission in Failure category by pRIFLE was significantly lower than those in other categories [3.7 (IQR; 3.5-4.1) vs 4.9 (IQR; 4.3-5.2), p<0.0001]. The AUC of Albumin at ICU admission for Failure by pRIFLE was 0.89. Regardless of the amount of albumin administered in the operating room, serum albumin at ICU admission could be an early marker of AKI in children following cardiac surgery.

**A105** Erythropoietin Neuroprotection in Neonatal Cardiac Surgery: A Phase I/I Safety and Efficacy Trial

Dean B. Andropoulos, M.D., Ken Brady, M.D., Ronald B. Easley, M.D., Heather Dickerson, M.D., Robert Voigt, M.D., Lara Shekerdemian, M.B., B.S., Marcie Meador, M.S.N., Emmett D. McKenzie, M.D., Jeffrey Heinle, M.D., Charles Fraser, M.D., Texas Children’s Hospital/Baylor College of Medicine, Houston, TX. A prospective, randomized, placebo-controlled, blinded trial of erythropoietin for neuroprotection in neonatal cardiac surgery was performed. 42 patients had Bayley Scales of Infant Development at 12 months. There were no differences in neurodevelopmental outcomes trends for the Cognitive, Language, and Motor Scores; nor were there differences in adverse events including deaths and major thromboses.
A106 Hemodynamic Response to Dexmedetomidine in Children With Cardiac Disease With and Without Pulmonary Hypertension

Christopher S. Nichols, M.D., Mark Twite, M.B., B.Ch., Kathryn Cardwell, B.S., Robert H. Friesen, M.D., Department of Anesthesia, Children's Hospital Colorado, Aurora, CO. This study aimed to evaluate the pulmonary hemodynamic response to different loading doses of dexmedetomidine in children with and without pulmonary hypertension. Increases of systemic and pulmonary vascular resistances and pressures were observed and tended to be dose-dependent, but PVR/SVR did not change.

A107 Dexmedetomidine for Sedation in Pediatric Patients: Hemodynamic Responses as a Function of Age

Edward A. Czinn, M.D., Heidy Gomez, C.R.N.A., Edward Punzalan, C.R.N.A., George J. Crystal, Ph.D., Department of Anesthesiology, Broward General Medical Center, Fort Lauderdale, FL, Department of Anesthesiology, Advocate Illinois Masonic Medical Center, Chicago, IL. Dexmedetomidine (DEX) is being used increasingly for sedation in pediatric patients but its hemodynamic effects in this population are not well defined. 118 children (age range - 3 mos to 8 yrs), undergoing diagnostic testing were sedated with IV DEX. Time dependent changes in heart rate (HR) and mean arterial pressure (MAP) were assessed. DEX caused sustained, marked decreases in HR in all children. In older children, MAP increased initially and gradually returned to baseline; in younger children, the initial pressor response was blunted and followed by hypotension. Because of their dependence on HR to maintain cardiac output, the DEX-induced bradycardia in younger children warrants special attention.

A108 Immediate Postpartum Access to Cardiac Therapy (IMPACT) in Newborns With Critical Congenital Heart Disease: Programmatic Challenges, Considerations and Performance Objective


A109 The Association of Lactate Clearance After Cardiopulmonary Bypass With Post Operative Severe Adverse Events in Pediatric Cardiac Surgery

Tomoyuki Kanazawa, Sr., M.D., Moritoki Egi, M.D., Kazuyoshi Shimizu, M.D., Yuichiro Toda, M.D., Tatsuo Iwasaki, M.D., Kiyoshi Morita, M.D., Department of Anesthesiology and Resuscitology, Okayama University Hospital, Okayama, Japan. Dynamic changes in lactate levels (lactate clearance \(\text{LAC}_{\text{Ct}}\)) in critically ill may associate with patient outcome more strongly than static indices. However, there is no study to assess relation of lactate clearance with outcomes in pediatric cardiac surgery. In this retrospective study, we included 349 pediatric patients undergone cardiac surgery required cardiopulmonary bypass (CPB). We found that 17.5% of study patients had postoperative serious events (SAE). The median \(\text{LAC}_{\text{Ct}}\) after CPB was significantly higher in patients with SAE compared with those without SAE. Even after adjusted relevant confounders using multivariate logistic regression analysis, \(\text{LAC}_{\text{Ct}}\) was independently associated with risk of SAE.

A110 Dexmedetomidine for Patients Undergoing Diagnostic Cardiac Procedures: A Non-inferiority Study

Nina Deutsch, M.D., Julia C. Finkel, M.D., Karen Gold, Ph.D., Yao Cheng, M.S., Michael Slack, M.D., Joshua Kanter, M.D., Zenaide Quezado, M.D., Children's National Medical Center, Washington, DC. This prospective non-inferiority study examined the effect of dexmedetomidine combined with sevoflurane on hemodynamics and bispectral index (BIS) in patients with a transplanted heart, Fontan physiology, or normal cardiac physiology undergoing cardiac catheterization. We concluded non-inferiority comparing steady-state with baseline for HR but not for SBP, DBP, and MAP in patients with normal and cardiac transplant physiology. This suggests that before dexmedetomidine is widely adopted for pediatric cardiac catheterization, more studies to determine effective dose, administration schedule, and effects of the combination of dexmedetomidine with currently used anesthetic drugs in various hemodynamic parameters are warranted.

A111 Response to Ischemia is Chamber-Dependent in Cardiomyocytes From Neonatal Rats With Intrauterine Nutritional Restriction

Lena S. Sun, M.D., Michale Keenaghan, M.D., Vadim Ten, M.D., Aili Wang, M.D., Pediatrics, Anesthesiology, Columbia University, New York, NY. There is a significant difference between the right and left ventricular cardiomyocytes cell viability at baseline as well as an increased vulnerability for ischemia-induced cell death. Intrauterine nutritional restriction further exacerbates the chamber-specific responses to ischemia.
A112 An Impact Study of Availability of Epidural Labor Analgesia on the Rate of Cesarean Delivery: A Report From the Chinese No Pain Labor ‘Delivery Experience

Ling Qun Hu, M.D., Jin Zhang, M.D., M.S., Cynthia A. Wong, M.D., Qinying Cao, M.D., M.S., Robert McCarthy, Pharm.D., Department of Anesthesiology, Northwestern University Feinberg School of Medicine, Chicago, IL, Department of Anesthesiology, Shijiazhuang Obstetrics and Gynecology Hospital, Shijiazhuang, Hebei Province, China. The important finding is that the introduction of neuraxial labor analgesia was associated with a significant decrease in the cesarean section delivery rate and the number of neonates with Apgar ≤ 3. No safety indicators worsened. We suggest that the introduction of neuraxial labor analgesia to Chinese women may be one method to improve labor and delivery outcomes.

A113 Availability of Lipid Emulsion in United States Obstetric Units

Heather C. Nixon, M.D., Paloma Toledo, M.D., Jill M. Myhre, M.D., Cynthia A. Wong, M.D., Guy Weinberg, M.D., Anesthesiology, University of Illinois Hospital and Health Sciences System, Anesthesiology, Northwestern University Feinberg School of Medicine, Center for Healthcare Equity/Institute for Healthcare Studies, Chicago, IL, Anesthesiology, University of Michigan, Ann Arbor, MI. The current survey sought to determine the availability of lipid emulsion on United States academic obstetric anesthesiology wards. The results of the study indicate that of the respondents, most institutions had lipid emulsion readily available with an algorithm for administration.

A114 PGRMC1 as a Mediator of the Protective Effect of Progestins on Cytokine Induced MMP 9 Activity

Terrence K. Allen, M.D., F.R.C.A, Liping Feng, M.S., Amy P. Murtha, M.D., Department of Anesthesiology, Obstetrics and Gynecology, Duke University Medical Center, Durham, NC. The progesterone membrane component 1 (PGRMC1) receptor is a novel progesterone receptor whose role still remains undefined. Using PGRMC1 specific siRNA we have demonstrated that the reduction in the proteolytic enzyme matrix metalloproteinase 9 activity may be mediated through this receptor in a human cytotrophoblast cell line expressing PGRMC1 but not the classic nuclear progesterone receptor. These findings provide some insight into the possible therapeutic mechanisms of progestins in the prevention of preterm delivery and preterm premature rupture of the membranes.

A115 The Incidence of Anxiety in Parturients Following Vaginal Delivery Versus Elective Cesarean Section

Svetlana Tsesis, B.S.N., Evgeny Brotfain, M.D., Micky Gedeon, M.D., Yuliya Popovych, M.P.H., Alexander Zlotnik, M.D., Ph.D., Department of Obstetrics and Gynecology, Department of Anesthesiology and Critical care, Department of Neurosurgery, Soroka Medical Center, Ben-Gurion University of the Negev, Beer-Sheva, Israel, Faculty of Philosophy and Sociology of Public Administration, Dnipropetrovsk, Ukraine. A vaginal delivery is associated with significantly increased anxiety prior to delivery compared to patients undergoing an elective cesarean section.

A116 Spoken Language and Disparities in Labor Epidural Use

Paloma Toledo, M.D., M.P.H., Cynthia A. Wong, M.D., William A. Grobman, M.D., M.B.A., Joe Feinglass, Ph.D., Romana Hasnain-Wynia, Ph.D., Anesthesiology, Obstetrics and Gynecology, General Internal Medicine, Institute for Healthcare Studies/Center for Healthcare Equity, Northwestern University, Chicago, IL. A disparity in epidural analgesia use exists based on spoken language. It is possible that health literacy or communication barriers exist to knowledge or understanding of analgesic options.

A117 Racial/Ethnic Differences in Knowledge of Labor Neuraxial Analgesia

Paloma Toledo, M.D., M.P.H., Cynthia A. Wong, M.D., William A. Grobman, M.D., M.B.A., Maleeha Mohiuddin, M.D., Romana Hasnain-Wynia, Ph.D., Anesthesiology, Obstetrics and Gynecology, Institute for Healthcare Studies/Center for Healthcare Equity, Northwestern University, Chicago, IL. A racial/ethnic disparity exists in labor neuraxial analgesia use. It is unknown if there is a relationship between health literacy and epidural analgesia use. A survey of demographic data, analgesic plans, source of information on labor analgesia, knowledge of neuraxial analgesia, and health literacy was developed. Although most patients had adequate health literacy, knowledge of neuraxial analgesia was the lowest among minority patients, and they were more likely to be unsure of their analgesic plan.

A118 Introduction of Low Dose Spinal Labor Analgesia in Low Resource Country

Adeyemi Olufolabi, M.B., B.S., Thomas Anabah, M.D., M.S., Gandau Bamaha, M.D., Ronald George, M.D., Anesthesiology, Duke University Medical Center, Durham, NC, Anesthesiology, Tamale Teaching Hospital, Tamale, Ghana, Anesthesiology, Dalhousie University, Halifax, NS, Canada. Intrathecal labor analgesia that includes morphine is a safe and affordable technique in countries of low resource with associated minimum maternal and neonatal complications or side effects. Parturients have minimal to no ambulation restrictions. Pain relief is significant and prolonged.

A119 Respiratory Systolic and Diastolic Time Variation Derived From Radial Arterial Waveform as a Dynamic Preload Index in Comparison With Stroke Volume Variation

Ji Hyun Park, M.D., Sung-Moon Jeong, M.D., Ph.D., Young-Kug Kim, M.D., Ph.D., Gyu-Sam Hwang, M.D., Ph.D., Department of Anesthesiology and Pain Medicine, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Republic of Korea. This study shows that fluid responsiveness may be assessed by measuring systolic and diastolic time variation derived from continuous radial arterial waveform, suggesting that this new method can be used to predict hemodynamic response during surgery as a surrogate for stroke volume variation or pulse pressure variation.
A120 Regional Heterogeneity of Cerebral Autoregulation During Cardiac Surgery in Adults Detected with Multi-Channel Optical Topographic Mapping

Charles W. Hogue, Jr., M.D., Masashiro Ono, M.D., Yueying Zheng, M.D., Jennifer Lee-Summers, M.D., Allan Gottschalk, M.D., Ph.D., Division of Cardiac Surgery, Department of Surgery, Anesthesiology & Critical Care Medicine, The Johns Hopkins University School of Medicine, Baltimore, MD, Anesthesiology, First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, China. Using 46 channel near infrared spectroscopy oxygen optical topographic cerebral mapping in 15 patients undergoing cardiac surgery, regional heterogeneity in autoregulation between different cerebral regions was evident often in adjacent brain areas.

A121 Three-Dimensional Echocardiography Elucidates Differences in Hypertrophic Cardiomyopathy Versus Post Mitral Repair Left Ventricular Outflow Tract Obstruction

Pingping Song, M.D., Bruce Bollen, M.D., Stanton K. Shernan, M.D., John A. Fox, M.D., Douglas C. Shook, M.D., Anesthesiology Perioperative and Pain Medicine, Brigham and Women's Hospital, Boston, MA, The International Heart Institute of Montana, Missoula, MT, Anesthesiology Perioperative and Pain Medicine, Brigham & Women's Hospital, Boston, MA. In this pilot study, 3D TEE identified significant differences in MV apparatus geometry in patients with HOCM versus post-MVP all of whom presented with SAM/LVOTO. Further evaluation is needed to identify whether these differences can elaborate on current risk profiles for the development of iatrogenic SAM/LVOTO, as well as techniques for medical and surgical intervention.

A122 Impact of Renal Transplantation on Echocardiographic Findings in Patients With End-Stage Renal Failure

Tamiko Endo, M.D., Yasuhiro Koide, M.D., Toshimiti Oda, M.D., Shunsuke Edakubo, M.D., Anesthesia, Shonan Kamakura General Hospital, Kamakura, Japan, Hayama Heart Center, Hayama, Japan. Echocardiographic variables including left atrial diameter, left ventricular (LV) diameters, LV ejection fraction, LV mass, LV mass index, and relative wall thickness were examined before and 30 days after renal transplantation. Cardiac enlargement related to increased intravascular volume was improved with a concomitant decrease in LV mass index after the transplantation.

A123 Fluid Load Responses Evaluated With Oesophageal Doppler vs. Vigileo/FloTrac in Aortic Tenositis Patients

Ingrid Elise Hoff, M.D., Lars Olivind Hoiseth, M.D., Ove Andreas Hagen, M.D., Svein Aslak Landsverk, M.D., Ph.D., Knut Arvid Kirkeboen, M.D., Ph.D., Dept. of Anesthesiology, University of Oslo and Oslo University Hospital, Oslo, Norway. A fluid load was measured by Vigileo Flo-Trac and Oesophageal Doppler in 15 anesthetized patients with aortic tenositis. There was a highly significant correlation between the relative changes in SV_VG and SV_CO induced by the fluid load. Limits of agreements between the two measurement methods were wide (although strongly influenced by one outlier patient).

A124 Can Changes in Pulse Pressure Variations be Used to Detect Changes in Cardiac Output During Volume Expansion in the Perioperative Period?

Maxime Cannesson, M.D., Ph.D., Christoph Hofer, M.D., Benoit Tavernier, M.D., Ph.D., Benoit Vallet, M.D., Ph.D., Yannick Le manach, M.D., Ph.D., University of California Irvine, Irvine, CA, Triemli City Hospital, Zurich, Switzerland, Centre Hospitalier Universitaire de Lille, Lille, France, Centre Hospitalier Universitaire Pitié-Salpêtrière, Paris, France. Volume expansion-induced changes in arterial pressure are related to volume expansion-induced changes in cardiac output. However, these changes cannot be used to detect changes in cardiac output induced by volume expansion. Only changes in pulse pressure variations accurately detect volume expansion-induced changes in cardiac output and have a potential clinical applicability.

A125 Evaluation of Morphological Changes in Mitral Annulus Using Real Time Three-dimensional Transesophageal Echocardiography Following Mitral Valve Plasty

Hirotugu Kanda, M.D., Takaumi Isida, M.D., Yuji Hirasaki, M.D., Yuki Toyama, M.D., Atsushi Kurosawa, M.D., Takayuki Kunisawa, M.D., Ph.D., Hiroshi Iwasaki, M.D., Ph.D., Anesthesiology and Critical Care Medicine, Asahikawa Medical University, Asahikawa, Japan, Tokyo Women's University, Tokyo, Japan. We investigated morphological changes of the mitral valve after MVP using real time 3D-TEE. Mitral annular height and annular height index significantly increased, whereas bicommissural diameter, perimeter and valve area significantly decreased after repair. Our data suggests that enlarged mitral annulus restores its original saddle shape following successful MVP.

A126 Dynamic Analysis of Mitral Valve Geometry in Functional Mitral Regurgitation

Feroze Mahmood, M.D., Philip E. Hess, M.D., Omair Shakil, M.D., Haider J. Warraich, M.D., Joseph H. Gorman, III, M.D., Robert C. Gorman, M.D., Robina Matyal, M.D., Peter Panzica, M.D., Kamal Khabaz, M.D., Anesthesia, Critical Care and Pain Medicine, Division of Cardiac Surgery, Beth Israel Deaconess Medical Center, Boston, MA, Gorman Cardiovascular Research Group, Gorman Cardiovascular Research Group, University of Pennsylvania, Philadelphia, PA. Using clinically feasible software, we performed dynamic analysis of mitral valve geometry in patients with functional mitral regurgitation. This is the first step in tracking changes after surgical intervention in these patients. The ready availability of this information brings such an undertaking a step closer to being incorporated into surgical decision-making.
Intubation Cases From 2008-2010

Intubation? A Retrospective Comparison of 431 Emergent Video or Direct Laryngoscopy for an Emergent

A301 Pulmonary Injuries in the Joint Theatre Trauma Registry

Ryan Keneally, M.D., Dale Spisjak, M.D., Michael Shigemasa, M.D., Scott Bunker, D.O., Anesthesiology, Uniformed Services University of the Health Sciences, Anesthesiology, Walter Reed National Military Medical Center, Bethesda, MD. The authors present retrospective data on the incidence and mortality rates of combat related pulmonary injuries sustained in Iraq and Afghanistan. The association of injury severity score and number of units of blood components transfused with mortality is presented.

A302 Causes of Postoperative Ventilation After Cancer Surgery and Outcomes

Madhavi Shetmahajan, M.D., Nayana S. Amin, M.D., Vijaya P. Patil, M.D., Anesthesia, Tata Memorial Hospital, Mumbai, India, Tata Memorial Hospital, Mumbai, India. Postoperative ventilation was not uncommon in patients undergoing cancer surgery though majority of patients required ventilation for less than 18 hours. POV was associated with a high ICU mortality rate.

A303 Unplanned Reintubation in the Operating Room: Not Nearly the Problem as Afterward?

Imani K. Thornton, M.D., Vivek Loomba, M.D., Cheryl Mords, M.D., Illan Rubinfeld, M.D., Anesthesiology, General Surgery, Henry Ford Hospital, Detroit, MI. Reintubation that occurs after a planned extubation in the operating room is a rare occurrence that requires a large data set to evaluate. Data in the National Surgical Quality Improvement Program provides an opportunity to evaluate this event and shows an associated increase in perioperative morbidity and mortality.

A304 Video or Direct Laryngoscopy for an Emergent Intubation? A Retrospective Comparison of 431 Emergent Intubation Cases From 2008-2010

Ankit Agrawal, B.Sc., Thomas E. Schulte, M.D., Anesthesiology, University of Nebraska Medical Center, Omaha, NE. The case study includes 436 adult patients requiring emergent intubation outside of the operating room or emergency room at our university tertiary care hospital from 2008 to 2010. This study is intended to look at the use of video laryngoscopy to see if it reduces complications or number of attempts made at intubation when performed outside the operating room environment. A total of 301 (70%) of the cases had successful intubation on the first attempt with 243 (81%) being direct laryngoscopy and 58 (19%) being video laryngoscopy.

A305 Postoperative Respiratory Depression: A Closed Claims Analysis

Lorri A. Lee, M.D., Linda S. Stephens, Ph.D., Robert C. Caplan, M.D., Karen L. Posner, Ph.D., Karen B. Domino, M.D., M.P.H., Anesthesiology and Pain Medicine, University of Washington, Anesthesiology, Virginia Mason Medical Center, Seattle, WA. Respiratory depression was a significant cause of death and brain damage in acute pain claims from the ASA Closed Claims Database. Better monitoring, nursing checks, management of sedation, and coordination of multiple modes of pain therapy may be useful interventions for reducing this high severity complication. These improvements may be particularly helpful in the first 24 hrs after surgery.

A306 Impact of Video Laryngoscopy in a Large Tertiary Anesthesia Practice

Lawrence R. Bellmore III, M.D., Daniel A. Diedrich, M.D., Daniel R. Brown, M.D., Ph.D., Laurence C. Torsher, M.D., Arun Subramanian, M.B., B.S., Mayo Clinic, Rochester, MN. Fiberoptic Bronchoscopic Intubation (FOI) has been considered the gold standard for safely securing a “difficult airway.” The advent of video laryngoscopes (VL) provides an additional technique to manage potentially difficult airways. This study looks at the trends in airway management techniques, including the impact on FOI, before and after the introduction of VL.

A307 Hyperoxia During Cardiopulmonary Bypass and Acute Kidney Injury Following Cardiac Surgery

Ahmad F. Ghafoori, M.D., Mark Stafford-Smith, M.D., Barbara G. Phillips-Bute, Ph.D., Frederick W. Lombard, M.B., Ch.B., Ian Welsby, M.D., Anesthesiology, Duke University Medical Center, Durham, NC. We hypothesized that hyperoxia during cardiopulmonary bypass is associated with increased acute kidney injury following cardiac surgery. In this retrospective study we did not find an association between hyperoxia during bypass and post-operative AKI as measured by % Cr.

A308 Incidence of Cannot Intubate-Cannot Ventilate (CICV) Situations: Results of a 2-Year Retrospective Multicenter Clinical Study in Japan

Nobuko Tachibana, M.D., Yukitoshi Niiyama, M.D., Michiaki Yamakage, M.D., Ph.D., Department of Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan. A retrospective multicenter survey of CICV situations was concluded over a 2-year period (January 2010-December 2011) in prefecture, Japan. The incidence of CICV was 3 in 135,687 general anesthetic cases (0.0022%).
A309 Short and Long-Term Pulmonary Complications Following Bariatric Surgery: A Large National Experience
Roman Schumann, M.D., Jeff Sigl, Ph.D., Omar Alyamani, M.D., Giannina Garces-Ambrosi, M.D., Scott Shikora, M.D., Scott Kelley, M.D., Anesthesiology, Tufts Medical Center, Boston, MA, Respiratory &Monitoring Solutions, Covident, Boulder, CO, Anesthesia, Perioperative and Pain Medicine, Metabolic Center and Bariatric Surgery Brigham & Women’s Hospital, Boston, MA. We analyzed the Bariatric Outcomes Longitudinal Database (BOLD), a large national repository for bariatric surgical data, for the incidence of postoperative pulmonary complications in this vulnerable population. We investigated risk factors and correlated the composite outcomes of pneumonia, atelectasis, pleural effusion, pneumothorax, respiratory failure and ARDS after weight loss surgery with 30, 60 and 365 day mortality. Pulmonary complications are infrequent, but when they occur they are often life threatening far beyond the first 30 postoperative days.

A310 Admission PaO2 and Survival/Mortality in Severe Pediatric Traumatic Brain Injury
Vijay K. Ramaiah, M.B., B.S., Deepak Sharma, M.B., B.S., Li Ma, M.D., Sumidtra Prathee, M.D., Noah G. Hoffman, M.D., Monica S. Vavilala, M.D., Anesthesiology and Pain Medicine, Laboratory Medicine, University of Washington, Seattle, WA. Admission PaO2 < 60 mmHg was associated with mortality. However, there may be a survival advantage with higher admission PaO2 in severe pediatric TBI which appears to be lost when PaO2 > 350 mmHg.

A311 Obesity Is Associated With Increased Pulmonary Morbidity Following Coronary Artery Bypass Surgery
Jagan Devarajan, M.B., Amaresh Vydyanathan, M.D., Jing You, M.S., Allen C. Bashour, M.D., Anesthesiology, Anesthesiology Institute, Cleveland Clinic, Cleveland, OH, Albert Einstein College of Medicine, Montefiore Medical Center, New York City, NY. Obese patients had increased pulmonary morbidity compared to their normal BMI counterparts following coronary artery bypass surgery. A prospective study is required to find whether more protective pulmonary ventilation strategy and better respiratory care would reduce the incidence of adverse pulmonary outcomes.

A312 Hyperoxia During Cardiopulmonary Bypass Is Not Associated With Postoperative Prolonged Pulmonary Support
Antonio Chiricolo, M.D., Frederick W. Lombard, M.B., Ch.B., Raquel Barre, M.D., Barbara Philips Bure, Ph.D., Mark F. Newman, M.D., Ian Welsby, M.D., Anesthesiology, Duke, Durham, NC. Hyperoxia is independently associated with increased in-hospital mortality following resuscitation from cardiac arrest. We conducted a study to evaluate an association between hyperoxia during cardiopulmonary bypass and prolonged post operative pulmonary support.

10-11 a.m.
Hall C, E-Poster area
A313 Use of a Comprehensive Assessment Form by Non-Clinicians to Predict Airway Difficulties
Peter V. Killoran, M.D., M.S., Merrick M. Meese, Student, Alfonso Altamirano, M.D., Carmen Seitan, M.A., Carin A. Hagberg, M.D., Davide Cattano, M.D., Ph.D., Anesthesiology, The University of Texas Medical School at Houston, Houston, TX. Ability of residents and a non-clinician research team to predict difficult airways using a comprehensive airway assessment form are compared in 1,378 anesthetics.

A314 External Neck Measurements, Laryngeal Anatomy and Gender/Height Controlled Variability in Adult Patients
Davide Cattano, M.D., Ph.D., Jacek Wojtczak, M.D., Carmen Seitan, M.A., Sadiya Shamam, M.D., Hassan Aijazi, M.B., B.S., Henrique Vale, M.D., Alfonso Altamirano, M.D., Carin A. Hagberg, M.D., Anesthesiology, University of Texas Health Science Center Houston, Houston, TX, Anesthesiology, University of Rochester, Rochester, NY. We present the results of recording the external neck measurements of 100 male and 100 female patients at our institution, Memorial Hermann Hospital Texas Medical Center-Houston, Texas. These measurements were taken according to gender and height. The primary aim of this study is to evaluate certain neck landmarks in adults as an estimation of laryngeal scaffold size.

A315 Airway Management in Patients With Oropharyngeal Carcinoma or a History of Neck Irradiation: Clinical Experience at Memorial Hermann Hospital-TMC
Davide Cattano, M.D., Ph.D., Peter V. Killoran, M.D., Hassan Aijazi, M.B., B.S., Carmen Seitan, M.A., Alfonso Altamirano, M.D., Carin A. Hagberg, M.D., Anesthesiology, The University of Texas Medical School at Houston, Houston, TX. Several factors have been identified as contributing to airway difficulty in patients with head and neck pathology. We analyzed anesthetic records from a large database to assess airway difficulties in patients with oropharyngeal carcinoma or a history of radiation therapy to the neck.

A316 An Evaluation of the Efficiency of RxNorm in the Identification of Preoperative Risk Factors for Postoperative Acute Lung Injury
Jennifer Bartolleti Telesz, M.D., Daryl J. Kor, M.D., Jyotishman Pathak, Ph.D., Department of Anesthesiology, Mayo Clinic, Rochester, MN. Acute Lung Injury (ALI) is a leading cause of postoperative respiratory failure. Timely identification of associated risk factors/risk modifiers is a key element of ALI prevention and early treatment. This study investigates the utility of RxNorm unique identifier codes in identifying the presence of medications that have been associated with postoperative ALI.

A317 A New Perspective on the Old Mallampati Score: NSQIP?
Vivek Loomba, M.B., B.S., Imani Thornton, M.D., Cheryl Mordis, M.D., Ilan Rubinfield, M.D., Henry Ford Hospital, Detroit, MI. In this large perioperative quality data set, there does seem to be a significant role for the Mallampati score. It appears to predict not only difficult intubations and airway trauma but is strongly associated with perioperative morbidity and mortality.

PO11-1 HISTORY AND EDUCATION
PI
8-11 a.m.
Hall C-Area A
A318 Professionalism OSCE’s (Objective Structured Clinical Exams) can be Used for Resident Milestones and Increases Residents’ Awareness of Their Own Behavior
Michael Wajda, M.D., Joseph Palmeri, M.D., Daniel O’Neill, M.D., Mitchell Lee, M.D., Anesthesiology, New York University, New York, NY. Professionalism OSCEs (Objective Structured Clinical Exams) increase resident awareness of their professional behavior. OSCEs can be used for documentation of resident milestones and outcome measures.
The Use of a Scavenger Hunt in CA - 1 Orientation to Facilitate Rapid Identification and Location of Anesthetic Equipment
Matthew Weckless, M.D., Angela Vick, M.D., Anesthesiology, Montefiore Medical Center, Bronx, NY. A scavenger hunt during orientation will assist new residents in rapid identification and location of necessary equipment and supplies in the operating room suites.

CA1 Survivor Series: An Innovative Crash Course for the Beginning CA1 Resident
Christopher L. Canlas, M.D., Department of Anesthesiology, Vanderbilt University Medical Center, Nashville, TN. CA-1 residents face difficult challenges in their first months of solo anesthesia. In order to consolidate their preparatory reading, we designed a survival series to quickly introduce CA-1s to forty of the most common cases they will face in their first two months. These discussions led by an attending and senior resident focused on the practical learning points and anesthetic considerations of each case. As measured by an end of course evaluation, CA-1 residents felt more confident and competent in the operating room.

Use of Online Medical Student Forums (Message Boards) by the Anesthesiology Residency Applicant
Pierre Levan, M.D., Amy Murray, M.D., Konstantin Garibashvili, Loyola University Medical Center, Maywood, IL. While it is certain that internet message board use is increasing as evidenced by the number of postings in a variety of interests or disciplines, the use of such forums for the purpose of obtaining information useful for the anesthesiology residency application process has not been documented. This study was designed to quantify the use of online medical student forums by the anesthesiology residency applicant, and to gather information regarding attitudes toward these forums. We aimed to assess the degree to which information contained within these forums was judged as accurate, helpful, professional or unprofessional, and how this information influenced applicant decision-making.

What Things Cost: A Survey of Anesthesiology Residents to Assess Education and Knowledge Regarding Cost in the Operating Room
Cory Maxwell, M.D., David Lindsay, M.D., Anesthesiology, Duke University, Durham, NC. During residency training, cost and billing may not be sufficiently emphasized. In order to assess anesthesiology resident knowledge, two programs were queried regarding the price of commonly used OR items including equipment and medications. Survey results demonstrated poor accuracy and precision on all 24 items tested. Additionally, the majority of residents felt economics in general as well as the logistics of managing a private practice was underemphasized during training. Although this study is limited to two institutions, the results suggest that residents lack the knowledge to make informed decisions about the cost of administering anesthetic care.

The Impact of a Dedicated Research Month for Anesthesiology Residents
Robert E. Freundlich, M.D., M.S., Jessica W. Newman, M.D., Kevin K. Temper, M.D., Ph.D., Sachin Kheterpal, M.D., M.B.A., Theodore J. Sanford, Jr., M.D., Alan R. Tait, Ph.D., Department of Anesthesiology, University of Michigan, Ann Arbor, MI. Using a validated metric, we have demonstrated improved resident understanding and appreciation of evidence-based medicine (EBM) topics relevant to anesthesiology following a dedicated month-long research rotation. To our knowledge, this is the first such rotation. This could be easily and effectively implemented at other training programs.

Resident Scholarly Activity: A Comparison Study Using a Rank-to-Match Population
Tetsuro Sakai, M.D., Ph.D., David G. Metro, M.D., Trent D. Emerick, M.D., Rita M. Patel, M.D., Yan Xu, Ph.D., Department of Anesthesiology, University of Pittsburgh School of Medicine, Pittsburgh, PA. Using a rank-to-match population as the control group, the impact of the structured initiatives to promote resident scholarly activity in an academic department was evaluated. Implementing the structured initiatives increased the number of residents who published articles in peer reviewed journals.

Health Literacy and Anesthesia: Patients’ Knowledge of the Roles of Anesthesiologists and Information Desired in the Preoperative Visit
Annery Garcia-Marcinkiewicz, M.D., Timothy R. Long, M.D., Steven H. Rose, M.D., David R. Danielson, M.D., Mayo Clinic, Rochester, MN. Limited data are available addressing patient knowledge about anesthesia and anesthesiologists. In this study we explored patients’ knowledge about the roles of anesthesiologists and determined what information patients desire in the preoperative visit. A survey was distributed to adult patients scheduled for assessment in the preoperative evaluation clinic at Mayo Clinic in Rochester, Minnesota. Despite the high level of education and health literacy in this group of patients, many were uninformed about the roles of anesthesiologists. Patients expressed interest in receiving a broad range of information about anesthesia during the preoperative visit including information about pain control, the duration of surgery, complications of anesthesia, and their anesthetic options.

Director of Resident Research Rotation: A Facilitator for Resident Scholarly Activity
Tetsuro Sakai, M.D., Ph.D., David G. Metro, M.D., Trent D. Emerick, M.D., Yan Xu, Ph.D., Department of Anesthesiology, University of Pittsburgh School of Medicine, Pittsburgh, PA. To promote the ACGME approved resident research rotation (RRR) and to facilitate residents’ research productivity, a position of Director of RRR has been created in an academic department since academic year (AY) 2007. This lead to increase of the number of residents who elected RRR from 8.1% to 35.1%, and to increase the total research activity (Scholarly Activity Points) by the residents who elected RRR from 719 (0-1550) (median with range) to 1757 (1249-4620).
**A327 Orthopedic Knowledge of Anesthesiology Residents**

Sephalie Patel, M.D., Allison Haller, M.D., Michael Moser, M.D., Patrick Tighe, M.D., Anesthesiology, Orthopedic Surgery, University of Florida, Gainesville, FL. Due to the growing volume of Orthopedic Surgical cases, we conducted a study to determine if a curriculum in Orthopedic Anesthesia would be warranted. A 21 question test was made assessing knowledge of orthopedic procedures. It was sent to program directors in 88 Anesthesiology Residency Programs. 61% of trainees had not completed an orthopedic anesthesia rotation, while 14% had completed greater than 4 weeks of this type of training. While overall scores were low, the presence of an orthopedic anesthesia rotation did not lead to a gross change in scores. Item response theory permitted differentiation of test questions by discriminatory ability rather than overall difficulty, which will be helpful in future assessments of Orthopedic Anesthesia evaluation methods.

**A328 Characterizing Better and Worse Than Average Teaching of Resident Physicians**

Bishr Haydar, M.D., Jonathan Charnin, M.D., Keith Baker, M.D., Ph.D., University of Michigan, Ann Arbor, MI, Massachusetts General Hospital, Boston, MA. This study evaluated whether recurring themes in the comments found in resident evaluations of teaching faculty can be correlated with above- or below-average evaluation scores.

**A329 Fellow and Fellowship Characteristics Associated With an Academic Trajectory in Adult Cardiothoracic Anesthesia: A Single Institution Experience**

Mark Stafford-Smith, M.D., Cheryl J. Stetson, A.A., Barbara Phillips-Bute, Ph.D., Joseph P. Mathew, M.D., Catherine M. Kuhn, M.D., Solomon Aronson, M.D., Mark F. Newman, M.D., Anesthesiology, Duke University Medical Center, Durham, NC. To advance the science and assure a supply of future educators, ACTA programs must train to the needs of both private practice and academics. Analysis of a single program from 1984-2011 (155 recruits) found those opting for academics vs. private practice differed by a greater likelihood of having received residency training outside the reference institution, particularly if this was outside the US. In addition, an academic trajectory was more likely with an assigned clinical year mentor (as advocate, role model, and research coordinator) and >2 years of training; the latter trended towards significance.

**A330 Electronic Airway Education Log Piloted at Northwestern University Anesthesiology Department**

Gail Randel, M.D., Ljuba Stojiljkovic, M.D., Ph.D., Tracey Straker, M.D., M.P.H., Department of Anesthesiology, Northwestern University Feinberg School of Medicine, Chicago, IL, Anesthesiology, Montefiore Medical Center Albert Einstein College of Medicine, Bronx, NY. EAL allows early identification and possible real-time adjustment of CA-1 trainees who may need reassignments in the operating room to gain more DL experience. None of the CA-1 residents reached the criteria number to achieve competence in direct laryngoscopy. 1. Anest Analg. 1998;86:635-9., 2. Anesthesiology. 2003;98:23-7., *IRB exempt status **Society for Airway Management Grant funded EAL development.

**A331 From Idea to Innovation: Hurdles and Milestones in Developing a Scholarly Activity Points Website**

Trent Emerick, M.D., David G. Metro, M.D., Tetsuro Sakai, M.D., Ph.D., Anesthesiology, University of Pittsburgh Medical Center, Pittsburgh, PA. There are many hurdles to overcome to take a scientific idea from a manuscript and develop it into an innovative product. A standard approach or guideline for technology development would be a valuable tool for any researcher fostering new scientific ideas. This abstract describes a systematic approach used to develop a consumer-ready website from a conceptual idea.

**A332 ECG Interpretation Workshop as a Low Cost, Time Effective Method of Education for Anesthesiology Residents**

Jolie Narang, M.D., Angela Vick, M.D., Sujatha Ramachandran, M.D., Montefiore Medical Center, Bronx, NY. Structured curricula have been shown to improve residents’ knowledge base. We hypothesize that this knowledge base in the perioperative evaluation EKGs increases after a structured educational curriculum in the in the form of an EKG interpretation workshop. Thirty CA-1, 2 and 3 residents from Montefiore Medical Center participated in an EKG Interpretation Workshop consisting of nine stations supervised by nine senior anesthesiology attending staff members. Residents were placed in groups of two - three and reviewed two EKGs at each station. Pre and post data scores were analyzed using Wilcoxon Signed Ranks test. There was a statistically significant increase in scores from the EKG test after the workshop.

**A333 Creation of a Web-Based Education Module Using the Knowledge Gaps Report from ABA/ASA Joint Council of Anesthesiology**

Joseph Resti, M.D., John P. Williams, M.D., Tetsuro Sakai, M.D., Ph.D., Anesthesiology, Peter and Eva Safar Professor and Chair, University of Pittsburgh Medical Center, Pittsburgh, PA. Since 2008, the ABA/ASA Joint Council of Anesthesiology Examinations publishes the Knowledge Gaps (KG) Report, which identifies topics in which the majority of examinees answered incorrectly. Using this resource, we developed a web-based module for our residents to use. We converted the KG topics into quiz question format, along with detailed explanations, and made these available for review to the residents. We hypothesize that this unique module will fill gaps in current teaching modalities, resulting in improved test performance and increased clinical knowledge.

**A334 The Educational Impact of Training With Underserved Patients: The Appreciation by Residents of Learning in the Public Hospital With an Increasing Number of Uninsured Patients**

Rachel Androphy, M.D., Suzanne Van Valkenburgh, M.D., Corey Scher, M.D., Anesthesiology, New York University Medical Center, New York, NY. With the current economic crisis, there is an increasing number of underinsured or uninsured patients, many of whom seek medical care in the public hospital system. This study looked at how anesthesiology residents educational experiences, personal beliefs and attitudes, and future employment may be affected by this changing population.
A335 Acquisition of Advanced Airway Competency in CA-1 Residents

Mark T. Roberts, M.D., Wade Weigel, M.D., Virginia Mason Medical Center, Seattle, WA. This observational study assesses the comfort and competency of anesthesiology residents as they develop airway management skills with video laryngoscopy, fiberoptic, and Fastrach intubations during their CA-1 year. Using scored simulations and self graded comfort scores the number of intubations required for competency with each technique is predicted.

A336 How Does an e-Learning Module During Internship Affect Resident Preparedness for Transition into Clinical Anesthesia Residency?

Tara L. Paulose, M.D., Lynn Ngai, Kyle Harrison, M.D., Larry Chu, M.D., Vijj Kunup, M.D., Yale University School of Medicine, New Haven, CT. Keck School of Medicine of USC, Los Angeles, CA, Stanford University School of Medicine, Stanford, CA. The Yale START program is an e-learning curriculum adapted from the Stanford University School of Medicine. This study aims to look at how incoming residents rate their preparedness for transition into anesthesia residency, before and after taking part in an e-curriculum on basic anesthesia topics. This study includes only a single site and utilizes video footage from our institution in an effort to make the experience relevant to the study participants.

A337 Results of the Accreditation Council for Graduate Medical Education (ACGME) Resident Survey - How Can We Accurately Assess?

Ned F. Nast, M.D., Jyoti Dangle, M.D., Josh Spruell, M.D., Piotr Aljindi, M.D., Reza Mohammad, M.D., Ramsis Ghafoory, M.D., Anesthesiology, JHS Hospital of Cook County, Chicago, IL. The ACGME Resident Survey is an important tool to assess compliance with ACGME standards and may serve as an early warning tool for Program Directors. Our survey identified a perception that the residents felt their education was interfered with by the presence of non-anesthesiology residents. By analyzing anesthesiology records, we have shown that the interference is overall much less than perceived, and affected only one subspecialty. Efforts are underway to minimize interference with our resident’s education and case numbers.

A338 Fundamental Anesthesia Education Via Quick Reference Codes - www.utswanesthesia.com/qrcodes

Enrique Escobar, M.D., Shahla K. Escobar, M.D., Rajvinder Baidwan, M.D., Charles W. Whitten, M.D., James D. Griffin, M.D., Anesthesiology and Pain Management, University of Texas Southwestern Medical Center at Dallas, Dallas, TX. Medical education in the 21st century presents new dynamics given the increasing resident educational requirements and regulations on work hours. Innovative teaching methods must take advantage of the growing body of technological resources at the disposal of educators and allow for residents and medical students to have instant access to learning resources online. At our department, we have continually adapted to the growing need of electronic communications and developed several online anesthesia education resources to supplement perioperative education. Our latest online resource successfully employs the use of the popular quick reference codes to deliver fundamental anesthesia knowledge to rotating medical students and residents.

A339 Evolution of Volumetric CO2 Measurements

Michael B. Jaffe, Ph.D. Philips-Respironics, Wallingford, CT. The evolution of volumetric CO2 measurements is chronicled from Aiken and Clark-Kennedy (1928) to the present.

A340 Anesthesiologists Role, Trust in Anesthesiologists, Knowledge and Fears About Anesthesia Among Patients From an Inner-City County Preoperative Anesthesia Clinic

Gundappa Neelakanta, M.D., Dustin Nagrampa, Student, Shahzad Hejazi-Bazargan, Ph.D., Mona Mojtabahdezahdeh, M.D., Margaret Miller, M.D., Adrienne Law, B.S., Anesthesiology, Ronald Reagan UCLA Medical Center, Charles R. Drew University, LAC and USC Dept. of Anesthesia, Los Angeles, CA. Knowledge about anesthesia and awareness of anesthesiologists role and function is limited. We surveyed 300 patients attending an inner city county preoperative anesthesia clinic that were predominantly attended by Latino /Hispanic patients. We found that their knowledge about anesthesia is limited and they are not aware of exact role of anesthesiologists in the perioperative setting. Educational efforts in this area may help in building trust and perhaps decreasing preoperative anxiety.

A341 Knowledge of Key Issues in Anaesthesia for the Morbidly Obese: An International Face-to-Face Survey to Ascertain Educational Needs

Michael P. Margarson, M.D., Stephanie B. Jones, M.D., Mark W. Richards, B.Sc., David Torres, M.D., Roman Schumann, M.D., Anesthesia, St Richard’s Hospital, Chichester, United Kingdom, Beth Israel Deaconess Medical Center, Boston, MA, Navus Consulting, Basel, Switzerland, Clinica Santa Maria, Santiago, Chile, Tufts Medical Center, Boston, MA. A survey of knowledge and attitudes regarding what is considered essential knowledge in the field of anesthesia for the morbidly obese was undertaken amongst delegates at ASA 2011 and the World Congress of Anaesthesiologists 2012. An interactive iPad based questionnaire allowed collection and analysis of responses to 12 randomly-selected questions, to identify which areas each of the 158 respondents most and least understood, and what they considered the key issues. The survey was sponsored by the International Society for the Perioperative Care of the Obese Patient (ISFCOP).

A342 Learning to Think for Yourself...A Problem Based Learning Approach to Medical Student Anesthesia Education

Ashish Gupta, M.D., Michael Hernandez, M.D., Igor Tkachenko, M.D., Anesthesia and Critical Care, University of Chicago, Chicago, IL. Problem-based learning discussion may be a useful teaching tool in a setting where patient acuity may deter medical student teaching. This format allows students to delve into complex decision making and the reasoning behind it without the urgency of time management.
A343 The Optimal Timing of Laryngeal Mask Airway Insertion With Propofol Induction

Richard Sheu, M.D., Rebecca Downey, M.D., Iwona Bonney, Ph.D., Charles Contant, Ph.D., Pei-Shan Zhao, M.D., Anesthesiology, Tufts Medical Center, Research Design Center, Tufts Clinical and Translational Science Institute, Boston, MA. The timing of laryngeal mask airway placement after general anesthesia induction has not been clearly defined. Our randomized control blinded study demonstrated that a brief (sixty- or ninety-second) delay of LMA insertion after routine propofol induction resulted in excellent placement conditions. However, when patient drinking status was taken into consideration, the optimal timing for LMA placement peaked at sixty seconds.

A344 Incidence of Perioperative Dysglycemia in Patients With Chronic Kidney Disease Undergoing Ambulatory and Same-Day Admission Surgery

Joshua Mollov, M.D., Daniel Carter, B.S., Saad Mohammad, M.D., Brian Bush, B.A., Rebecca Twersky, M.D., M.P.H., Anesthesiology, SUNY Downstate Medical Center, Brooklyn, NY. Chronic kidney disease patients, with or without diabetes, undergoing ambulatory surgery appear to be at an increased risk for day-of-surgery preoperative hyper- or hypoglycemia.

A345 Is No-Cost TSE “Mask” More Efficient Than High Nasal Cannula Oxygen Flow in Reducing Severe Desaturation in Patients Under Deep Propofol Sedation during Colonoscopy?

James T. Tse, M.D., Ph.D., Shaul Cohen, M.D., May Fernandez, M.D., Kristen Dauphinee, M.D., Sylvia Barsmouth, M.D., Modechai Bermann, M.D., Melissa S. Wu, M.D., Jane Kim, M.D., Candy Anim, M.D., Christine W. Hunter, M.D., Anesthesia, UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ. Patients undergoing colonoscopy receive IV sedation and nasal cannula (NC) O₂ at a flow rate of 3-5 l/min. Over-sedation/airway obstruction causes severe desaturation. NC O₂ flow may be raised in an attempt to improve oxygenation. In severe cases, assisted bag-mask ventilation is needed. A simple plastic sheet was shown to improve oxygenation by transforming a NC to a face tent (TSE “Mask”) in sedated patients during EGD. Review of 215 patients who received deep propofol sedation during colonoscopy shows that TSE “Mask” is more efficient than high nasal cannula O₂ flow in improving oxygenation and reducing severe desaturation. It improves oxygenation by increasing FiO₂ without raising NC O₂ flow. It can be used as a rescue device when patient’s oxygenation deteriorates. It may improve patient safety at no cost and should be routinely used.

A346 Postoperative Delirium After Laparoscopic Surgery in the Very Elderly Patients

Yoshinori Tanigawa, M.D., Kyousuke Sugiyama, M.D., Yoshiro Sakaguchi, Ph.D., Department of Department of Anesthesiology and Critical Care Medicine, Saga University, Faculty of Medicine, Saga City, Japan. We retrospectively investigated and compared factors causing postoperative delirium after laparoscopic surgery. There were significant differences in regard to anesthesia and operation times, intraoperative hypotension, and patients with hypacusia, especially intraoperative hypotension and hypacusia to be significant factors.

A347 Dexmedetomidine for Deep IV Sedation in Adults for OMFS Surgery

Christopher Heard, M.D., Ramiro Mireles, M.D., Marwa Sidani, M.D., Michael Quigley, D.D.S., Abdolnabi Sabouri, M.D., Women & Children’s Hospital of Buffalo, Buffalo, NY. Deep IV sedation is often used for third molar extractions. Fentanyl and midazolam are frequently used with propofol to provide this sedation. This combination is associated not infrequently with respiratory complications. Dexmedetomidine has less risk for airway complications and may be a suitable alternative to the fentanyl and midazolam. This prospective case series evaluates the efficacy and safety of dexmedetomidine for deep sedation as an adjunct to propofol. As per surgeon assessment, observer evaluation and patient review the efficacy appears to be equivalent to our standard regimen. The incidence of airway complications appears to be much less. Also there is no recall associated with the omission of the midazolam.

A348 A Retrospective Review of Deep Sedation: Pre-Teens Undergoing Oral Surgery

Christopher Heard, M.D., Ramiro Mireles, M.D., Kristen Bender, D.D.S., Paul Creighton, D.D.S., Women & Children’s Hospital of Buffalo, Buffalo, NY. The provision of deep sedation for younger children who require office based OMFS procedures is limited. Many OMFS surgeons do not provide sedation for younger children due to lack of experience and the increased risks of providing deep sedation for younger children. This study evaluated the deep sedation provided by a Pediatric Anesthesiologist in an outpatient office for preteen children undergoing surgery under deep sedation. The data was obtained from our QA initiative and by chart review. The doses of sedation are higher as anticipated with younger children. Airway interventions were required not infrequently. All sedation procedures were completed successfully. The use of intranasal sufentanil with nitrous oxide appeared to be helpful during IV placement.

A349 Check List in an Ambulatory Surgical Center in Developing Country, Colombia

Jorge Humberto Rubio, Sr., M.D., Ivan D. Quiceno, M.D., Rafael I. Gonzalez, M.D., Juan C. Suescun, M.D., Sandra N. Mazo, A.A., Anesthesiology and Perioperative Medicine, Ambulatory Surgical Center, Anesthesiology and Perioperative Medicine, Ambulatory Surgical CenterAuditory, Nursery, Ambulatory Surgical Center, Salud SURA, Medellin, Colombia. The checklist and a multidisciplinary analysis of adverse events, generates security policies for its own problems, with a positive impact, a lower incidence of adverse events, data available in the literature aimed to strengthen the non-technical skills of staff (team work and communication), management guidelines, and encouraging judicious reporting of events adverse for to better meet the criteria for achieving a patient-focused outcomes, to achieve early return to daily life.
A350 Additional Use of Dexmedetomidine Can Not Reduce Complications of Sedation in Endoscopic Submucosal Dissection

Yosuke Kawaguchi, M.D., Yoshinori Kamiya, M.D., Ph.D., Nohito Tanioka, M.D., Miki Yamada, M.D., Satoru Nonaka, M.D., Ichiro Oda, M.D., Ph.D., Tetsufumi Sato, M.D., Ph.D., Dept. of Anesthesiology & CCM, National Cancer Center Hospital, Tokyo, Japan. Dept. of Neuroanatomy, Yokohama City University School of Medicine, Yokohama, Japan, Okayama Citizens’ Hospital, Okayama, Japan, Endoscopy Division, National Cancer Center Hospital, Tokyo, Japan. The aim of this study is to assess usefulness of Dexmedetomidine (DEX; Precedex) for reducing complications of ESD/EMR operation. We retrospectively reviewed anesthesia records of the patients who underwent EMR/ESD under sedation and the cases sedated with propofol and fentanyl with/without DEX were collected. Sedation in ESD/EMR operation, the addition of DEX as compared with sedation by propofol + fentanyl did not lead decrease of body movements and other perioperative complications.

A351 Midazolam With Meperidine and Dexmedetomidine vs Midazolam With Meperidine for Sedation During ERCP

Jung-Hee Ryu, M.D., Sang-Hwan Do, M.D., Sun-Ji Hyun, M.D., Seong-Joo Park, M.D., Seoul National University Bundang Hospital, Seongnam, Republic of Korea. The combination of midazolam and opioid has been widely used as standard regimen for ERCP. This study was performed to compare the sedation effect and adverse events between midazolam-meperidine-dexmedetomidine and midazolam-meperidine. The result showed that midazolam-meperidine-dexmedetomidine is superior to midazolam-meperidine for sedation during ERCP in that midazolam-meperidine-dexmedetomidine group was sedated with less additional sedative/analgiesics gestics during the procedure.

A352 Magnetic Resonance (MR) Safety of the Disposable One Piece Laryngoscope Laryngobloc

Elodie Breton, Ph.D., Eric Noll, M.D., Pierre Diemunsch, M.D., Ph.D., LSIT - AVR, University of Strasbourg, Service d’Anesthésie Réanimation, Hôpital de Hautepierre, Strasbourg, France. Magnetic resonance (MR) safe laryngoscopes improve emergency care for MR patient by allowing fast tracheal intubation directly inside the MR room. In addition, bacterial contamination of reusable handle may represent a significant problem compared with completely disposable device. In this study, the MR safety of a one piece disposable laryngoscope (Laryngobloc®, AM Project, France) was tested in both 1.5T and 3T MR systems. The Laryngobloc® was fully functional inside both MR systems. It was proved to be MR safe: no translational attraction nor magnetic field-induced torque were observed. The Laryngobloc® could be safely used for an emergency tracheal intubation procedure inside the MR room.

A353 Magnesium Sulphate to Improve Postoperative Quality of Recovery After Ambulatory Surgery

Gildasio S. De Oliveira, Jr., M.D., M.S., Paul Fitzgerald, M.S., Robert Mccarthy, Pharm.D., Anesthesiology, Northwestern University, Chicago, IL. The objective of this randomized placebo controlled trial was to evaluate the effect of magnesium replacement on postoperative quality of recovery in patients undergoing ambulatory surgery. There was a trend towards better quality of recovery in the magnesium group compared to placebo.

A354 Dose Ranging Effects of Diphenhydramine to Improve Postoperative Quality of Recovery After Ambulatory Surgery

Gildasio S. De Oliveira, Jr., M.D., M.S., Paul Fitzgerald, M.S., R-Jay Marcus, M.D., Robert McCarthy, Pharm.D., Anesthesiology, Northwestern University, Chicago, IL. Diphenhydramine seem to improve postoperative quality of recovery after ambulatory surgery. The 50 mg I.V. dose resulted in a prolonged hospital discharge compared to the 25 mg I.V. dose.

A355 A Placebo-Controlled Study Evaluating the Effect of Fentanyl on the Incidence of Intraoperative Coughing and Movements, as Well as Recovery Outcomes, With Propofol-Desflurane Anesthesia

Ronald H. Wender, M.D., Roya Yumul, M.D., Ph.D., Ofelia L. Elvir-Lazo, M.D., Jun Tang, M.D., Alan S. Zaentz, M.D., Robert K. Kariger, M.D., Mitra M-Khanj, M.D., Alan Stern, M.D., Paul E. White, M.D., Ph.D., Anesthesiology, Cedars Sinai Medical Center, Los Angeles, CA. This is a randomized, double-blinded, placebo-controlled study esigned to test the hypothesis that the adjunctive use of fentanyl (vs. saline) during propofol-desflurane anesthesia would reduce coughing during insertion of an LMA device, as well as coughing and movements during maintenance and emergence from general anesthesia. The secondary objectives were to assess the effect of fentanyl (vs. saline) on postoperative outcome variables (e.g., recovery times, severity of pain, postoperative nausea and vomiting).

A356 Monitored Sedation for Oftalmologic Surgery

Emma G. Urias, M.D., Francisco Guadarrama, M.D., Luis A. Cordoba, M.D., Joel Ortega, M.D., Anesthesiology and Perioperative Medicine, Instituto Nacional Ciencias Medicas y Nutricion Salvador Zubiran, Culaicán, Mexico, Anesthesiology and Critical Care, American British Cowdray, Mexico, D.F., Mexico, Hospital Civil de Culaicán, Culaicán, Mexico, Critical Care, Hospital Angeles Culaicán, Culaicán, Mexico. The introduction of a monitoring device requires evaluation in various clinical situations, finding a level of BIS that correlates with adequate and safe sedation for these procedures will improve the care of patients undergoing ophthalmic surgery.

A357 Interobserver Agreement of the Modified Mallampati Classification Assessed by Experienced Anesthesiologists in Programmed Surgery Patients in a Colombian Teaching Hospital

Juan C. Diaz, M.D., Olga L. Quintero, M.D., Maria C. Niño, M.D., Anesthesiology, Hospital Universitario Fundación Santa Fe de Bogota, Bogotá, Colombia. This is a cross-sectional study of 421 consecutive patients that evaluates the interobserver agreement of a widely used test to predict difficult orotracheal intubation, the modified Mallampati classification.

A358 Can We Offer Sphen-Palatine Ganglion Block for Our Obstetric Patients Following Accidental Dural Puncture?

Ashraf Sakr, M.D., Shaul Cohen, M.D., Adil Mohiuddin, M.D., Shruti Shah, M.D., Scott Melender, M.D., Purvi Patel, M.D., Christine W. Hunter, M.D., Anesthesiology, Robertwood Johnson University Hospital-UMDNJ, New Brunswick, NJ. Our data suggest that every obstetric patient with post dural puncture headache may receive this minimal invasive technique which has minimal side effects and in most cases can avoid the need for a blood patch along with its side effects and complications.
A359 Effect Site Concentrations of Propofol for Dental Treatment Under Deep Sedation in Intellectually Disabled Patients

Kwang-Suk Seo, M.D., Brian Seonghwa Lee, D.D.S., Mi Seon Kim, R.N., Hyun-Jeong Kim, M.D., Soonyoung Shin, M.D., Jung-Man Lee, M.D., Juhea Chang, D.D.S., Dept. of Dental Anesthesiology, Clinic for Persons with Disabilities, Seoul National University Dental Hospital, Seoul, Republic of Korea. It is difficult to assess and maintain an adequate depth of sedation in patients with severe intellectual disabilities because of problems with airway maintenance during dental treatments, inappropriate pain control and co-morbidities of brain and internal organs. The initial propofol target concentration for TCI infusion was 2.5 ± 0.5 (2.0-3.0) mcg/ml and stabilized propofol target concentration was 2.56 ± 0.48 (1.5 - 3.5) mcg/ml. There was no severe vital changes and airway problem during dental treatment. Patients were deeply sedated without abrupt movements during dental treatment and BIS value was 42.6 ± 13 (28 - 61).

A360 The Society for Ambulatory Anesthesia Clinical Outcome Registry (SCOR): Proof of Concept

Lucinda Everett, M.D., Peter Glass, M.B., Ch.B., MGH, Boston, MA, State University of New York at Stony Brook, Stony Brook, NY. The Society for Ambulatory Anesthesia’s Clinical Outcome Registry (SCOR) has been operational since January 2011 and now has over 23,000 cases. This abstract describes the structure of the database as well as the context and operational challenges of database work. The successful pilot phase is proof of concept of a prospective, per-patient outcomes database for ambulatory anesthesia.

A361 Increasing Efficiency in the Anesthesia Assessment Center (AAC) Using New, Smarter, Digital Technology

Katy French-Bloom, M.D., Tayab Andrabi, M.D., Renee Veira, M.B.A., Uniqua Smith, M.B.A., Anesthesiology and Perioperative Medicine, University of Texas MD Anderson Cancer Center, Houston, TX. Adoption of digital technology into Medical Processes has become more prevalent. Implementing new, smarter technology in medical centers can improve efficiency if it is the right technology.

A362 Location Change and Added Services in Pre-Anesthesia Clinic Result in Decrease Anesthesia Delays

Thomas E. Schulte, M.D., Ellen K. Roberts, M.D., Kristina Birch, M.D., Anesthesiology, University of Nebraska Medical Center, Omaha, NE. Pre Anesthesia Clinics have shown to have beneficial impacts on patient satisfaction, improve hospital efficiency, and decrease delays into the operating room. By changing the location of the Pre-Anesthesia Screening Center and providing additional services, we showed dramatic decreases in preoperative testing delays, decrease in anesthesia evaluation delays, and noted an increase in patient volume in the pre-anesthesia screening center.

A363 Reasons for Day-of-Surgery Cancellations

Ronald Olson, M.D., Anthony Basil, R.N., Anesthesiology, Duke University Hospital, Durham, NC. Incidence and reasons for day-of-surgery cancellations are compared between elective surgery patients seen in a preoperative optimization clinic and those who are not.

A364 Descriptive Study of Case Scheduling and Cancellations Within One Week of the Day of Surgery

Franklin Dexter, M.D., Ph.D., Richard H. Epstein, M.D., University of Iowa, Iowa City, IA, Anesthesiology, Jefferson Medical College, Philadelphia, PA. We performed a descriptive study of operating room (OR) case scheduling close to the day of surgery. The data used were cases from the active and historical case scheduling transaction audit tables from a hospital’s anesthesia information management system (AIMS). Each change to a scheduled case in the OR information system was captured in the audit table, including the date and time when the change was made. The timestamps allowed reconstruction of the elective OR schedule at preceding dates. The findings show that planning anesthesia assignments, ORs to target, etc., can be done productively starting two working days ahead of surgery. The primary predictor of additional net hours of cases to be scheduled is the difference between the forecasted (allocated) OR time and the hours scheduled so far.

A365 Intraoperative Blood-Sparing Intravascular Occlusive Balloons During Primary and Revision Total Hip Replacement

Enrico M. Camporesi, M.D., Hesham R. Omar, M.D., Devanand Mangar, M.D., Thomas L. Bernasek, M.D., Steven T. Lyons, M.D., Adam S. Baumgarten, B.S., Rita S. Patel, M.D., Rachel Karhoski, M.D., Surgery, University of South Florida, Florida Gulf to Bay Anesthesiology, Florida Orthopaedic Institute, Tampa, FL, MS3, University of South Florida, Tampa, FL. Blood conservation by internal tourniquet of the common iliac artery decreased blood loss in primary and total hip replacements. Temporary arterial occlusive balloons when used as an adjuvant to surgery significantly reduced intra-operative blood loss during primary or revision THR surgery when compared to matched control groups and can be adapted as a blood sparing procedure for JW patients.

A366 Tailored Provider Feedback Using Anesthesia Information Management System (AIMS) Reduces Pharmaceutical Cost at Point of Care

Darren R. Raphael, M.D., M.B.A., Yuichi Yokoyama, M.D., Melissa McCourt, B.S., Ottoniel Castillo, B.S., Jeff Perez, B.A., Anesthesiology and Perioperative Care, Pharmacy Department, University of California, Irvine, Orange, CA, Health Affairs Information Services, University of California, Irvine, Orange, CA. Provider specific data obtained from an anesthesia information management system (AIMS) was used to create a tailored intervention aimed at reducing the pharmacy expenditure of volatile and non-depolarizing neuromuscular blocking agents (NDMBs), while maintaining quality of care. This intervention showed a significant shift toward the use low-cost volatiles and NDMBs.
A367 Even 2-Hour Restriction of Clear Liquid Intake Before General Anesthesia May Induce Some Dehydration
Maiko Tomita, M.D., Yoshihito Fujita, M.D., Ph.D., Saya Yoshiawa, M.D., Megumi Harima, M.D., Kazuya Sobue, M.D., Ph.D., Anesthesiology and Medical Crisis Management, Nagoya City University Graduate School of Medical Sciences, Nagoya, Japan. Stroke Volume Variation (SVV) has received much attention regarding perioperative fluid optimization. We investigated the relationship between the length of the intake restriction period before general anesthesia and circulating blood volume, using estimation of SVV value. The patients undergoing general anesthesia were randomly assigned to be restricted of clear liquid intake either for 2 or 4 hours. The result was that the estimation of SVV showed some dehydration in both the groups and the degree of dehydration was lower in for 2-hours restriction group. Less infusion tended to be required for correction of dehydration in for 2-hours restriction. Even 2-hours restriction of clear liquid intake may induce some dehydration.

A368 Clinical Decision Support Using the Risk Stratification Index
Adam Was, B.S., Jonathan Wanderer, M.D., Department of Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital, Boston, MA. Patient and surgical case complexity are important considerations in creating appropriate clinical assignments for operating room coverage in a training program. We have incorporated a recently published Risk Stratification Index model into an existing clinical decision support tool to enable automated analysis of surgical patients’ complexity. Initial results indicate that model input data are available for approximately one-third of patients undergoing operations in our institution and that the risk index displayed within the O.R. schedule is useful in determining OR case assignments.

A369 Vigilance Beyond the Operating Room: Disrupting Dysfunctional Momentum in the Implementation of an Anesthesia Information Management System (AIMS)
Esther Solomon, Ph.D., Dorina A. Botas, M.D., Jan R. Purgess, M.D., Management Systems, Fordham University Graduate School of Business, Anesthesiology, NYU School of Medicine, NY Veterans Administration Hospital, New York, NY. In addressing challenges during implementation of Anesthesia Information Management Systems (AIMS), anesthesiologists need to take a leadership role to optimize outcomes. We present a case where the strong interventions by the anesthesiologists redirected the AIMS implementation to optimize critical aspects were properly addressed. This was done in the face of institutional momentum to launch the new system despite cues and indicators that suggested the need to change course. Taking such initiative to redirect action is characterized in the business literature as disrupting dysfunctional momentum to enhance reliability in complex organizations.

A370 Effect of Immune Function on Patients With Auto-blood Transfusion During the Total Hip Replacement Operation
Fan Su, M.D., Ph.D., Jia-fu Ji, M.D., Department of Anesthesiology, Affiliated Hospital, Shandong Medical University of TCM, Jinan, China. To compare the effect of the immune function on orthopedics operation patients between the auto-blood transfusion and variant-blood transfusion. Auto-blood transfusion was a safe and reliable method of blood protection which had no obviously depressant effect on immune including cellular immune function and humoral immune function of patients with total hip replacement operation.

A371 Analyzing the Need for Dedicated Trauma Rooms: A Data-Driven Modeling Approach
Loren Hemachandra, M.D., Kofi Kla, M.D., Brian Rothman, M.D., Jesse Ehrenfeld, M.D., M.P.H., Warren Sandberg, M.D., Ph.D., Anesthesiology, Vanderbilt University, Nashville, TN. Summary: Emergency cases can be accommodated within the elective surgical schedule by taking advantage of the inefficiencies in O.R. utilization. Efforts to improve first-case on-time starts or minimize cancellations remove gaps in O.R. usage necessary to accommodate emergency cases. This study uses a data-driven software model to quantify our institution’s historical risk of not being able to accommodate an emergency case, as well as to analyze the extent to which various initiatives to improve O.R. efficiency will negatively impact our ability to handle these time-sensitive cases.

A372 The Case Map: A Novel Way to Look at and Manipulate Operating Room Cases Using Vector Math
Donald M. Voltz, M.D., Alfred Pinchak, M.D., Matthew Joy, M.D., Anesthesiology, Aultman Hospital, Canton, OH, Anesthesiology, MetroHealth Medical Center, Cleveland, OH. Development of an abstract representation of a surgical case allows for a number of mathematical and data visualization techniques to better understand case flow through an operating room. We have combined principles of object-oriented programming with surgical cases to develop an expandable set of tools for use in the management and study of operating rooms.

A373 Overrides of Clinical Decision Support Alerts
Karen C. Nanji, M.D., M.P.H., Sarah P. Slight, Diane L. Seger, Insook Cho, Lisa M. Redden, Lynn Volk, David W. Bates, M.D., M.S., Department of Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital, General Internal Medicine, Brigham and Women’s Hospital, Boston, MA, Partners Healthcare Systems, Inc., Wellesley, MA. Although clinical decision support (CDS) is a valuable tool for improving patient safety, we continue to experience high levels of alert overrides. The purpose of this study is to evaluate the override rates for clinical decision support alerts in the outpatient setting and the reasons cited for overrides at the time of prescribing. More than half of CDS alerts were overridden with reasons varying depending on the type of alert. Further research is needed to evaluate clustering of overrides by provider in order to design effective interventions.

A374 Does Prediction of Anesthesia-controlled Times Matter?
Lebron Cooper, M.D., David Sinclair, M.D., Joni Maga, M.D., Anesthesiology, University of Miami Hospital/Miller School of Medicine, Miami, FL. Statistical modeling can be used to identify areas to target for improvement. Reducing anesthesia-controlled time may decrease tensions and misperceptions, improve morale, and increase surgeon satisfaction. Whether increased surgeon satisfaction is likely to result in scheduling more cases on future workdays is still unknown.

A375 Increased Preoperative Clinic Productivity Using Web-Based Patient Triage
Errol P. Lobo, M.D., Ph.D., William Shapiro, M.D., John Feiner, M.D., Anesthesia & Perioperative Care, University of California San Francisco, San Francisco, CA. Web-based preoperative patient screening improves clinic efficiency.

A376 Monitoring of Intraoperative Hemodynamic Variables Using a Preoperative Risk Stratification Index
Satoshi Kato, M.D., Hiroshi Takahashi, M.D., Megumi Harima, M.D., Megumi Harima, M.D., Kazuya Sobue, M.D., Ph.D., Anesthesiology and Medical Crisis Management, Nagoya City University Graduate School of Medical Sciences, Nagoya, Japan. To determine the effect of the risk stratification index on intraoperative hemodynamic variables. Conclusion: The risk stratification index was helpful in determining intraoperative hemodynamic variables.
A376 The Perioperative Datamart: A Step Closer to the Meaningful Use of Electronic Perioperative Clinical Data

Vitaly Herasevich, M.D., Ph.D., Nageswar Madde, M.S., Man Li, M.D., Gregory Wilson, R.R.T., Arun Subramanian, M.B., B.S., Rahul Kashyap, M.B., B.S., Ognjen Gajic, M.D., Brian Pickering, M.D., Bradly Narr, M.D., Daryl J. Kor, M.D., Mayo Clinic, Rochester, MN. The objective of this project was to develop an infrastructure that can support quality improvement and research initiatives while also providing meaningful bedside clinical decision support in the perioperative environment. The current version of the Perioperative Datamart contains 13 years of data from 1998 to present. Data is extracted from 103 operative suites (average 50 000 surgical cases per year) and a total of 648 anesthetizing locations. Near real-time data is currently captured with an approximately 5-minute delay. The Datamart will facilitate quality improvement initiatives, administrative and clinical reporting, bedside clinical decision support as well as clinical research.

A377 Does Intravenous Landiolol, a Novel β1-Adrenergic Blocker, Affect Stroke Volume Variation in Man?

Zen’ichiro Wajima, M.D., Ph.D., Toshiya Shiga, M.D., Ph.D., Kazuyuki Imanaga, M.D., Ph.D., Tetsuo Inoue, M.D., Ph.D., Department of Anesthesiology, Shinoya Hospital, International University of Health and Welfare, Tochigi, Japan, Department of Anesthesiology, Kaken Hospital, Department of Anesthesiology, New Tokyo Hospital, Department of Anesthesia, Chiba-Hokusoh Hospital, Nippon Medical School, Chiba, Japan. This study shows that intravenous landiolol, a novel β1-adrenergic blocker, significantly decreased stroke volume variation (SVV). We therefore believe that SVV values might be overestimated or misinterpreted when decreasing heart rate by landiolol. Such situations might not necessarily indicate that the patient is hypervolemic or normovolemic.

A378 Phenytoin Commenced Prior to Anaesthesia Reduced the Haemodynamic Changes Associated With Induction of Anaesthesia in Patients Undergoing High Risk Vascular Surgery

Heena Bidd, Jr., M.B., B.S., David Green, M.B., B.S., Hugo Araujo, B.S., Audrey Tan, M.D., Eric Mills, M.Sc., Anesthetics, King’s College Hospital, Division of Engineering, King’s College London, LiDCCO Ltd, London, United Kingdom. We studied patients undergoing peripheral vascular surgery where a PE infusion was used. The haemodynamic changes were compared to 20 patients without a PE infusion. LIDCO rapid was used to monitor the haemodynamic changes. CO drop was 24% in the PE group compared to 39%, SV drop was 14% in the PE group compared to 34% (p<0.0001). Mean Stroke Volume Variation (SVV) was 6% in PE group compared to 14%. (p<0.002). PE infusions may reduce haemodynamic changes seen after induction by maintaining venous tone and preload, suggested by a reduced SVV.

A379 Vascular Impedance, BIS, Heart Rate Variability, and Pulse Wave Velocity During Surgical Stress

Noboru Saeki, M.D., Ph.D., Ryuji Nakamura, M.D., Ph.D., Teiji Ukawa, Ph.D., Abdugheni Kutluk, Ph.D., Toshio Tsuji, Ph.D., Masashi Kawamoto, M.D., Ph.D., Anesthesiology and Critical Care, Biological System Engineering, Hiroshima University Hospital, Hiroshima, Japan, Nihon Koden, Corp., Tokyo, Japan. Peripheral arterial impedance or stiffness may respond to surgical stress than BIS or heart rate variability. Further study is required to reveal the availability under different surgical stress.

A380 Comparison of Dexmedetomidine and Remifentanil for Attenuation of Hemodynamic Responses to Laryngoscopy and Tracheal Intubation

Jeonghan Lee, M.D., Ph.D., Hyojoong Kim, M.D., Myoungun Kim, M.D., Kwangrae Cho, M.D., Kunmoo Lee, M.D., Soonho Cheong, M.D., Anesthesiology and Pain Medicine, Inje University Busan Paik Hospital, Busan, Republic of Korea. Dexmedetomidine and remifentanil during anesthetic induction.

A381 Surgical Correction of Tricuspid Regurgitation Modifies the Risk of Adverse Outcomes in Patients Undergoing Mitral Valve Surgery

Renata Ferreira, M.D., Barbara G. Philips-Bute, Ph.D., G. Burkhard Mackensen, M.D., Ph.D., Carmelo A. Milano, M.D., Joseph P. Mathew, M.D., Donald D. Glower, M.D., Madhav Swaminathan, M.D., Alina Nicoara, M.D., Anesthesiology, Cardiovascular and Thoracic Surgery, Duke Medical Center, Durham, NC. Persistent tricuspid regurgitation after mitral valve repair/replacement is associated with poor outcome and predicts poor survival. We confirmed our hypothesis that surgical correction of significant tricuspid regurgitation at the time of mitral valve repair/replacement modifies the risk of adverse outcome and is associated with improved event-free survival.

A382 Perceptions About Blood Transfusion Among Preoperative Patients

Lalleh Adhami, B.S., Thomas Vetter, M.D., Marisa Marques, M.D., Pathology, Anesthesiology, University of Alabama at Birmingham, Birmingham, AL. Understanding patient perceptions about blood transfusion will enable health professionals, including anesthesiologists, to better educate their patients and ultimately create a shared responsibility for the patient’s health care. Optimal patient education efforts and materials about BT should be culturally sensitive and focused on the unique, greater concerns of women, African Americans, lower educated patients, and rural inhabitants.

A383 Does the Urgency of Cardiac Surgery Change Effects of Preoperative Aspirin on Outcomes?: A Subgroup Analysis

Jian-Zhong Sun, M.D., Longhui Cao, M.D., Ph.D., Linong Yao, M.D., Ph.D., Hong Liu, M.D., Will Sun, M.S., Dejan Vuckovic, M.D., James Diehl, M.D., Anesthesiology, Thomas Jefferson University, Philadelphia, PA, UC Davis Medical Center, Sacramento, CA. This observational cohort study showed that preoperative aspirin therapy was associated with significant benefits including improved survival, reduced renal failure and shortened ICU stay in patients undergoing either elective or urgent cardiac surgery (the same trend was also showed in emergent cardiac surgery patients).
A384 Baroreflex Sensitivity Determined by the Squatting Test: Correlations With the Conventional Cardiovascular Indices

Natsuyo Kusuyama, M.D., Syunsuke Ishitsuka, M.D., Makoto Tanaka, M.D., University of Tsukuba Hospital, Tsukuba, Japan. This study was designed to test the hypothesis that BRS calculated by the squatting test correlates well with conventional BRS and heart rate variability (HRV) indices reflecting cardiovascular function. Our results suggest that BRS determined from squatting to standing, but not from standing to squatting, transition may represent cardiovascular function.

A385 Relationship Between the Preoperative Values and Perioperative Outcomes on Chronic Thromboembolic Pulmonary Hypertension

Junpei Shibata, Ph.D., Osamu Nishida, Ph.D., Sohta Uchiyama, M.D., Shino Mori, M.D., Chizuru Yamashita, M.D., Kotaro Kawata, M.D., Seiko Hayakawa, M.D., Mika Suga, M.D., Masahiro Noda, M.D., Miho Yumoto, Ph.D., Anesthesiology and Critical Care Medicine, Fujita Health University School of Medicine, Toyoake, Aichi, Japan. Chronic thromboembolic pulmonary hypertension (CTEPH) is a disease in which organize thrombi stenose or obstruct the pulmonary artery, leading to pulmonary hypertension. In this study, we retrospectively analyzed 121 patients to examine whether preoperative laboratory values were predictive indicators of perioperative outcomes. The results indicate that, among the preoperative laboratory data, diastolic pulmonary vascular resistance is a predictive indicator of the reversal of mean pulmonary and systemic arterial pressures and the postoperative mortality rate. Thus, a higher diastolic pulmonary vascular resistance before surgery is likely to be associated with Pg/Ps ≥ 1.

A386 Effects of Massive Infusion of Hydroxyethyl Starch Solution (HES70/0.55/4) on Blood Coagulation in Major Surgical Patients

Hisanori Yogo, M.D., Shiroh Isono, M.D., Yusuke Kasuya, M.D., Anesthesiology, Chiba University, Chiba, Japan, Tokyo Women’s Medical University, Tokyo, Japan. Low molecular hydroxyethyl starch solution (HES70/0.55/4) is expected to have less adverse effects on coagulation compared to other HES products. However massive infusion of HES70/0.55/4 resulted in clinically significant coagulopathy. It is recommended to measure both PT-INR and APTT-R in patients receiving high-dose HES solution.

A387 Heparin-coated Pulmonary Artery Catheters Prolong Clotting Time as Measured by Thromboelastometry Without Heparinase Modification

Euijin Kim, M.D., Jason Chua, M.D., Michelle Y. Braunfeld, M.D., Anesthesiology, UCLA, Los Angeles, CA. This study shows that blood samples drawn from a heparin-coated pulmonary artery catheter have significantly longer clotting times when compared to samples drawn from a radial artery catheter both with and without heparinase modification. However, when using heparinase modification the increase in clotting time is not likely to be clinically significant.

A388 2011 STS/SCA Transfusion Guidelines: Advancing Knowledge of Contemporary Transfusion Practice

Aruna M. Kamath, M.D., M.P.H., Roberta L. Hines, M.D., Shamsuddin Akhtar, M.B., B.S., Anesthesiology Dept, Yale University School of Medicine, New Haven, CT. Our study shows that there has been a substantial increase in knowledge regarding blood transfusion, especially on blood component therapy, which has been incorporated in the 2011 STS/SCA transfusion guidelines.

A389 Hemodynamic Instability During Pheochromocytoma Surgery: Looking for Predictive Factors

Patrick Tauzin-fin, M.D., Musa Sesay, M.D., Alice Quinart, M.D., Philippe Gosse, M.D., François Sztark, M.D., Ph.D., Hospital Pellegrin University Hospital Saint-Andre, Bordeaux, France. The classical factors such as tumor size and catecholamine levels are not factors of hemodynamic instability. Surgical management and duration of pneumoperitoneum are involved in hemodynamic instability during pheochromocytoma laparoscopic surgery.

A390 Which Thromboelastogram (TEG) Parameter is Most Affected by Bypass Time

Mary E. Arthur, M.D., Erica Hawthorne, B.S., Nadine Odo, B.A., Vinayak Kamath, M.D., Anesthesiology and Perioperative Medicine, Perioperative Services, Georgia Health Sciences University, Cardiothoracic Surgery, Georgia Health Sciences University, Augusta, GA. The MA which reflects platelet function is the most sensitive TEG parameter related to prolonged bypass time.

A391 The Effect of Aortic Surgery with Deep Hypothermic Circulatory Arrest on Thrombin Generation

Brian Barrett, M.D., Frederick W. Lombard, M.D., G. C. Hughes, M.D., Jeffrey Gaca, M.D., Jan J. Welby, M.D., Duke University Medical Center, Durham, NC. Thrombin generation assays may be useful predictors of bleeding and thrombosis risk. We describe reduced thrombin generation after aortic reconstructive surgery with a marked, early rebound increase within 24 hours of surgery.

A392 Stroke Volume Variations to Predict Fluid Responsiveness in Aortic Stenosis Patients

Lars Ovind Hoiseth, M.D., Ingrid Elise Hoff, M.D., M.P.H., Ove Andreas Hagen, M.D., Svein Aslak Landsverk, M.D., Ph.D., Knut Arvid Kirkeboen, M.D., Ph.D., Oslo University Hospital, Oslo, Norway. There was no significant association between stroke volume variations measured by FloTrac/Vigileo and fluid response in patients with aortic stenosis before surgery. After surgery, however, there was a significant association and high value of area under receiver operating characteristics curve. These preliminary results indicate that SVV (Vigileo/FloTrac) should be used with caution in aortic stenosis, but predicts fluid responsiveness well after aortic valve replacement.

A393 Impact of Dialysis on Plethysmographic Respiratory Variability

Goung Arteya, M.D., Nyasha George, B.S., Beshoy Esmat, M.D., Mark Perazella, M.D., Kirk H. Shelley, M.D., Ph.D., David G. Silverman, M.D., Aymen A. Alian, M.D., Anesthesiology, Nephrology, Yale University School of Medicine, New Haven, CT. The use of incentive spirometry in spontaneously breathing patients facilitates monitoring the respiratory variability of the PPG waveforms.

A394 Esmolol or Nitroglycerin for Blood Pressure Control Prior to Bypass in Cardiac Surgery: Interim Analysis

Ji Hye Yoo, M.D., Richard L. Applegate II, M.D., Jason Gatling, M.D., Ryan Laufer, M.D., Stan Brauer, M.D., Jonathan Debooy, M.D., Martin Allard, M.D., Anesthesiology, Loma Linda University School of Medicine, Loma Linda, CA. Pre-bypass control of systolic hypertension and diastolic hypotension is important for coronary perfusion pressure. This interim analysis investigates if esmolol provides better blood pressure control over nitroglycerin during cardiac surgery.
A399 Coagulation During Therapeutic Hypothermia After Cardiac Arrest

Barry F. Faust, Jr., M.D., Robert Craft, M.D., Russell Langdon, M.D., Tina Tudney, M.D., Roger Carroll, Ph.D., Carolyn Snider, B.S., Taylor Buck, B.S., Anesthesiology, UTMCK, Knoxville, TN, Medicine, UTMCK, Knoxville, TN. The effects on hemostasis of decreasing temperature to 33°C for 24 hours after cardiac arrest has not been investigated. This study was conducted by TEG analysis on blood samples of 16 patients admitted to the intensive care unit for therapeutic hypothermia after cardiac arrest. It showed that patients had poor function of their coagulation factors and low fibrinogen before cooling started, but there were no significant changes during cooling or re-warming at any time point.

A400 An Evaluation of SNOMED CT for the Efficient Identification of Preoperative Risk Factors for Postoperative Acute Lung Injury

Rebecca C. Adair, M.D., Jyoti Pathak, Ph.D., Daryl Kor, M.D., Anesthesiology, Mayo Clinic, Rochester, MN. This study evaluated the accuracy of SNOMED-CT as a means of identifying established risk factors for postoperative ALI in a time efficient manner. Our results identify excellent sensitivity for identifying the conditions of interest, but specificity was suboptimal.

A401 Tracheal Intubation Prior to Burn Center Admission: Indications and Risks

Hernando Olivar, M.D., Nathalia Jimenez, M.D., Anthony Tran, M.D., Andreas Grabinsky, M.D., Nicole Gibran, M.D., Samuel Shatar, M.D., Anesthesiology and Pain Medicine, University of Washington, Surgery, UW Burn Center, Harborview Medical Center, University of Washington, Seattle, WA. Tracheal intubation of burn injured patients at the field or referring hospital before transport to a burn center is controversial. This retrospective study compares characteristics and airway related complications of patients admitted to a regional Burn Center who required pre-transport tracheal intubation with patients that required post-admission tracheal intubation. Indications for pre-transport tracheal intubation (PTTI) were analyzed using univariate and multivariate multinomial logistic regression.Conclusion: Odds of PTTI are increased in patients presenting with impending airway obstruction or possible inhalational injury.

A402 Factors Influencing Outcome of Extracorporeal Membrane Oxygenation Bridging to Lung Transplantation

Michael E. Dolch, M.D., Lorenz Frey, M.D., Gerhard Preissler, M.D., Hauke Winter, M.D., Rene Schramm, M.D., Alois P. Ueberfuhr, M.D., Claus Neurohr, M.D., Michael Irbeck, M.D., Thomas Weig, M.D., Anesthesiology, Thoracic Surgery, Cardiac Surgery, Internal Medicine I, Division of Pulmonary Diseases, University Hospital Großhadern-Ludwig-Maximilians-University of Munich, Munich, Germany. In patients with end-stage lung failure bridging to lung transplantation with ECMO offers a valuable treatment option for a selected patient population. High pulmonary artery pressures as well as deteriorations in liver function were found to negatively impact on outcome.

A398 Pre Transfusional Fibrinogen on Reversal of Experimental Haemorrhagic Shock Coagulopathy: Can We Lower the Dose?

Eric Noll, M.D., Michele Diana, M.D., Lélia Grunebaum, M.D., Sebastien Garnel, Pharm.D, Dominique Desprez, M.D., Girish Joshi, M.D., Julien Pottecher, M.D., Pierre Diemunsch, M.D., Ph.D., IRCAD-EITS, Laboratoire d’hémostase, Service d’Anesthésie Réanimation, CHU Strasbourg, Strasbourg, France. Fibrinogen substitution in experimental haemorrhagic shock has been shown to efficiently reverse dilutional coagulopathy. In this work, we challenge this concept with a lower dose of fibrinogen (100 mg kg⁻¹).
A403 Endotracheal Intubation With a Traditional Videolaryngoscope Blade Versus an Integrated Suction Blade in a Hemorrhagic Airway Cadaver Model

Thomas A. Nicholas, IV, M.D., Michael Wadman, M.D., Mary Bernhagen, B.S., Gail Kuper, B.S., Nikola Miljovic, B.S., Steven Schmidt, M.D., Jason Massignan, M.D., Ben Boedeke, M.D., Anesthesiology, Emergency Medicine, University of Nebraska Medical Center, Omaha, NE. A comparison of suction techniques and laryngoscope blade use in a hemorrhagic airway cadaver model.

A404 3-MCP Prodrug Treatment in a Rabbit Model of Lethal Cyanide Toxicity

David Beebe, M.D., Harpreet Singh, M.B., B.S., Renu Adhikari, M.B., B.S., Jeyanthan Srikanthan, B.A., Steven Patterson, Ph.D., Kumar Belani, M.B., B.S., Anesthesiology, Center for Drug Design, University of Minnesota, Minneapolis, MN. 3MCP is effective in reversing acutely induced CN toxicity in a rabbit model.

A405 Farnesyltransferase Inhibitor, FTI-277, Reverses Burn Injury-Induced Muscle Insulin Resistance in Mice

Marina Yamada, Ph.D., Fu Ming, Ph.D., J.A.Jeevendra Martyn, M.D.,FR.C.A, Masao Kaneki, M.D., Ph.D., Anesthesia, Critical Care, and Pain Medicine, Massachusetts General Hospital, Shriners Hospitals for Children, Harvard Medical School, Boston, MA. Burn injury results in increased expression of PTP-1B and PTEN, negative regulators of insulin signaling, and FoxO1 (transcription factor integrating insulin signaling downstream of Akt), and in decreased IRS-1 expression in mouse skeletal muscle, all of which contribute to insulin resistance. These changes paralleled increased farnesytransferase expression in burned mice compared with sham mice. Farnesyltransferase inhibitor, FTI-277, reversed burn-induced these changes and impaired insulin signaling in skeletal muscle. These findings identify farnesyltransferase as a novel potential molecular target to reverse muscle insulin resistance in burn patients.

A406 New Intramuscular Drug Reverses Lethal Cyanide Toxicity

David Beebe, M.D., Harpreet Singh, M.B., B.S., Renu Adhikari, M.B., B.S., Jeyanthan Srikanthan, B.A., Steven Patterson, Ph.D., Kumar Belani, M.B., B.S., Anesthesiology, Center for Drug Design, University of Minnesota, Minneapolis, MN. 3-mercaptoptyruvate administered intramuscularly is effective in reversing acutely induced lethal cyanide toxicity in rabbits.

A407 Compensating for Facemask Leaks During Noninvasive Ventilation (NIV) Improves Accuracy of Work of Breathing (WOB) Measurements

Nawar N. Al-Rawas, M.D., M.J. Banner, Ph.D., N.R. Euliano, Ph.D., J Brown, R.R.T., A. D. Martin, Ph.D., S Myers, Ph.D., A. Gabrielli, M.D., Department of Anesthesiology, Convergent Engineering, University of Florida College of Medicine, Gainesville, FL. Work of breathing data during noninvasive ventilation may be useful for guiding ventilator settings to appropriately unload inspiratory muscles.

A408 Burn Injury Induces Mitochondrial DNA Depletion Syndrome-Like State in Mouse Muscle: Role of Inducible Nitric Oxide Synthase

Ming Fu, Ph.D., Marina Yamada, Ph.D., Masao Kaneki, M.D., Ph.D., Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital, Shriners Hospitals for Children, Harvard Medical School, Boston, MA. Burn induced a marked reduction in mitochondrial DNA (mtDNA) in skeletal muscle in mice compared with sham-burn, along with decreased mitochondrial electron transport chain activities and suppressed Nrf1 and Nrf2 expression. iNOS deficiency partially prevented burn-induced mtDNA reduction, but did not increase Nrf1 and Nrf2 expression in burned mice. These data indicate that burn leads to mtDNA depletion syndrome-like state in muscle via iNOS-dependent and -independent mechanisms, which in turn may contribute to metabolic derangements and muscle insulin resistance.

A409 Anesthesia for Lung Lavage: A Retrospective Single-Center Review of 26 years of Experience Using Hyperbaria

Jessica L. Meyers, M.D., Sean W. Dobson, M.D., Bret W. Stolp, M.D., Claude A. Piantadosi, M.D., Richard E. Moon, M.D., Anesthesiology, Pulmonary and Critical Care Medicine, Duke University Medical Center, Durham, NC. A procedural challenge of therapeutic lung lavage in the treatment of pulmonary alveolar proteinosis is the prevention and treatment of hypoxemia during the lavage of each lung. Though this is often managed with ECMO, in our facility hypoxemia is managed by increasing the ambient pressure in a hyperbaric chamber. Through a retrospective review of 26 years of anesthesia experience and 117 lung lavages, it is found that bilateral therapeutic lung lavage can be safely performed as a single procedure, using hyperbaria to treat hypoxemia.

A410 A New Method of Enriched Water in Oxygen by Electrolysis Which Improves Transcutaneous Oxygen Pressure

Antoine Charton, M.D., François Péronnet, M.D., Ph.D., Stephane Doutreleau, M.D., Evelyne Lonsdorfer, M.D., Alexis Klein, M.D., Liliana Jimenez, M.D., Bernard Geny, M.D., Ph.D., Pierre Diemunsch, M.D., Ph.D., Ruddy Richard, M.D., Ph.D., Department of Anesthesiology, Physiology Institute and EA 3072, Strasbourg University Hospital, Strasbourg, France, Department of Kinesiology, Université de Montréal, Montréal, QC, Canada, Danone Research, Palaiseau, France, Department of Sport Medicine and Functional Explorations and INRA UMR 1019, Clermont-Ferrand University Hospital, Clermont-Ferrand, France. To compare the effects of two types of oxygenated water during anaesthesia. Compare to water enriched in O2 by injection, ingestion of water enriched in O2 by process of electrolysis improves TcPO2 in an animal model.

A411 Comparison of Indirect Calorimetry, and Bioelectrical Impedance Analysis in Estimating the Energy Requirements of Critically Ill Patients

Hüseyin O. Yılmaz, M.D., Serkan Şenkal, M.D., Ahmet Coşar, M.D., Anesthesiology and Reanimation, Merzifon Military Hospital, Amasya, Turkey, Anesthesiology and Reanimation, Gülhane Military Medical Faculty, Ankara, Turkey. The main determinant of energy consumption is lean body mass. Whole body bioelectrical impedance analysis, after excluding patients who are extremely hypermetabolic and who have excessive edema, can be used to predict the energy needs of mechanically ventilated critically ill patients.
A412 Videolaryngoscopy for Pre-Hospital Use by Physicians: Preliminary Data From a Prospective, Multicenter Comparison of GlideScope, McGrath, and D-Blade During Emergency Intubation

Erol Cavus, M.D., Peter Rösch, M.D., Andreas Callies, M.D., Matthias Helm, M.D., Volker Dörges, M.D., Anesthesiology and Intensive Care Medicine, University Hospital Schleswig-Holstein, Campus Kiel, Kiel, Germany, Anaesthesiology and Intensive Care Medicine, Hospital Eutin, Eutin, Germany, Anaesthesiology and Intensive Care Medicine, Hospital Links der Weser, Bremen, Germany, Anaesthesiology and Intensive Care Medicine, Hospital of the Armed Forces, Ulm, Germany. In this preliminary study at four physician-based air rescue centers we compared the efficacy of the videolaryngoscopes (VLS) GlideScope Ranger, McGrath Series 5, and C-MAC D-Blade for obligate indirect laryngoscopy during pre-hospital emergency endotracheal intubations. Our data suggest that obligate indirect VLS perform differently in the pre-hospital emergency setting and must be used with the option for conventional direct laryngoscopy as a backup procedure.

A413 Lung Ultrasound: Correlation of the B-line Dynamics and Macroscopic Pathology in Porcine Ex-Vivo Lungs

Jacek A. Wojtczak, M.D., Ph.D., Department of Anesthesiology, University of Rochester School of Medicine and Dentistry, Rochester, NY. In this study surface sonograms were performed in excised, ex vivo porcine lungs and correlated with the macroscopic exam of the underlying lung. B-line (lung comet) reverberations could be recorded in the areas with diffuse subpleural hemorrhagic "microlesions".

A414 Use of Port for Transpulmonary Thermodilution

Stéphanie Suria, M.D., Anne Wynieccki, M.D., Alexandre Eghiaian, M.D., Gregoire Weil, M.D., Institut Gustave Roussy, Villejuif, France. The aim of this study is to validate the feasibility of the transpulmonary thermodilution via port-a-catheter to measure the cardiac output.

A415 Endotoxin Removal by Magnetic Separation-Based Blood Purification

Inge K. Herrmann, Ph.D., Martin Urner, M.D., Samuel Graf, Student, Christoph M. Schumacher, M.Sc., Wendelin J. Stark, Ph.D., Beatrice Beck-Schimmer, M.D., University Hospital Zurich, ETH Zurich, Zurich, Switzerland. We present a magnetic separation-based approach using polymyxin B functionalized cobalt/iron nanomagnets to remove endotoxin from human blood in vitro.

A416 Bench Evaluation of NPPV Mask Leak-Compensated VCO2 Measurement

Joseph Orr, Ph.D., Branden Rosenhan, M.D., Lara M. Brewer, Ph.D., Anesthesiology, University of Utah, Salt Lake City, UT, Medicine, Pulmonary Division, Anesthesiology, University of Utah, Salt Lake City, UT. We developed a system which can be used to measure the volume of CO2 excreted by patients on noninvasive positive pressure ventilation. We evaluated the system using a bench simulation and found that the system adequately compensates for mask and other leaks.

A417 Subclavian Vein Puncture: Modified Approach Based on Vascular Anatomy

Goverdhan Puri, M.D., Ph.D., Kriti Puri, M.B., B.S., PGIMER, Chandigarh, India, AIIMS, New Delhi, India. The central venous cannulation based on vascular anatomy is a suitable alternative to the classical approach with higher success rates of venipuncture in the first attempt and lesser complication and failure rates.

A418 Impact of Multi-Lumen Infusion Devices on the Occurrence of Known Physical Drug Incompatibility: A Controlled In Vitro Study

Aurélie Foinard, M.Sc., Bertrand Décaudin, Ph.D., Christine Barthelemy, Ph.D., Bertrand Debaine, Ph.D., Pascal Odou, Ph.D., Department of Biopharmacy, Galenic and Hospital Pharmacy, Faculty of Pharmacy, Pharmacy, University Hospital of Lille, Lille, France, Anesthesia and Intensive Care Department, University Hospital of Poitiers, Poitiers, France. The present study was designed to assess the impact of multi-lumen infusion access devices on the occurrence of known drug incompatibility (furosemide-midazolam) through a controlled in vitro study. The standard set with two-port manifold and one-meter extension set was unsatisfactory with drug precipitation whatever the conditions. The nine-lumen device (Edelvaiss Multiline®, Doran International) prevented drug precipitation for two access combinations under specified conditions.

A419 Three Dimensional (Speckle Tracking Based) Strain Imaging Identifies Alterations in Dynamic Left Ventricular Function After Cardiac Surgery

Kimberly Howard-Quijano, M.D., Jonathan Ho, M.D., Ali Salem, M.D., Einar Azor, Jennifer Scovotti, M.A., Aman Mahajan, M.D., Ph.D., Anesthesiology, UCLA, Los Angeles, CA. Transthoracic three-dimensional speckle tracking strain imaging is a measure of myocardial deformation that provides a more accurate measurement of myocardial function than traditional ejection fraction (EF) calculations. This prospective study demonstrated that 3D TTE speckle tracking imaging can detect a 10% decrease in myocardial function after cardiac surgery. This emerging measurement may be a valid tool for the evaluation of post-operative cardiac systolic function.

PO15-2 Pediatric Anesthesia: General Pediatrics

PD 8-11 a.m.
Hall C-Area F

A420 Unanticipated Admissions Before and After Instituting Obstructive Sleep Apnea Guidelines

Vidya T. Raman, M.D., Joseph D. Tobias, M.D., Kris R. Jatana, M.D., Anesthesiology and Critical Care, Pediatric Otolaryngology, Nationwide Children’s Hospital, Columbus, OH. In accordance to national recommendations, our hospital has instituted Obstructive Sleep Apnea (OSA) guidelines for all children undergoing adenotonsillectomies, adenoidectomies, and tonsillectomies. We looked at unanticipated admissions before and after the OSA guidelines were established in July 2011. We found that the unanticipated admissions decreased from 0.014% to 0.008% (p=0.05) using the OSA guidelines.
A421 The Accuracy of Noninvasive Hemoglobin Monitoring Using Radical-7 Pulse CO-Oximeter in Children Undergoing Neurosurgery

Yonghong Park, M.D., Jin-Tae Kim, Ph.D., Hyo-jin Byon, M.D., Hee-Soo Kim, Ph.D., Department of Anesthesiology and Pain Medicine; Seoul National University Hospital, Seoul, Republic of Korea, Department of Anesthesiology and Pain Medicine, Inha University Hospital, Incheon, Republic of Korea. An evaluation for the accuracy of SpHb using Radical-7 Pulse CO-Oximeter compared with the laboratory hemoglobin (tHb) was performed in children undergoing neurosurgery. Our study revealed that Radical-7 can be used as a trend monitor of hemoglobin level during pediatric surgery even with rapid volume resuscitation. However, clinicians should confirm the baseline hemoglobin level and consider the initial bias for monitoring.

A422 Optimal Sevoflurane Concentration for Tracheal Intubation With Rocuronium in Infants: The Evaluation by Heart Rate Variability

Hiroshi Hanamoto, D.D.S., Aiji Boku, D.D.S., Mitsutaka Sugimura, D.D.S., Yoshinari Morimoto, D.D.S., Chihyo Kudo, D.D.S., Hitoshi Niwa, D.D.S., Department of Dental Anesthesiology, Osaka University Graduate School of Dentistry, Suita, Japan. The purpose of this study was to determine the optimal sevoflurane concentration that can minimize the hemodynamic and autonomic response to tracheal intubation in infants using heart rate variability (HRV). Although neuromuscular blocking agents can provide excellent intubating conditions, more than 5% of the end-tidal concentration of sevoflurane might be required to stabilize the autonomic response during intubation in infants.

A423 Insertion Performance of Pediatric Sized I-Gel: Comparison Among Four Sizes

Aya Fukuhara, M.D., Ryu Okutani, M.D., Yutaka Oda, M.D., Anesthesiology, Osaka City General Hospital and Children's Hospital, Osaka, Japan. Insertion performance of pediatric i-gel (size 1.5, 2, 2.5 and 3) was evaluated in children between 3 month to 15 year of age (n = 67). Each size i-gel was successfully inserted at the 1st or 2nd attempt (64 and 3 cases, respectively). There were no differences in ease of insertion or airway leak pressure among the 4 sizes. Fiberoptic view in the size 2, 2.5 and 3 i-gel was significantly better than size 1.5 i-gel. Pediatric i-gel, size 1.5 - 3 is able to be safely used.

A424 A Comparison of the GlideScope® Video Laryngoscope and the Storz DCI® Video Laryngoscope for Endotracheal Intubation in Children Younger Than Two Years of Age

Marissa Vadi, M.D., M.P.H., Elizabeth Ghazal, M.D., Richard L. Applegate, II, M.D., Anesthesiology, Loma Linda University, Loma Linda, CA. This study compares intubating times between the GlideScope® (G) and Storz DCI® (S) video laryngoscopes as well as to standard direct laryngoscopy (DL) in children under the age of 2 years. Anesthesiology trainees were frequently not able to intubate in <30 seconds in the clinical setting using S and often unable to meet this standard using G despite successful intubation of an infant airway manikin. Differences between manikin and clinical intubation times suggest that for patients under 2 years of age, manikin training may not provide accurate prediction of intubation speed during clinical airway management.

A425 Effects of the Acetated Ringer's Solution With Low Concentration of Glucose on the Intraoperative Blood Glucose and the Catabolism in the Pediatric Surgical Patients

Qiang Liu, Student, Liang Jing, M.D., Ph.D., Anesthesiology, Zhongda Affiliated Hospital of Southeast University, Nanjing, China. The research is aimed to observe the effects of acetated Ringer's solution with low concentration (1%-2%) of glucose on the intraoperative blood glucose and the catabolism of the protein and fat in the pediatric surgery. Through this research we found that the administration of acetated Ringer's solution with low concentration (1%-2%) of glucose can increase the levels of blood glucose, but it can decrease the fat and protein catabolism without hyperglycemia during surgery.

A426 Preoperative Screening for Sickle Cell Disease in a Population With a Newborn Screening Program: A Historical Cohort Study

James O'Leary, M.B., B.Ch., Isaac Odam, M.B., B.Ch., Carolyne Pehora, R.N., Praneet Chakraborty, M.D., Mark W. Crawford, M.B., B.S., Department of Anesthesia and Pain Medicine, Department of Haematology, The Hospital for Sick Children, Toronto, ON, Canada, Department of Genetics, Children's Hospital of Eastern Ontario, Ottawa, ON, Canada. Preoperative screening for sickle cell disease is based on ethnic identity alone may be an ineffective method of identifying new cases in populations with newborn screening. This historical cohort study provides data for 710 children, born after the introduction of newborn screening for sickle cell disease in Ontario, who underwent preoperative screening. These data indicate that preoperative screening based on ethnicity alone is ineffective at identifying new cases of sickle cell disease in a population with newborn screening and that further criteria for preoperative screening are needed.

A427 A Systematic Approach to Ultrasonography of the Pediatric Airway

Nicholas M. Dalesio, M.D., Emmett Whitaker, M.D., Robert S. Greenberg, M.D., Anesthesiology and CCM, Johns Hopkins University, Baltimore, MD. We describe an approach to evaluate the pediatric airway using ultrasound sonography, which is a safe, non-radiating, effective imaging technique.

A428 Effect of Magnetic Resonance Imaging on Core Body Temperature in Anaesthetised Children

Andrew J. Davidson, M.D., Chai-Yin Lo, Student, Gillian Ormond, M.Sc., Suzette Sheppard, B.Sc., Rob McDougall, M.B., B.S., Anesthesia & Pain Management, Royal Children's Hospital, Anaesthesia Research Group, Murdoch Childrens Research Institute, Parkville, Australia. Our objective was to characterise the effect of MRI on core body temperature in anaesthetised children. Core body temperature was found to decrease after an MRI scan under general anaesthesia. These results may imply more focus is needed regarding the cooling effects of general anaesthetic agents, as opposed the heating effects of the MRI scan.
A429 Safety of Isotonic Electrolyte Solution With 1% Glucose Infused During and After Plastic Surgery in Children

Kiyoko Bito, M.D., Ph.D., Yuri Kaneda, M.D., Tenyuki Obata, M.D., Azusa Omura, M.D., Satoshi Higuchi, M.D., Satomi Azuma, M.D., Ph.D., Reiko Oraki, M.D., Naoki Otsuka, M.D., Ph.D., Takashi Toi, M.D., Ph.D., Kazumasa Yasumoto, M.D., Ph.D., Anesthesiology, Showa University School of Medicine, Tokyo, Japan. The aim of this study was to determine the safety of administration of an isotonic electrolyte solution with 1% glucose to children undergoing plastic surgery. 37 patients under 2 years scheduled for plastic surgery were randomized to receive either hypotonic electrolyte solution (Na 90 mEq/L) or isotonic electrolyte solution (Na 140 mEq/L). Electrolytes and blood glucose levels in the whole blood were measured before and after the surgery. Administration of a hypotonic electrolyte solution promoted reductions in blood sodium levels. The isotonic electrolyte solution with 1% glucose proved to be safely usable because it caused no abnormalities of blood sodium or glucose levels in any subject when administered during and after surgery.

A430 New Devices for Pediatric Intubation: Manikin Evaluation

Annelise Foucher-Lezla, M.D., Carole Fleury, M.D., Amélie Azau, M.D., Jean-Pierre Monrigal, M.D., Jean-Claude Granry, M.D., CHU, Angers, France. Videolaryngoscopes (Glidescope - Airtraq) in pediatric sizes are tested on a manikin and compared to classical laryngoscopes. The results show the rapidity of learning to use these devices and the non aggressivity of intubation in comparison with the McIntosh and Miller blades.

A431 Use of Lateral Cephalograms to Predict Difficult Intubation in Japanese Pediatric Patients With Craniofacial Anomalies

Atsushi Kohjitan, D.D.S., Takuya Miyawaki, D.D.S., Shouichi Miyawaki, D.D.S., Norifumi Nakamura, D.D.S., Kazuhide Nishihara, D.D.S., Sachi Ohno, D.D.S., Masahiko Shimada, D.D.S., Kazuma Sugiyama, D.D.S., Dental Anesthesiology, Kagoshima University Graduate School of Medical and Dental Sciences, Kagoshima, Japan, Dental Anesthesiology and Special Care Dentistry, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama, Japan, Orthodontics, Oral and Maxillofacial Surgery, Kagoshima University Graduate School of Medical and Dental Sciences, Kagoshima, Japan, Orofacial Pain Management, Tokyo Medical and Dental University, Tokyo, Japan. It is suggested that combinations of lateral cephalogram parameters can differentiate patients who are unable from those who are able to be intubated by direct laryngoscopy.

A432 Hyperthermia During Cochlear Implant Surgery in Children

Andrew Schwartz, M.D., Vsevolod Rozenzweig, M.D., Yoram Shapiro, M.D., Ph.D., Benjamin F. Gruenbaum, B.S., Alexander Zlotnik, M.D., Ph.D., Department of Anesthesiology and Critical care, Soroka Medical Center, Ben-Gurion University of the Negev, Beer-Sheva, Israel. Patients undergoing cochlear implantaion may be susceptible to developing intraoperative hyperthermia.

A433 Predictors of Occurrence of Postoperative Vomiting in Children With Microtia

Ryouichi Kawaguchi, M.D., Shigekazu Sugino, M.D., Naoyuki Hirata, M.D., Ph.D., Nao Suzuki, M.D., Michiaki Yamakage, M.D., Ph.D., Department of Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan. We retrospectively examined occurrence of postoperative vomiting in children with microtia. The present study indicates that the incidence of POV is much higher when volatile anesthetics are used than when intravenous anesthetics are used.

A434 Evaluation of a Novel LMA With Built-In Pressure Gauge in the Pediatric Population

David P. Martin, M.D., Joseph D. Tobias, M.D., Anesthesiology, Nationwide Children's Hospital, Columbus, OH. Over inflation of the LMA cuff may result in mucosal damage with resultant swelling. This damage leads to sore throats. The use of a novel LMA with built-in pressure gauge allows for the accurate measurement of intracuff pressures and thus may help the clinician to avoid excessive intracuff pressures.

A435 The Perioperative Management of Pediatric Patients With Tethered Spinal Cord Syndrome

Myron Yaster, M.D., Mala N. Gurbani, D.O., Elizabeth D. White, R.N., Constance L. Montillo, M.D., George J. Jallo, M.D., Eric V. Jackson, M.D., M.B.A., Anesthesiology/Critical Care Medicine, Neurosurgery, Johns Hopkins University, Baltimore, MD. In this retrospective chart review we determined basic patient and surgical demographics, intraoperative anesthetic and postoperative pain management, and the incidence and management of low pressure CSF leak (headache) in patients who underwent spinal cord untethering surgery. We found that post-operative neurological deficits, headaches, and surgical site pain are common and that postoperative pain could be effectively treated with I.V. PCA. Hospitalization is often prolonged and correlates to surgical preference for head of bed elevation and management of low pressure CSF leaks. Future studies aimed at standardizing the perioperative care of these are warranted and underway.

A436 Evaluation of Temperature and Humidity of Inhaled Gases in Pediatric Patients in an Anesthesia Workstation With Low or High Fresh Gas Flow and With or Without a Heat and Moisture Exchanger

Gustavo P. Bicalho, M.D., Leandro G. Braz, Ph.D., Norma S p Módo, Ph.D., Larissa S b Jesus, M.D., José R e Braz, Ph.D., UNESP - Univ. Estadual Paulista, Botucatu Medical School, Botucatu, Brazil. This randomized controlled trial evaluates the humidity and temperature of inhaled gases in pediatric patients using a breathing circle system in a Dräger Primus anesthesia workstation. We demonstrated that the humidification of inhaled gases depends on the fresh gas flow (FGF) utilized, but both low and high FGF only partially humidify the inhaled gases. Insertion of a heat and moisture exchanger increases the humidity of inhaled gases bringing it closer to physiological values, independently of the FGF utilized.

A437 Don't Know Where to Press? Cricoid Pressure in the Very Young

Thomas Engelhardt, M.D., Ph.D., Laurin Allen, M.D., Robert Lendrum, M.D., Royal Aberdeen Children's Hospital, Aberdeen, United Kingdom. Identification of the cricoid cartilage in young children is difficult. This observational study assesses the accuracy of landmark based identification of the cricoid cartilage using ultrasound.
A438 Malignant Hyperthermia in Children: An Analysis of the North American Malignant Hyperthermia Registry
Ronald Litman, D.O., Priscilla Nelson, M.D., Anesthesiology & Critical Care, The Children’s Hospital of Philadelphia, Philadelphia, PA. Many differences existed between age groups with regard to characteristics of acute MH. Older pediatric patients are more likely to display classic symptoms of MH. The youngest patients were more likely to demonstrate decreased muscle tone prior to the event. Masster muscle rigidity was primarily seen in children between 3 and 11 years. Adolescents were more likely to develop a greater degree of hyperthermia more rapidly.

A439 Anesthesiologist’s Medical Experience Does Not Affect the Effectiveness of the Preoperative Anesthetic Consultation on Parents’ and Children’s Anxiety
Jeanne Scemama-Clergue, Sr., M.D., Christelle Osso, M.S., Nicolas Favez, Ph.D., Walid Habre, M.D., Ph.D., Anesthesiology, Pharmacology and Intensive Care, University Hospitals of Geneva, Geneva, Switzerland. We investigated the impact of medical experience in the effectiveness of 48 pre-anesthetic consultation (PAC) in reducing preoperative anxiety in children (6-12 yrs) and parents. Children’s anxiety was rated using the Venham Picture Test (VPT) and a Visual Analog Scale (VAS). Parents completed a Faces Pain Scale (FPS) before and after the PAC. We observed a significant decrease in children’s anxiety evaluated by the VAS (p=0.002) only in the Registrars group despite a longer duration of the PAC in the Consultants group. However, no effect of experience was found in the reduction of parental anxiety.

A440 The Effect-Site Concentration of Remifentanil for Minimizing the Cardiovascular Changes and Airway Reactivity During Desflurane Anesthesia in Pediatric Patients
Sang-Wook Shin, M.D., Eun Jung Kim, M.D., Hye Jin Kim, M.D., Tae Kyun Kim, M.D., Ji-Uk Yoon, M.D., Gyeong-Jo Byeon, M.D., Pusan National University Hospital, Pusan, Republic of Korea. The dose of remifentanil to minimize the cardiovascular changes to tracheal intubation and airway reactivity during 1 MAC desflurane anesthesia was investigated with target controlled infusion system in pediatric patients.

A441 Wait Til Your Father Sees This! Simulation Training for Residents During Their Pediatric Anesthesia Rotation
Melanie M. Wilson, M.D., Torry Kahute, D.O., Igor Tkachenko, M.D., Michael Hernandez, M.D., Anesthesiology, University of Chicago Hospitals, Chicago, IL. Simulation training is a valuable tool for providing exposure to rare clinical circumstances that residents may not otherwise get to experience. Our experience has shown promise in creating a realistic environment that the trainees identified as a desirable training experience that they would like to repeat. Using simulation training allows the resident to function autonomously in a crisis, unlike a true clinical scenario in which an attending would likely intervene. Video review of performance is helpful to allow residents’ insight into their interactions with the patient’s family and peri-operative staff.

A442 The Use of the GlideScope® Cobalt Video Baton for Intubation in 200 Children Weighing Less Than 10 Kilograms
Jeffrey W. Steiner, D.O., John W. Robben, M.D., Patrick Olomu, M.D.,F.R.C.A, Osama Aboul-fettouh, M.D., Peter Smuk, M.D., Children’s Medical Center UT Southwestern Medical Center and Outcomes Research Consortium, Children’s Medical Center Dallas, UT Southwestern Medical Center, Dallas, TX. We enrolled 200 patients weighing 10 kg or less in our study to evaluate the efficacy of the GlideScope® Cobalt Video Batons (GS-CVB) 1 and 2 single-use blades. We recorded time to best view, time to intubation, along with demographic data and compared it to previous studies evaluating older GlideScope® equipment. In our study, with the GlideScope® Cobalt Video Batons, it is possible to intubate patients ≤ 10kg faster than the previous Glide Scopes and perhaps more quickly than a standard direct laryngoscopy.

A443 Clothing Size in Children as a Proxy for Body Size and a Predictor of Perioperative Complications
Olubukola O. Nafiu, M.D.,F.R.C.A., Anesthesiology, University of Michigan, Ann Arbor, MI. Clothing size has been used to predict adiposity and the clustering of heart disease and other chronic conditions in adults. Similar studies are unavailable in children. We prospectively evaluated the association of large clothing size with incident asthma, OSA and the occurrence of some acute perioperative complications. Large clothing size in the study subjects was associated with asthma, OSA and acute perioperative airway complications. Clothing size may be a useful health promotion tool that parents can relate to since most children from the present study with large clothing were also classifiable as overweight or obese.

A444 Dexmedetomidine has Both Suppressing and Enhancing Effects on Human Platelet Aggregation
Shuji Kawamoto, M.D., Hideo Hirakata, M.D., Ph.D., Tero Noguchi, M.D., Naoko Sugita, M.D., Kazuhiko Fukuda, M.D., Ph.D., Anesthesiology, Kyoto University, Kyoto, Japan, Anesthesiology, Hirakata Kohsai Hospital, Hirakata, Japan, Anesthesiology, Tenri Yorozu Hospital, Tenri, Japan. We investigated the effects of dexmedetomidine (DEX), an agonist of the α₂-adrenoceptor, on human platelet aggregation and elucidated the underlying mechanisms. Aggregation study and cAMP assay were performed. DEX enhanced aggregation but suppressed it in the presence of yohimbine. Efaroxan, imidazoline1 antagonist, abolished this suppressive effect, indicating DEX suppressed aggregation through imidazoline1-receptor. Stimulation of α₂-adrenoceptor causes the suppression of cAMP level and platelet activation. DEX suppressed cAMP level and yohimbine abolished this effect, indicating that DEX enhanced platelet aggregation by suppression of cAMP through α₂-adrenoceptor.
A445 The Effect of Acidosis and Alkalosis on the Lipid Emulsion-Mediated Reversal of Toxic Dose Levobupivacaine-Induced Vasodilation in Isolated Rat Aorta
Ju-Tae Sohn, M.D., Seong-Ho Ok, M.D., Soo Hee Lee, M.D., Department of Anesthesiology and Pain Medicine, Gyeongsang National University Hospital, Jinju, Republic of Korea. In terms of vascular tone recovery from the toxic dose of local anesthetic-induced vasodilation, these results suggest that LE may provide better reversal of severe levobupivacaine-induced vasodilation with metabolic acidosis which is commonly encountered in clinical settings with toxic dose levobupivacaine-induced cardiovascular collapse.

A446 Dexmedetomidine-Induced Contraction Involves C-Jun NH2-Terminal Kinase Phosphorylation Via the Activation of Lipoxygenase Pathway in Isolated Rat Aortic Smooth Muscle
Ju-Tae Sohn, M.D., Seong-Ho Ok, M.D., Soo Hee Lee, 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, Jinju, Republic of Korea. Taken together, these results suggest that the dexmedetomidine-induced contraction involves lipoxygenase pathway-mediated JNK phosphorylation via alpha-2 adrenoceptor stimulation.

A447 Lipid Emulsion Reverses Toxic Dose Levobupivacaine-Induced Vasodilation Through Reversal of Protein Kinase Inhibition Induced by Levobupivacaine
Ju-Tae Sohn, M.D., Seong-Ho Ok, M.D., Soo Hee Lee, 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, Jinju, Republic of Korea. Taken together, these results suggest that LE reverses the toxic dose (5 × 10 M) levobupivacaine-induced vasodilation through reversal of inhibition of PKC phosphorylation and Rho-kinase membrane translocation induced by toxic dose levobupivacaine.

A448 Protein Kinases Contribute to Mepivacaine-Induced Contraction in Isolated Rat Aorta
Ju-Tae Sohn, M.D., Seong-Ho Ok, M.D., Soo Hee Lee, M.D., Department of Anesthesiology and Pain Medicine, Gyeongsang National University Hospital, Jinju, Republic of Korea. Taken together, these results indicate that the mepivacaine-induced contraction involving an increase in myofilament Casensitivity involves the primary activation of PKC-, Rho-kinase-, and ERK-mediated pathways in the isolated endothelium-denuded aortic rings. In addition, PKC appears to mediate the mepivacaine-induced ERK activation.

A449 Effects of Sevoflurane and Erythropoietin on Trastuzumab-induced Myocardial Depression in Isolated Rat Heart
Yu Sato, Ph.D., Osamu Nishikido, Ph.D., Takeshi Tateda, Ph.D., Anesthesiology, St. Marianna University School of Medicine, Kawasaki, Japan. We evaluated the effects of sevoflurane on trastuzumab-induced myocardial depression in isolated rat hearts, and whether erythropoietin protects the myocardium against trastuzumab- and sevoflurane-induced cardiotoxicity in isolated rat hearts. As a result, we observed that sevoflurane enhanced trastuzumab-induced myocardial depression, and erythropoietin significantly prevented trastuzumab- and sevoflurane-induced cardiotoxicity. Thus, we conclude that erythropoietin protects the myocardium from trastuzumab- and sevoflurane-induced damage.

A450 Inhibitory Effect of Ketamine on Rat Vascular Smooth Muscle Cell Proliferation
Yi Chang, M.D., Ph.D., Joen-Rong Sheu, Ph.D., Department of Anesthesiology, Shin Kong Wu Ho-Su Memorial Hospital, Department of Pharmacology, School of Medicine, Taipei Medical University, Taipei, Taiwan. We investigated the anti-proliferation effect of ketamine and its possible mechanism on rat vascular smooth muscle cells. Our data reveal the anti-proliferation effect of ketamine is at least partially due to inactivation of Akt-ERK signaling pathway.

A451 Identification and Characterization of a Novel Compound That Protects Cardiac Tissue From hERG-Related, Drug-Induced Arrhythmias
Amanda N. Lorinc, M.D., Franck Potet, Ph.D., Raghav Venkataraman, Veniamin Sidorov, Ph.D., Franz Bauendenbacher, Ph.D., Sabina Kupershmidt, Ph.D., Vanderbilt University, Nashville, TN. The hERG-encoded K current, IKr, is essential for cardiac repolarization but also a source of cardiotoxicity because unintended hERG inhibition by diverse pharmaceuticals can cause arrhythmia and sudden cardiac death. We identified and characterized a small compound, U3405601 ("601"), that reduces the sensitivity of hERG to the prototypical inhibitor, dofetilide and other known blockers. In isolated, Langendorff-perfused rabbit hearts, 601 reduced the incidence of dofetilide-enhanced arrhythmias.

A452 Rescue of Pre-existing Severe Pulmonary Hypertension and Cardiovascular Dysfunction by an Apolipoprotein-A1 Mimetic Peptide 4F
Soban Umar, M.D., Ph.D., Rangarajan D. Nadadur, B.Sc., Kaveh Navab, M.D., Mohamad Navab, Ph.D., Mansoureh Eghbali, Ph.D., Anesthesiology, Medicine, UCLA, Los Angeles, CA. Apolipoprotein-A1 mimetic peptide 4F rescues pre-existing severe PH and RV dysfunction in rats.

A453 Sudden Cardiac Death and Spontaneous Ventricular Fibrillation Associated With Pulmonary Hypertension-induced Right Heart Failure Are Prevented by 17-Beta Estradiol
Soban Umar, M.D., Ph.D., Aneesh Bapat, M.D., Raymond Chui, B.Sc., Hrayr S. Karaguzian, Ph.D., Mansoureh Eghbali, Ph.D., Anesthesiology, Medicine, UCLA, Los Angeles, CA. Estrogen prevents sudden cardiac death and spontaneous ventricular fibrillation associated with pulmonary hypertension-induced right heart failure.

A454 Estrogen Reverses Pulmonary Vascular Remodelling, Elevated Plasma Oxidized Lipids and Eicosanoids Associated With Severe Pulmonary Hypertension
Soban Umar, M.D., Ph.D., Kaveh Navab, M.D., Samuel H. Wald, M.D., Mohamad Navab, Ph.D., Mansoureh Eghbali, Ph.D., Anesthesiology, Medicine, UCLA, Los Angeles, CA. Estrogen therapy reverses pulmonary vascular remodelling and increased plasma oxidized lipids and eicosanoids associated with severe PH.
A455 Protective Role of Endogenous and Exogenous Estrogen in the Development of Experimental Pulmonary Hypertension and Right Ventricular Remodeling

Soban Umar, M.D., Ph.D., Rangarajan Nadadur, B.S., Samuel H. Wald, M.D., Gabriel Wong, B.S., Mansoureh Eghbali, Ph.D., Anesthesiology, UCLA, Los Angeles, CA. Endogenous and exogenous estrogen plays a protective role in the development of experimental pulmonary hypertension and right ventricular remodeling.

A456 A Novel Therapeutic Application for Bolus Remifentanil: Blunting the Hemodynamic Response to Mayfield Placement

Miles Berger, M.D., Ph.D., Jason Guercio, M.D., M.B.A., Thomas Hopkins, M.D., Michael Lucas James, M.D., Cecil Borel, M.D., Barbara Phillips-Bute, Ph.D., David S. Warner, M.D., David McDonagh, M.D., Anesthesiology, Duke University Medical Center, Durham, NC. Delicate neurosurgeries often require rigid immobilization of the patient's head with a Mayfield frame. Mayfield frame placement causes intense nociceptive stimulation and major hemodynamic spikes. Blunting this response may be critical to avoid increased ICP, cerebral aneurysms/vascular malformations rupture and myocardial stress. Using a retrospective database, we find that remifentanil was more effective than propofol in abating the heart rate and MAP increase in response to Mayfield placement. These data raise the possibility that remifentanil boluses provide better hemodynamic control than propofol boluses for other short but intense epochs of surgical stimulation.

A457 Short-Term Estrogen Treatment of Advanced Heart Failure Reverses Cardiac Fibrosis and Inflammation

Andrea Iorga, B.S., Rangarajan Nadadur, B.S., Salil Sharma, Ph.D., Jingyuan Li, M.D., Ph.D., Mansoureh Eghbali, Ph.D., UCLA, Los Angeles, CA. One of the possible mechanisms for the beneficial action of E2 on left ventricular heart failure is through reversal of inflammation and fibrosis.

A458 Estrogen Receptor β Mediates the Anti-Extracellular Matrix Remodeling Effects of Estrogen in the Right Ventricle

Rangarajan Nadadur, B.S., Soban Umar, M.D., Ph.D., Andrea Iorga, B.S., Mansoureh Eghbali, Ph.D., Anesthesiology, UCLA, Los Angeles, CA. Summary: RVF results in adverse ventricular remodeling of the RV which is reversed with E2. In vitro data suggests that E2 directly reverses this remodeling through Estrogen Receptor β.

A459 The EC90 of Remifentanil Blunting Cardiovascular Responses to Head Holder Application for Neurosurgery Under Total Intravenous Anesthesia With Propofol and Remifentanil

Jung-Man Lee, M.D., Deok-Man Hong, Ph.D., Young-Jin Lim, Ph.D., Jae-Hyon Bahk, Ph.D., Dental Anesthesiology, Seoul National University Dental Hospital, Seoul, Republic of Korea, Anesthesia and Pain Medicine, Seoul National University Hospital, Seoul, Republic of Korea. TIVA with propofol and remifentanil is considered to be the ideal anesthetic method for neurosurgery requiring EP monitoring. Using the biased coin design up-and-down sequential method, we estimated the EC90 of remifentanil blunting the cardiovascular responses to the application of a head holder to be 6.48 ng/mL (95% CI, 5.94-6.83 ng/mL).

A460 Matrix Remodeling Effects of Estrogen in the Right Ventricle

Andrea Iorga, B.S., Soban Umar, M.D., Ph.D., Mansoureh Eghbali, Ph.D., Anesthesiology, UCLA, Los Angeles, CA. Genistein rescues severe pulmonary hypertension through estrogen receptor β.

A461 Comparison of Propofol Anesthesia to Dexmedetomidine + Propofol for Intraoperative Management and Emergence in Craniotomy Surgery

Michael Misbin, M.D., Marc C. Torjman, Ph.D., Srijesh Vajjala, M.D., Robyn Tarpley, M.S., Ronak Desai, D.O., Alan Turtz, M.D., Ashley Shapiro, B.A., Warren Goldman, M.D., Steve Yocom, M.D., Department of Anesthesiology, Departments of Surgery, Cooper University Hospital, Cooper Medical School of Rowan University, Camden, NJ. This study evaluated the effect of adding Dexametomidine (DEX) to a total I.V. anesthetic on hemodynamic control and emergence during craniotomy surgery. We also examined requirement for antihypertensive therapy and long acting opiates. Our results show that DEX appears to reduce coughing therefore providing a more favorable emergence when compared to propofol. These findings may be related to the unique clinical profile of DEX.

A462 The EC90 of Remifentanil Blunting Cardiovascular Responses to Head Holder Application for Neurosurgery Under Total Intravenous Anesthesia With Propofol and Remifentanil

Jie Zhou, M.D., Linda S. Aglio, M.D., Department of Anesthesiology, University of California, Los Angeles, CA. Minimally Invasive Hemodynamic Monitoring Guided Intra-Operative Fluid Individualization and Optimization for Skull Base Surgery

Jie Zhou, M.D., Linda S. Aglio, M.D., Department of Anesthesiology, Perioperative and Pain Medicine, Brigham and Women’s Hospital, Harvard Medical School, Boston, MA. This is a retrospective review of anesthetic management for skull base operations with a focus on intra-operative fluid individualization and optimization.
A464 Intra-Operative Hydroxyethyl Starch (HES) Colloid Use is Not Associated With Post-Craniotomy Hemorrhage

James A. Feix, M.D., Tong Joo Gan, M.B., Michael James, M.D., David Warner, M.D., David McDonagh, M.D., Anesthesiology, Duke University Medical Center, Durham, NC. This is a retrospective study of patients undergoing craniotomy at Duke University Medical Center. Hydroxyethyl starch (HES) based colloid use and dose, as well as other fluids were quantitated. In this large database of craniotomy patients, HES use is not associated with post-craniotomy hemorrhage.

A465 Homologous Versus Autologous Blood Transfusion During Craniotomy for Intracranial Tumor

Parmod K. Bithal, M.D., Gyaninder P. Singh, M.D., Hemanshu Prabhakar, M.D. Neuroanaesthesia, All India Institute of Medical Sciences, New Delhi, India. Clinical outcome is better in patients not receiving blood transfusion. Transfusion of autologous blood in addition to homologous blood does not reduce the postoperative complications and outcome in the patients, though the requirement of the homologous blood products may be reduced.

A466 Post-Craniotomy Acute Kidney Injury: Vascular Procedures are Associated With Higher AKI Rates Than Tumor Resections

John Nardiello, M.D., Jeff A. McKenzie, M.D., Barbara G. Phillips-Bute, Ph.D., David L. McDonagh, M.D., Tong J. Gan, M.D., Madhav Swaminathan, M.D., Mark Stafford-Smith, M.D., Anesthesiology, Duke Medical Center, Durham, NC. In our retrospective study we investigated the incidence of acute kidney injury (AKI) in patients undergoing intracranial vascular procedures or craniotomy for tumor resection. In addition, we compared the rates of postoperative creatinine increase and AKI in craniotomy for tumor resection versus intracranial vascular procedure.

A467 Effect of Temporary Clipping During Intracranial Aneurysm Surgery on Hospital Stay

Gyaninder P. Singh, M.D., Deepa Khurana, M.D., Hemanshu Prabhakar, M.D., All India Institute of Medical Sciences, New Delhi, India. At discharge, outcome of patients of subarachnoid hemorrhage depend upon multiple factors. The duration of temporary clipping may affect the duration of hospital stay secondary to complications produced with prolonged application. In our retrospective analysis, we found that the duration of temporary clipping less than 20 minutes does not affect the duration of hospital stay in patients undergoing clipping of intracranial aneurysm.

A468 Valproate Treatment in Surgical Brain Injury

Wendy Woo, M.D., Richard Applegate, M.D., John Zhang, M.D., Ph.D., Anesthesiology, Loma Linda University, Loma Linda, CA. This study investigated the effects of Valproate treatment prior to surgical brain injury in rats. We found decreased brain edema in our low dose treatment group. With further studies, we hope to not only see decreased brain edema but also improved neurological outcome.

A469 Venous Air Embolism During Awake Craniotomy for Deep Brain Stimulation Electrode Implantation

Michael E. Johnson, M.D., Ph.D., Jana L. McNeil, R.N., Soumya P. Lehnhoff, R.N., Mary S. Marienau, Ph.D., Margaret W. Weglinski, M.D., Kendall H. Lee, M.D., Ph.D., Anesthesiology, Neurosurgery, Mayo Clinic, Rochester, MN. Patients undergoing awake craniotomy for deep brain stimulation electrode placement are at increased risk of venous air embolism (VAE) due to sitting position and spontaneous respiration. A retrospective, consecutive chart review of 140 patients monitored with precordial Doppler found an incidence of 5.7% definite VAE and 4.3% probable VAE.

A470 Factors Predicting Intraoperative Hypertension During Deep Brain Stimulator Insertion in Parkinson's Disease

Shobana Rajan, M.D., Eman Nada, M.D., Roop Kaw, M.D., Milind Deogaonkar, M.D., Rafi Avitsian, M.D., Anesthesiology, Department of Hospital Medicine, Neurosurgery, General Anesthesia, Cleveland Clinic, Cleveland, OH. Deep brain stimulation is used for control of motor symptoms in Parkinson’s disease. Hypertension is common during these procedures and can predispose to intracranial hemorrhage. This is a retrospective review to evaluate the factors which could predict a rise in intraoperative blood pressure during the testing period.

A471 Failed Awake Craniotomy - Incidence, Possible Causes and Effect on Outcome

Idit Matot, M.D., Erez Nossek, M.D., Daniel Hayat, M.D., Zvi Ram, M.D., Anesthesiology & Intensive Care & Pain, Neurosurgery, Tel Aviv University Medical Center, Tel Aviv, Israel. The failure rate of awake craniotomy (AC) in our center was 6.3% (27/424 patients). Successful AC was associated with a significantly increased rate of tumor resection and reduced operative morbidity. Failures were due primarily to preoperative mix dysphasia, low Karnofsky score, phenytoin treatment, history of seizures and multiple antiepileptic drug treatment. The results of the present study suggest that the majority of AC failures may be preventable by more meticulous patient selection, and avoidance of drugs that might change the patient’s cognitive status.

A472 Effect of High Positive End-Expiratory Pressure on the Cerebral Oxygen Saturation During Laparoscopic Cholecystectomy Under Propofol Anesthesia

Hyun Jeong Kwak, M.D., Hong Soon Kim, M.D., Wol Seon Jung, M.D., Hee Yeon Park, M.D., Jong Min Park, M.D., Gwang Sub Kim, M.D., Department of Anesthesiology and Pain Medicine, Gachon University Gil Medical Center, Incheon, Republic of Korea. Application of PEEP with 10 cm H2O during CO2 pneumoperitoneum could preserve the rSO2 value and hemodynamic stability in patients undergoing laparoscopic cholecystectomy under propofol anesthesia.
Elderly Age as a Prognostic Marker of 1-Year Poor Outcome for SAH Patients Through Age's Interaction With Admission Hydrocephalus

Vincent Degos, M.D., Ph.D., Virginie Trehel Turis, M.D., Christian C. Apfel, M.D., William L. Young, M.D., Louis Puybasset, M.D., Ph.D., Anesthesia and Perioperative Care, University of California, San Francisco, San Francisco, CA, Anesthesiology and Critical Care, Groupe Hospitalier Pitié-Salpêtrière, Assistance Publique-Hôpitaux de Paris, Université Pierre et Marie Curie, Paris, France. In this observational study including a cohort of 933 consecutive SAH patients followed for one year after discharge from the same ICU, we found that elderly age and admission hydrocephalus were both associated with 1-year poor outcome and that elderly age was associated with 1-year poor outcome only in the presence of admission hydrocephalus. Furthermore, the association between admission hydrocephalus and 1-year poor outcome was increasing with age.

C-Reactive Protein Is a Useful Prognostic Factor for Poor Outcome and Symptomatic Vasospasm in Patients With Aneurysmal Subarachnoid Hemorrhage

Anna Kim, M.D., Hee-Young Park, M.D., Young-Jin Lim, M.D., Department of Anesthesiology and Pain Medicine, Seoul National University Hospital, Seoul, Republic of Korea. CRP POD1-2 can be a useful prognostic factor for poor outcome or symptomatic vasospasm in patients with aneurysmal SAH.

Diffusion Tensor Imaging to Predict Long-term Outcome Following Cardiac Arrest

Hortense Besancenot, M.D., Charles-Edouard Luyt, M.D., Robert Stevens, M.D., Louis Puybasset, M.D., Ph.D., Damien Galanaud, M.D., Rajiv Gupta, M.D., Ph.D., Steven Laureys, M.D., Ph.D., Neuro Critical Care, Critical Care Medicine, Neuroradiology, Pitié-Salpêtrière, Paris, France, Division of Neuroscience Critical Care, John Hopkins University School of Medicine, Baltimore, MD, Radiology, Massachusetts General Hospital, Harvard Medical School, Boston, MA, Neurology, Cyclotron Research Centre University & University Hospital of Liège Sart Tilman, Liège, Belgium. DTI may be useful in predicting unfavorable outcome in comatose survivors of cardiac arrest, since it provides physiological information in the injured white matter.

Inpatient Management of Postoperative Stroke

Thomas Didier, M.D., Matt Giles, M.D., George A. Mashour, M.D., Ph.D., Amy M. Shanks, M.S., Eric E. Adelman, M.D., Adrian W. Gelb, M.D., Laurel E. Moore, M.D., Anesthesiology, Department of Neurology, University of Michigan, Ann Arbor, MI, Anesthesiology, University of California San Francisco, San Francisco, CA. Although there are data on incidence and risk factors for perioperative stroke and well-established guidelines for the management of nonoperative acute ischemic stroke, there are little data to guide the management of patients who suffer acute perioperative stroke. We hypothesized that the management of patients suffering perioperative stroke may not meet the standards in place for nonoperative acute stroke and tested this hypothesis using a large perioperative data base in noncardiac, nonvascular and non-intracerebral surgery patients.

Adenosine Responses to Halothane and 4-Chloro-M-Cresol in Human B Cells: A Diagnostic Application for Susceptibility to Malignant Hyperthermia

Said Bina, Ph.D., Sheila Muldoon, M.D., John Capacchione, M.D., Rolf Bünger, M.D., Ph.D., Anesthesiology, Physiology, USUHS, Bethesda, MD. Development of a relatively simple blood test for malignant hyperthermia diagnosis.

Genetic Testing for Malignant Hyperthermia: Are Direct-to-Consumer Tests a Viable Alternative to Traditional Laboratories?

Carlos Wilkerson, M.D., Ph.D., Anesthesiology, Thomas Jefferson University Hospital, Philadelphia, PA. Direct-to-consumer (DTC) genetic testing for MH was evaluated as an alternative to testing by traditional laboratories. The ease of use and the relatively low price make DTC testing attractive but the results for MH are incomplete, misleading, and not evidence based. Further studies are needed to verify the validity of DTC genetic testing compared to results from experienced laboratories.

The Role of Calsequestrin-1 Gene in Predisposition to Malignant Hyperthermia

Sheila Riazi, M.D., Natalia Kraeva, Ph.D., Elena Zvaritch, Ph.D., Alexander Kraev, Ph.D., David MacLennan, Ph.D., Anesthesia, Malignant Hyperthermia Investigation Unit, Banting and Best Department of Medical Research, University of Toronto, Toronto, ON, Canada. Following promising data from animal studies on calsequestrin and MH and in order to increase sensitivity of genetic testing in MH, a complete sequencing of calsequestrin-1 gene, encoding the sarcoplasmic protein modulating RyR1, was performed in a large group of MH susceptible (MHS) individuals. Our analysis revealed a very low level of genetic variation within the CASQ1 coding regions suggesting that CASQ1 is not a major MH locus in MHS population.

Analysis of Abnormal Histomorphology in Malignant Hyperthermia Susceptible (MHS) Patients, Correlation With Reactivity to Caffeine and Halothane

Sheila Riazi, M.D., Derek Rosen, M.D., Julia Keith, M.D., Natalia Kraeva, Ph.D., Sidney Croul, M.D., Anesthesia, Toronto General Hospital, Department of Pathology, Sunnybrook Health Center, Malignant Hyperthermia Unit, Canada, Department of Pathology, Toronto General Hospital, Toronto, ON, Canada. Despite the lack of identifiable structural histomorphologic abnormality in majority of MHS patients, analysis of MHS patients with abnormal histomorphology revealed a few characteristics that stand out, indicating myopathic changes. There was no difference in RyR1 mutation positivity, nor caffeine-halothane reactivity in these patients, when compared with all MHS patients.
A481 Anesthetic Synergy Between Two N-Alkanes
Robert Brosnan, D.V.M., Ph.D., Fabiola Fukushima, D.V.M., Trung Pham, B.S., Department of Surgical and Radiological Sciences, University of California, Davis, Davis, CA. Butane and pentane show synergistic anesthetic effects in vitro consistent with their different in vitro receptor effects. Results also support the relevance of NMDA receptors to anesthetic actions for some (but not all) inhaled agents.

A482 Propofol Attenuates Pneumoperitoneum-Induced Formation of Lipid Peroxides in Patients Undergoing Robot-Assisted Laparoscopic Radical Prostatectomy
Chi-Fong Tsai, M.D., Chun-Tse Wu, M.D., Ph.D., Chih-Chung Lin, M.D., Ph.D., Huang-Ping Yu, M.D., Ph.D., Department of Anesthesiology, Chang Gung Memorial Hospital, Taoyuan, Taiwan, Department of Urology, Chang Gung Memorial Hospital, Keelung, Taiwan. A prolonged pneumoperitoneum in robot-assisted laparoscopic radical prostatectomy (RALP) decreased splanchic blood flow. Pneumoperitoneum itself produces reactive oxygen species (ROS), and ischemia-reperfusion model after deflation of pneumoperitoneum produces more ROS. We demonstrated that propofol may attenuate pneumoperitoneum-induced formation of lipid peroxides in RALP.

A483 Physiological and Pathological Features are Not Always Identical in Patients With a Known RYR1 Mutation
Yasuko Ichihara, M.D., Ph.D., Hirotsu Kikuchi, M.D., Ph.D., Carlos A. Ibarra M., M.D., Ph.D., Kohji Fujio, M.D., Ph.D., Yoshinori Iwase, M.D., Ph.D., Nobuyuki Matsumoto, M.D., Ph.D., Akira Kitamura, M.D., Ph.D., Anesthesiology, Kikkoman General Hospital, Noda-shi, Chiba Pref. Japan, Anesthesiology, Abiko Toho Hospital, Abiko-shi, Chiba pref, Japan, Anesthesiology, Hadassa Hospital, Jerusalem, Israel, Anesthesiology, Saitama Medical Hospital, Moroyamamachi, Japan, Anesthesiology, Saitama Medical University International Medical Center, Hidakashi, Japan. The known MH-causative Arg163Cys RYR1 mutation was identified in our three patients. Of them survived clinical MH episodes but showed different pathological findings. The third case had no clinical MH history, CIICR rate was atypically enhanced, and had muscle pathology findings commonly seen in MH patients.

A484 Questionnaire on Dantrolene to the Certified Training Hospitals in Japan
Hirosato Kikuchi, M.D., Ph.D., Yasuko Ichihara, M.D., Ph.D., Carlos A. Ibarra M., M.D., Ph.D., Kouji Fujio, M.D., Ph.D., Yoshinori Iwase, M.D., Ph.D., Nobuyuki Matsumoto, M.D., Ph.D., Anesthesiology, Abiko Toho Hospital, Chiba, Japan, Anesthesiology, Kikkoman General Hospital, Noda, Chiba, Japan, Anesthesiology, Hadassah University Hospital, Jerusalem, Israel, Saitama Med. Univ. Hospital, Inuma, Saitama, Japan. To evaluate the knowledge about dantrolene, an anonymous questionnaire was collected from 320 out of 1,100 Certified Training Hospitals (Japanese Society of Anesthesiologists). Dantrolene was stored within the OR area only in 75% of the hospitals and there was no storage at all in one of them. Many certified anesthesiologists have no idea that the agent has to be dissolved in distilled water. Lack of an appropriate knowledge about dantrolene might explain that deaths from MH crisis are still reported in Japan, which might be improved through an educational intervention.

A485 A Comparison Between Two Types of Anesthesia for Open Abdominal Aortic Surgery - Myocardial Injury: A Randomized Controlled Study
Esper E. Lindholm, M.D., Erland Aune, M.D., Ph.D., Knut Arvid Kirkeboen, M.D., Ph.D., Anesthesiology, Vestfold Hospital Trust, Toensberg, Norway, Dept. of Cardiology, Oslo University Hospital, Anesthesiology, Oslo University Hospital, Oslo, Norway. Data on cardioprotection, especially pre- and postconditioning, indicate that volatile anesthetic agents might induce a direct cardioprotective effect, independent of hemodynamic alterations. The present study report data from 193 patients in a randomized trial comparing TIVA and volatile anesthetic with regard to troponin T (TnT) release in elective abdominal aortic surgery. We found no significant difference in TnT release between patients subjected to volatile anesthesia compared to TIVA. These data indicate that the cardioprotective effects of volatile agents found in cardiac surgery are less obvious in major vascular surgery.

A486 Effects of Infusion of Different Doses of Continuous Etomidate on Adrenal Function in Dogs
Bangyong Qin, M.Sc., Honghuan Hu, M.Sc., Zhaoqiong Zhu, M.D., Zunyi Medical College, Zunyi, China. Summary: The serum cortisol and aldosterone levels were decreased with the doses and times of infusion of continuous etomidate, but there were no significant differences on adrenaline, noradrenaline and hemodynamics in dogs. As etomidate of 10μg.kg.min for 3h has little effect on adrenocortical and adrenal medulla function, it may be safe for the clinical continuous maintenance of anesthesia.

A487 GABA-A Receptors as Molecular Targets of General Anesthetics
Guodong Li, M.D., Ph.D., Anesthesiology, UCLA Medical Center, Los Angeles, CA. Establishment of a coherent and consistent structural model of the GABA_A receptor found in cardiac surgery are less obvious in major vascular surgery.

A488 Inhibitory Effect of Urapidil on Vascular Tone in Rat Aortics Rings: Role of the Alpha-1 Adreno Receptors
Claire E. Bopp, M.D., Girish Joshi, M.D., Ph.D., Valerie Schnikerth, M.D., Ph.D., Pierre Diemunsch, M.D., Ph.D., Anesthesiology and Intensive Care, University Hospital of Strasbourg, UMR CNRS 7213 Laboratoire de Biophotonique et Pharmacologie, Anesthesiology and Intensive care, University Hospital of Strasbourg, Strasbourg, France. The antihypertensive drug Urapidil (U) is a peripheral postsynaptic alpha 1 adreno-receptor antagonist and a central 5-HT1A serotoninergic agent. The potential role of endothelin, nitric oxide (NO) and peripheral 5-HT1A serotoninergic receptors in the mechanism of action of U remain unknown. This in vitro experimental study aimed to characterize the vascular alpa-1 adrenergic effects of U on rat aorta, either with intact endothelium or without endothelium. These observations suggest that the alpha-1 adreno-receptor antagonistic effects of U do not require an intact (functional) endothelium.
A490 Anesthetic Preconditioning in Aortic Valve Replacement Surgery

Miomir D. Jovic, Sr., M.D., Dusko Nezic, M.D., Ana Stancic, Ph.D., Bato Korac, Ph.D., Olivera Cekic, M.D., Anesthesia and Intensive Care, Dedinje Cardiovascular Institute, Dedinje Cardiovascular Institute, University of Belgrade, Institute for Biological Research Siniša Stanković, Belgrade, Serbia. During the last decade anesthetic preconditioning drew the attention to possibly new form of heart preconditioning, during cardiac surgery, by modulation of intracellular mechanisms mostly situated in mitochondria. The aim of the study was to compare the effects of propofol and sevoflurane on myocardial protection and mitochondria bioenergetic-related molecules during aortic valve replacement (AVR).

A491 Effect of Succinylcholine in Malignant Hyperthermia Susceptible Pigs Evaluated by Femoral Venous pCO2 Monitoring

Stephan Johannsen, M.D., Daniel Schneiderbanger, M.D., Norbert Roewer, M.D., Ph.D., Martin Anetseder, M.D., Frank Schuster, M.D., Department of Anaesthesia and Critical Care, University of Wuerzburg, Wuerzburg, Germany, Department of Anaesthesia, Krankenhaus Landshut-Achdorf, Landshut, Germany. Metabolic reaction in MH-susceptible pigs measured by venous pCO2 was similar following succinylcholine or halothane and potentiated by the combination of both triggering agents.

A492 Effects of Dexmedetomidine and Propofol on Sedation With BIS in Patients After Cardiac Surgery in a Fast-Track Recovery Room Setting

Yucel Karaman, M.D., Burcin Abud, M.D., Meltem Cakmak, M.D., Murside Yildiz, M.D., Mustafa Gonullu, M.D., Zeki Tekgul, M.D., Anesthesiology and Reanimation, Department of Cardiac Surgery, Tepecik Research Hospital, Izmir, Turkey. To compare the safety and effectiveness of dexmedetomidine to propofol for sedation with bispectral index (BIS) of mechanically ventilated patients after coronary artery bypass grafting. At sternal closure, patients in group A received dexmedetomidine and; group B patients received propofol. Infusion rates were titrated to keep patients comfortable, to Ramsay Sedation Score (RSS) (targeted ≥3) and bispectral index (BIS) (targeted 70%) monitoring. We conclude that dexmedetomidine provide safe and effective sedation for post-coronary artery bypass surgical patients, especially first hours.

A493 Dexmedetomidine Infusion Prevents Post-Operative Shivering in Patients Undergoing Gynecologic Laparoscopic Surgery

Semra Karaman, M.D., Ilkben Gunusen, M.D., Arda Ceylan, M.D., Yucel Karaman, M.D., Esranur Cetin, M.D., Abdurrahim Derbent, M.D., Ahmet Mete Ergenoglu, M.D., Anesthesiology and Reanimation, Ege University Faculty of Medicine, Tepecik Research Hospital, Department of Obstetric and Gynecology, Izmir, Turkey. Shivering is very unpleasant and uncomfortable after surgery. It may also cause increasing oxygen consumption, intracranial and intraocular pressure and aggravate postoperative pain. Intraoperative dexmedetomidine infusion reduces the incidence and severity of post-anesthetic shivering compared with placebo in gynecologic laparoscopy.

A494 No Change in Red Blood Cell Ability to Withstand Shear Stress After Induction With Propofol

Gerhardt Konig, M.D., Marina V. Kameneva, Ph.D., Jonathan H. Waters, M.D., Anesthesiology, McGowan Institute for Regenerative Medicine, Anesthesiology, Magee Women's Hospital of the University of Pittsburgh Medical Center, Pittsburgh, PA. Red blood cells (RBCs) are exposed to mechanical stress and shear in excess of those encountered during in vivo circulation in numerous biomedical devices. RBC lysis occurs when blood is processed through these devices with resultant red cell loss and release of free hemoglobin, both of which are detrimental to the patient. The aim of this study was to determine if the anesthetic agent propofol affects the RBC’s ability to withstand mechanical stress and shear. The results showed that the mechanical properties of RBCs and blood viscosity do not change appreciably after induction with propofol.
A496 Comparison of Anesthetic Management and Outcomes of Robot Assisted Versus Open Radical Cystectomy

Terence Trentman, M.D., Sharon Fassett, C.R.N.A., Dustin McGirr, B.S., Brad Anderson, B.S., Yu-Hui Chang, Ph.D., Rafael Nunez Nateras, M.D., Erik Castle, M.D., David Rosenfeld, M.D., Mayo Clinic in Arizona, Midwestern University/Arizona College of Osteopathic Medicine, Biomedical Statistics and Informatics, Phoenix, AZ. The University of Arizona College of Medicine – Tucson, Tucson, AZ, Urology, Anesthesiology, Mayo Clinic in Arizona, Phoenix, AZ. We compare anesthetic techniques and outcome for patients undergoing robot assisted versus open cystectomies. Our data show that robotic surgery provides advantages for patients in terms of pain and hospital length of stay, but also challenges for anesthesia providers in terms of positioning and ventilation management.

A497 Clevidine Is Associated With Less Perioperative Vasopressor Use in Patients Undergoing Carotid Endarterectomy

Yamei Wang, M.S., Tracy Crothers, Pharm.D, Stephanie Plent, M.D., The Medicines Company, Parsippany, NJ. This observational database analysis describes for the first time the use of clevidine for the perioperative management of BP in carotid endarterectomy patients. Clevidine, a short-acting dihydropyridine calcium antagonist, has a rapid onset and offset of action that reduces blood pressure rapidly and in a controlled fashion. Preliminary analysis indicates that clevidine is associated with less vasopressor use and manages BP without additional antihypertensive agents more frequently than the comparators nicardipine and sodium nitroprusside in this population.

A498 Transfusion Therapy and Lung Injuries in the Joint Theatre Trauma Registry

Ryan Keneally, M.D., Dale Szpiesjak, M.D., Michael Shigemasa, M.D., Michael Paul, M.D., Anesthesiology, Uniformed Services University of the Health Sciences, Anesthesiology, Walter Reed National Military Medical Center, Bethesda, MD. The authors present retrospective data on transfusion therapy and associated mortality rates among patients with combat related pulmonary injuries sustained in Iraq and Afghanistan. The association of blood component therapy and ratio of components transfused with mortality is presented.

A499 Statin Therapy After Orthotopic Liver Transplantation is Associated With Reduced Mortality

Dost M. Khan, M.D., Wael AlJaroudi, M.D., Chadi Alraies, M.D., Jacek Cywinski, M.D., Anesthesiology, Cardiovascular Medicine, Hospital Medicine, Cleveland Clinic, Cleveland, OH. All adult patients that underwent orthotopic liver transplantation (OLT) at Cleveland Clinic from January 2004 to December 2010 were identified in a retrospective fashion. In total 902 patients underwent OLT between the specified study dates. During a mean follow-up of 1328±788 days, there was reduced all-cause mortality in statin group (10/87 died (11%) vs 174/815 died (21%)), log rank P=0.0059. In summary, postoperative statin therapy in orthotopic liver transplant recipients is associated with decreased mortality.

A500 Comparative Perioperative Outcomes Associated With Neuraxial Versus General Anesthesia for Simultaneous Bilateral Total Knee Arthroplasty

Ottokar Stundner, M.D., Ya-Lin Chiu, M.S., Xuming Sun, M.S., Madhu Mazumdar, Ph.D., Peter M. Fleischut, M.D., Lazaros Poultsides, M.D., Peter Gerner, M.D., Stavros G. Mentzoudis, M.D., Ph.D., Department of Anesthesiology, Hospital for Special Surgery, Division of Biostatistics and Epidemiology, Department of Public Health, Department of Orthopedic Surgery, Hospital for Special Surgery, Weill Medical College of Cornell University, New York, NY. Department of Anesthesiology, Salzburg University Hospital, Salzburg, Austria. 27138 records of patients undergoing bilateral total knee arthroplasty were analyzed by anesthetic technique. Neuraxial anesthesia was associated with lowest rate of complications, transfusion, length and cost of hospitalization.

A501 A Prospective Comparison of Outcomes in NICOM-Versus EDM-Guided Goal Directed Fluid Therapy

Nathan H. Waldron, M.D., Timothy E. Miller, M.B., B.Ch., Amy K. Manchester, M.D., Kerri M. Wahl, M.D., Tong Joo Gan, M.D., Department of Anesthesiology, Duke University, Durham, NC. In this study, we prospectively compared postoperative outcomes in colorectal surgery patients receiving Goal Directed Fluid Therapy (GDFT) with either the Non-invasive cardiac output monitor (NICOM) or esophageal Doppler monitor (EDM). As part of the GDFT protocol, patients received intraoperative boluses of a colloidal solution. We found no significant differences in postoperative recovery profile, including length of stay, return of bowel function, or adverse events. NICOM is a viable totally non-invasive hemodynamic monitor to guide GDFT.

A502 MAC vs. GA for ERCP: Experiences From a High-Volume Endoscopy Center

Marc D. Fisicaro, M.D., Ali Siddiqui, M.D., Richard R. Bartkowski, M.D., Ph.D, Richard H. Epstein, M.D., Anesthesiology, Gastroenterology, Jefferson Medical College, Philadelphia, PA. Patients undergoing endoscopic retrograde cholangiopancreatography (ERCP) have been successfully used for perioperative sympatholysis and for reducing the anesthetic requirement during propofol or volatile-based techniques more frequently than the comparators nicardipine and sodium nitroprusside in this population.


Ofelia L. Elvir Lazo, M.D., Ronald H. Wender, M.D., Roya Yumul, M.D., Ph.D., Robert K. Kariger, M.D., Alan S. Zaentz, M.D., Kaplan B. Marshal, M.D., Robert T. Naruse, M.D., Mitra M-Khany, M.D., Derek Kwan, M.D., Paul F. White, M.D., Ph.D., Anesthesiology, Cedars Sinai Medical Center, Los Angeles, CA, Cedars Sinai Medical Center/White Mountain Institute, Los Angeles/Los Altos, CA. Labetalol and esmolol have been successfully used for perioperative sympatholysis and for reducing the anesthetic requirement during propofol or volatile-based anesthesia. This is a randomized, double-blinded, and active-controlled study to evaluate the adjunctive effects of labetalol and esmolol (vs. fentanyl) on the hemodynamic stability during General Anesthesia for Laparoscopic Surgery and postoperative recovery outcomes (e.g., pain, PONV, return of bowel function).
A504 Effect of Lidocaine and Esmolol Alone or in Combination to Improve the Quality of Recovery, Maintaining Hemodynamic Stability During Abdominal Surgery

Roya Yumul, M.D., Ph.D., Ronald H. Wender, M.D., Ofelia L. Elvir-Lazo, M.D., Meir J. Solnik, M.D., Marshal B. Kaplan, M.D., Taizoon Yusufali, M.D., Mitra M-Khany, M.D., Raul Lopez, M.D., Andrew J. Li, M.D., Paul F. White, M.D., Ph.D., Cedars Sinai Medical Center, Los Angeles, CA. We designed this prospective, randomized, double-blinded, active-controlled study to test the hypothesis that systemic administration of lidocaine and esmolol in combination (vs. either drug alone) for maintenance of hemodynamic stability during surgery will result in improved postoperative outcomes for patients undergoing abdominal surgery.

A505 Duration of Red Cell Storage is Associated With Worse Outcomes After Liver Transplantation

Jacq B. Cywinski, M.D., Jing You, M.S., Maged Argulious, M.D., Cleveland Clinic, Cleveland, OH. In this follow up study we found that intraoperative administration of red cells stored longer than 15 days is associated with worse outcomes after orthotopic liver transplant. Prospective study is needed to confirm these findings.

A506 External Validation of VBHOM-based Outcome Model for Major Lower Extremity Amputation

Shariq A. Khan, M.D., Christopher Liu, M.B., B.S., Ruth Lee Qianyi, M.B., B.S., Ee Ling Ng, M.B., B.S., Anesthesiology, Singapore General Hospital, NUS Yong Loo Lin School of Medicine, Tan Tock Seng Hospital, Singapore, Singapore. Attempts have been made in the past to identify high risk patients undergoing Lower extremity amputation, including an attempt by the Vascular Society of Great Britain & Ireland (VSGBI) to produce a prognostic model based on a minimal dataset (=VBHOM model). The purpose of this study is to externally validate the VBHOM model and to develop a similar prognostic model using an artificial neural network. All patients who had major lower extremity amputations, were identified using the hospital database. The VBHOM model failed to show adequate calibration and discrimination on external validation. Although the ANN model had adequate discrimination, it failed to show an adequate goodness of fit.

A507 Effect of Anesthesiology Type on the Incidence of Cardiac Arrest During Surgical Procedures

Frank Rosinia, M.D., John Lefante, Ph.D., Laurie Freyder, M.P.H., Mark Diana, Ph.D., Henry Liu, M.D., Larry Webber, Ph.D., Anesthesiology, Tulane University, Tulane School of Public Health and Tropical Medicine, Tulane School of Medicine, New Orleans, LA. The Anesthesiology Business Group registry was used to analyze the influence of gender and patient type for intraoperative cardiac arrest.

A508 The Impact of Intraoperative Fluid Management on Short-term Outcome in Patients Undergoing Laparoscopic Colon Resection. Five Years Retrospective Study at a Tertiary Medical Center

Ana M. Manrique-Espinell, M.D., Paul Halweg, M.D., Daniela Damian, M.D., Ibtessam Hilmi, M.B., Anesthesiology, A, University of Pittsburgh Medical Center, Pittsburgh, PA. Retrospective analysis of five years of institutional experience in a tertiary medical center regarding perioperative fluid management and correlation with postoperative outcomes. Preoperative, intraoperative and postoperative data of 227 patients was collected. A logistic regression analysis of all significant variables showed that ASA ps, surgical time, total crystalloids, and preoperative hematocrit were correlated with increased incidence of postoperative complications.

A509 Preoperative Oral Intake of an Amino Acid and No-fat Carbohydrate Liquid Diet Keep Body Temperature During General Anesthesia and Improve Patient’s Satisfaction

Naoko Takeuchi, M.D., Hajime Arima, M.D., Haruko Ota, M.D., Hiroshi Sasso, M.D., Kanuya Sobue, M.D., Department of Anesthesiology and Management, Nagoya City University Graduate School of Medical Sciences, Mizuho-ku, Nagoya-shi, Aichi, Japan. We make a hypothesis oral intake of amino acid before anesthesia has the same effect. Temperature of the group of oral intake of an amino acid diet was significantly higher than the group of oral intake of water. In our study, an amino acid diet has good effects as a preoperative oral intake.

A510 Effect of Corticosteroids and Depth of Anesthesia on Acute Postoperative Pain in DeliT Study

Jae Ho Lee, B.A., Alexander Y. Fu, B.S., Cameron Egan, B.A., Michael Ghobrial, M.D., Abdulkadir Atim, M.D., Yashar Eshraghi, M.D., Jing You, M.S., Basem Abdelmalak, M.D., Alparslan Turan, M.D., Outcomes Research, Case Western Reserve University School of Medicine, Cleveland, OH, Cleveland Clinic, Cleveland, OH. The hypothesis of this study was that each of dexamethasone and light anesthesia is associated with better pain and/or less opioid consumption. Our patient population was patients who were enrolled in DeliT trial where patients were randomized to dexamethasone vs. placebo, light vs. deep anesthesia, and tight vs. conventional glucose control. The two outcomes (pain and opioid consumption) were assessed as joint hypothesis testing. After analysis, we found that neither light anesthesia nor dexamethasone was associated with better pain/opioid outcomes.

A511 Effects of Angiotensin Receptor Blockers on Early Postoperative Outcomes After Coronary Bypass Grafting

Michael W. Manning, M.D., Ph.D., William Whilte, M.P.H., John H. Alexander, M.D., Joseph Mathew, M.D., Mark Newman, M.D., Mihai Podgoreanu, M.D., Department of Anesthesiology, Department of Cardiology, Duke University, Durham, NC. This is a retrospective study looking at the effects of Angiotensin Receptor Blockers on postoperative outcomes following CABG. While ARBs were not independently associated with decreased adverse outcomes, patients with higher propensity scores appeared to benefit from ARB treatment.
A512 Impact of General versus Spinal Anesthesia on Post-Anesthesia Care Unit Recovery Time Following Total Hip and Knee Arthroplasty

Kelsey McCarty, M.B.A., Marta J. Rozanski, M.D., Robert G. Peloquin, M.D., Andrew A. Freiberg, M.D., James P. Rathmell, M.D., Department of Anesthesia, Critical Care and Pain Medicine, Department of Orthopaedics, Massachusetts General Hospital, Boston, MA. The purpose of our study was to analyze the influence of different anesthetic techniques on the recovery time in the PACU. The recovery time in spinal anesthesia (SA) patients averaged 272 and 262 minutes for total hip and knee arthroplasty patients, respectively, which was significantly longer than the recovery time following general anesthesia (GA; 222 and 209 minutes for hips and knees, respectively; p<0.001). Use of SA as compared to GA at our institution was associated with greater variability in recovery times and, on average, almost one hour longer recovery time from surgical end to readiness for PACU discharge.

A513 Ketamine Use in the Acute Pain Management of Major Spine Surgery

Joshua Kohzt, M.D., Armagan Dagal, M.D., Mario Depinto, M.D., Aaron Joffe, D.O., Jean-Pierre Estebe, M.D., Mitiam Treggiari, M.D., Anesthesiology and Pain Medicine, University of Washington, Seattle, WA. We observed a strong pattern of higher opioid consumption in the postoperative period for patients that received ketamine. It is possible that providers elect to use ketamine in patients with expected high consumption of postoperative opioids.

A514 Possible Involvement of Hypoxia-Inducible Factor 1 in Activation of Microglia and Subsequent Gene Expression Conferring Neuropathic Pain

Tomonori Matsuyama, M.D., Kiichi Hitota, M.D., Ph.D., Kengo Suzuki, M.D., Shinichi Kai, M.D., Kazuhiko Fukuda, M.D., Ph.D., Anesthesia, Kyoto University Hospital, Kyoto, Japan. We hypothesize that activated microglia may express the HIF-1 activity like macrophage and such oxygen environment in spinal cord may affect the gene expression and the neuropathic pain development. In response to activation of microglia, HIF-1 activation and expression of genes, which play essential roles in neuropathic pain, are observed under 20% conditions. In particular, LPS and ATP induced P2X4 expression, which is most strongly related to neuropathic pain development than P2X7, under 20% O2 conditions and much more induce under 1% O2 conditions. These findings suggest that redox environment caused by micro oxygen environment in spinal cord may affect activation of microglia and gene expression involved in neuropathic pain.

A515 Antihyperalgesic Efficacy of Pregabalin Involves the Modulation of IL-10 Secretion From Splenocytes Followed by Chronic Constriction Nerve Injury in Mice

Ho Kyung Song, M.D., Ph.D., You Jin Kang, M.D., Ph.D., Anesthesiology and Pain Medicine, The Catholic Univ. Medical College, Seoul, Republic of Korea. To evaluate the possible influence of pregabalin treatment in neuropathic pain on cytokine production, the concentrations of TNF-α, IL-1β and IL-10 from plasma or splenocytes were measured. Pregabalin is likely to involve the modulation of the inflammatory pathway followed by nerve injury in mice, and it may affect anti-inflammatory cytokine in splenocytes.

A516 Differential Involvement of Spinal 5-HT7 Receptor in Formalin and Carrageenan Induced Inflammatory Pain

Jeong Il Choi, M.D., Ph.D., Myung Ha Yoon, M.D., Ph.D., Seong Wook Jeong, M.D., Hong Beom Bae, M.D., Ph.D., Sang Hyun Kwak, M.D., Ph.D., Cheol Won Jeong, M.D., Ph.D., Seong Heon Lee, M.D., Anesthesiology and Pain Medicine, Chonnam National University Medical College, Gwangju, Republic of Korea. Spinal 5-HT7 receptor is involved in formalin induced pain with its activation being antinoiceptive, but not in carrageenan. Depletion of serotonin in spinal cord enhanced mechanical allodynia by intraplantar carrageenan, but attenuated flinching behavior in the formalin test. 5-HT receptor activation in the state of serotonin depletion could be antihyperalgesic in carrageenan induced pain, but its activation does not produce additional antinociceptive effect in the formalin test.

A517 Early Intervention With Resveratrol Reduces Osteoarthritis and Osteoarthritis-Induced Pain in Mice

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., Hee-Jeong Im, Ph.D., Anesthesiology, Rush Medical College, Biochemistry, Rush University Medical Center, Rush University Medical Center, Biochemistry and Orthopedic Surgery, Rush Medical College, Chicago, IL. In this mouse knee trauma model, early intervention with intra-articular Resveratrol significantly reduced osteoarthritis-induced pain and cartilage degeneration.

A518 FGF-2 Reverses Osteoarthritis but not Osteoarthritis-Induced Pain in Mice

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., Hee-Jeong Im, Ph.D., Anesthesiology, Rush Medical College, Biochemistry, Rush University Medical Center, Rush University Medical Center, Biochemistry and Orthopedic Surgery, Rush Medical College, Chicago, IL. Despite the capacity of FGF-2 to reduce murine cartilage regeneration, mice injected with FGF-2 did not experience significant alleviation of pain.

A519 Differential Expression of Hippocampal Micrornas in Rat Chronic Pain Models

Yoko Hori, M.D., Masae Arai, M.D., Masashi Ishikawa, M.D., Yuki Genda, M.D., Shunsuke Tanaka, M.D., Atsuhiko Sakamoto, M.D., Ph.D., Nippon Medical School, Tokyo, Japan. We examined the miRNA expression changes in hippocampus of CCI and CFA rats with TLDA and detected 225 miRNA expressions. Our study revealed the expression patterns of neuropathic injury and inflammation-related miRNAs in rat’s hippocampus. Our results indicated that investigation of miRNA might lead to more efficient treatment strategies with each pain mechanism.
A520 Change of BDNF Expression in the Dorsal Root Ganglion of the Bone Cancer Pain Model
Naoto Tomotsuka, M.D., Ryuji Kaku, M.D., Ph.D., Arata Taniguchi, M.D., Ph.D., Norihiko Obata, M.D., Ph.D., Yoshikazu Matsuoka, M.D., Ph.D., Satoshi Mizobuchi, M.D., Ph.D., Tadasu Sato, M.D., Ph.D., Hiroi Ichikawa, M.D., Ph.D., Kiyoji Morita, M.D., Ph.D., Anesthesiology and Resuscitology, Okayama University Graduate School, Okayama, Japan, Oral and Craniofacial Anatomy, Tokoku University Graduate School, Sendai, Japan. In the bone cancer pain model, expression of BDNF exons and protein significantly increased in the ipsilateral L3 DRG. The suppression of BDNF expression may attenuate bone cancer pain.

A521 Expression of PKMζ mRNA in Anterior Cingulate Cortex of Neuropathic Pain Rats
Hong Yu, M.D., Haqing Yu, Ph.D., Hui Liu, M.D., Anesthesiology, West China Hospital of Sichuan University, Chengdu, China, Research Center for Preclinical Medicine, Luzhou Medical College, Luzhou, Sichuan, China, Department of Anesthesiology, West China Hospital, Sichuan University, Chengdu, Sichuan, China. Protein kinase M zeta (PKMζ) plays a key role in pain maintenance. The significant increasing of PKMζ in mice anterior cingulate cortex (ACC) after nerve injury has been revealed. However, whether PKMζ accumulation is related to mRNA expression is still obscure. The purpose of this study is to investigate the expression of PKMζ mRNA in spared nerve injury (SNI) rats. This study showed that the PKMζ mRNA did not change in ACC of neuropathic pain rats. And the findings revealed that accumulation of PKMζ protein may be enhanced in a transcription-independent manner after nerve injury according to the previous study.

A522 Spinal Dorsal Horn Neurons Responding to Mechanical Stimulation of Bone Marrow Characteristics of Spinal Dorsal Horn Neurons Responding to Mechanical Stimulation of Bone Marrow
Takashi Ishida, M.D., Satoshi Tanaka, M.D., Tomoyuki Kawamata, M.D., Mikito Kawamata, M.D., Anesthesiology and Resuscitology, Shinshu University School of Medicine, Matsumoto, Japan. Bone cancer pain is one of the most serious forms of cancer pain. In addition to the periosteum, bone pain originates from the bone marrow. However, the mechanisms that generate pain in the bone marrow still remain to be elucidated. The purpose of this study was to investigate the profiles of spinal dorsal horn (SDH) neurons in response to a transient increase in the bone marrow pressure of the femur. Forty three SDH neurons responded to balloon inflation in the medullary cavity. Spinally administered morphine (1 μg) suppress the responses of the SDH neurons to balloon inflation in the medullary cavity. The results show that nerve fibers in the bone marrow of the femur sense noxious stimulation and send the signals to SDH.

A523 Pain Candidate Pathway Prioritization Using Interspecies Plasma Metabolomics
Hung-Lun J. Hsia, M.D., Thomas Van de ven, M.D., Ph.D., Thomas Buchheit, M.D., Joseph Lucas, Ph.D., Mary McDuflhe, R.N., Chester Buckenmaier, M.D., Andrew Shaw, M.D., Anesthesiology, Duke University Medical Center, Durham, NC, WRNMMC, Bethesda, MD. We present a comparative biological study of the human and murine plasma metabolomic response to peripheral nerve injury.

A524 Effect of Intrathecal Injection of Kinesin Superfamily Protein 17 Competitive Antagonist on Pain Behavior in a Mouse Model of Bone Cancer Pain
Zhengliang Ma, Ph.D., Fengling Wang, M.D., Xiaoping Gu, Ph.D., Kun Ni, M.D., Yu Zhou, M.D., Department of Anesthesiology, Affiliated Drum Tower Hospital of Medical School of Nanjing University, Nanjing, China. NR2B plays a vital role in bone cancer pain. KIF17 is a kinesin motor which transports NR2B. Intrathecal injection RC-13, a kinesin superfamily protein 17 competitive antagonist, dose-dependently relieves bone cancer pain in mice.

A525 The Role of Akt/GSKβ3 Signaling Pathway in Neuropathic Pain in Mice
Xiaoping Gu, Ph.D., Zhengliang Ma, Ph.D., Jinhua Bo, M.D., Xiaofeng Sun, M.D., Department of Anesthesiology, Affiliated Drum Tower Hospital of Medical School of Nanjing University, Nanjing, China. Akt/GSKβ3 signal pathway contributes to the development and maintenance of neuropathic pain in mice.

A526 Effects of Intrathecal Injection CREB Antisense Oligodeoxynucleotide on the Expression of NR2A in a Mouse Model of Neuropathic Pain
Xiaoping Gu, Ph.D., Zhengliang Ma, Ph.D., Jinhua Bo, M.D., Zhong Jiang, M.D., Department of Anesthesiology, Affiliated Drum Tower Hospital of Medical School of Nanjing University, Nanjing, China. Intrathecally treated with CREB antisense ODN in the development of neuropathic pain induced by CCI may attenuate neuropathic pain though inhibiting the expression of mRNA and protein of NR2A in spinal cord.

A527 Noradrenaline Release in the Locus Coeruleus of Streptozotocin-induced Diabetic Rats: A Microdialysis Study
Koichi Suehiro, M.D., Tomoharu Funao, M.D., Ph.D., Katsuki Tanaka, 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, Japan. In the present study, the brain microdialysis technique was used in free moving diabetic mellitus (DM) rats to study the special features of extracellular noradrenaline (NA) in the locus coeruleus (LC) area. And we investigated the correlation between NA release in the LC and the analgesic efficacy of morphine, tramadol, and clomipramine in DM rats by analyzing mechanical hypersensitivity. We found that descending noradrenergic pathway could play an important role in analgesia of DM neuropathy, and that there was a significant correlation between NA release in the LC and the analgesic efficacy of morphine, tramadol, and clomipramine in DM neuropathy state.

A528 Treatment With P-Nitro-Phenilmaleimide Delays Progression Toward Hyperalgesia and Allodynia by Inhibiting Opioid Receptor in Rat Model of Neuropathic Pain
A529 Pre-Operative Dexamethasone Decreases the Development of Chronic Mechanical Allodynia in a Mouse Tibial Spared Nerve Injury Model

Thomas Van de Ven, M.D., Ph.D., Hung-Lun John Hsia, M.D., Thomas Buchheit, M.D., Huaxin Sheng, M.D., Andrew Shaw, M.B., Anesthesiology, Duke University, Durham, NC. Administration of a single pre-operative dose of dexamethasone reduces chronic mechanical allodynia in a mouse spared tibial nerve injury model.

A530 Sub-Anesthetic Ketamine Prior to Nerve Lesion Reduces the Development of Chronic Neuropathic Pain in a Mouse Tibial Spared Nerve Injury Model

Thomas Van de Ven, M.D., Ph.D., Hung-Lun John Hsia, M.D., Thomas Buchheit, M.D., Huaxin Sheng, M.D., Andrew Shaw, M.B., Anesthesiology, Duke University, Durham, NC. A one-time, pre-operative, sub-anesthetic dose of ketamine reduces chronic mechanical allodynia in a mouse spared nerve injury model.

A531 Effects of Chronic Morphine Treatment on Growth of Lewis Lung Carcinoma in Mice: A Dose-Response Study

Hitoshi Minemura, M.D., Tomoyuki Kawamata, M.D., Kumiko M. Ishida, M.D., Satoshi Fuseya, M.D., Mikito Kawamata, M.D., Department of Anesthesiology and Resuscitology, Shinshu University School of Medicine, Matsumoto, Japan. It is still controversial whether morphine facilitates or inhibits tumor growth. But there are few in vivo studies which have dealt with the dose-response relationship between morphine and tumor growth. We examined the effects of chronic morphine treatment at clinically relevant doses on tumor growth in mice. Chronic treatment of morphine at clinically relevant doses attenuated the growth of LLC in mice. However, higher dose of morphine does not affect tumor growth. These results suggest that chronic morphine treatment on growth of LLC may be biphasic alteration.

A532 Divergent Effects of Spared Sural and Tibial Selective Nerve Injury Chronic Neuropathic Pain Models on EEG and Behavioral Endpoints in Rat

Kevin Gingrich, M.D., Elena Sokolova, M.D., Shawn Lee, B.A., Anesthesiology, UT Southwestern Medical Center, Dallas, TX, Anesthesiology, NYU School of Medicine, NYU College of Arts and Sciences, New York, NY. Persistent neuropathic pain arising from selective sciatic nerve injury produces effects on electrical brain activity reported by electroencephalography in rat. These effects depend on whether the tibial or sural nerve is selectively spared.

A533 Paradoxic Expression Profiles of Sema3A and CDK5 in Spinal Dorsal Horn and Dorsal Root Ganglion of Neuropathic Pain Model Rat

Kensuke Saeki, B.S., Yoshinori Kамиyama, M.D., Ph.D., Yusuke Nakahashi, M.D., Naoya Yamashita, Ph.D., Kengo Funakoshi, M.D., Ph.D., Neuroanatomy, Anesthesiology, Pharmacology, Yokohama City University School of Medicine, Yokohama, Japan. Intratheclearly administered Sema3A, one of the repulsive axonal guidance factors, could attenuate development of neuropathic pain in model rat. However, expression changes of Sema3A and CDK5, its downstream molecules, were solely remained to be elucidated. We analyzed the expression changes of Sema3A and CDK5 in DRG and spinal dorsal horn (SDH) by Western blot analysis using CCI model rat. Sema3A was upregulated after CCI in DRG, but was unchanged in SDH. CDK5 was also upregulated in DRG but downregulated in SDH. The results indicated that Sema3A signaling dissociation would be occurred in the SDH in neuropathic pain rat.

A534 Peroxynitrite Decomposition Catalyst Alleviates Mechanical Allodynia in a Rat Model of Neuropathic Pain

Dong-Gun Lim, M.D., Ph.D., Kyung-Hwa Kwak, M.D., Ph.D., Jae-Kyung Han, M.D., Jun-Mo Park, M.D., Tae-Ha Ryu, M.D., Jong-Chan Kim, M.D., Ph.D., Anesthesiology and Pain Medicine, Kyungpook National University, Daegu, Republic of Korea. Peroxynitrite decomposition catalyst alleviates mechanical allodynia as well as central sensitization in neuropathic pain model.

A535 Activation of Anterior Prefrontal Cortex and Serotonergic System May Be Associated With Antinociception During Pedaling Exercise in Humans

Tsutomu Oshima, M.D., Ph.D., Miyuki Yokota, M.D., Ph.D., Department of Anesthesiology, Cancer Institute Hospital, Tokyo, Japan. The pedaling exercise-induced antinociception is characterized by a delayed onset and a residual action of hypalgesia, increased levels of oxygenated hemoglobin in the anterior prefrontal cortex, and increased serotonin levels in the whole blood. Therefore, we conclude that prolonged pedaling exercise-induced analgesia may be achieved by activation of the anterior prefrontal cortex and serotonergic neural system in humans.

A536 TRPV2 Is Involved in Bone Cancer-induced Movement-evoked Pain But Not Ongoing Pain

Katsumi Yamamoto, M.D., Tomoyuki Kawamata, M.D., Satoshi Fuseya, M.D., Mami Sakurai, M.D., Mikito Kawamata, M.D., Anesthesiology & Resuscitology, Shinshu University School of Medicine, Matsumoto, Japan. We previously reported that TRPV2-positive primary afferents innervated bone marrow of the femur in mice. In this study, we examined whether TRPV2 siRNA alleviates pain-related behaviors, including ongoing pain and movement evoked pain, in a preclinical model of bone cancer pain. Western blot analysis showed that intrathecal TRPV2 siRNA significantly reduced TRPV2 expression in lumbar DRGs compared to the vector alone. Intrathecal TRPV2 siRNA significantly improved limb use and weight bearing but not the number of spontaneous flinches compared to the vector alone. The results of this study showed that primary afferent expressing TRPV2 was involved in bone cancer-induced movement-evoked pain but not ongoing pain.

A537 The Analgesic Effect of Toll-like Receptor 4 Inhibitor TAK242 in Diabetic Neuropathic Pain

Yanping Zhang, Ph.D., Yilian Rodriguez, M.D., Peter Takacs, M.D., Melvin Gutin, M.D., Keith A. Candiotti, M.D., Anesthesiology, Obstetrics and Gynecology, Miller School of Medicine, University of Miami, Miami, FL. The present study evaluated that hyperglycemia induces activation of microglia and TLR4 inhibitor-TAK242 can be an anagetic agent in diabetes neuropathic pain.

A538 A Critical Role for Lipid Mediators in Pain Suppression by Spinal Cord Stimulation

Jian-Guo Cui, M.D., Ph.D., Gabriel Tender, M.D., David Mari, B.S., Diana Erasso, Ph.D., Roy C. Levitt, M.D., Anesthesiology, UM Miller School of Medicine, Miami, FL, Neurosurgery, Louisiana State University School of Medicine, New Orleans, LA. Our data indicate that rats responding to SCS specifically demonstrate increased free fatty acids in the DH associated with increased GABA and glutamate release. These results suggest for the first time that selected free fatty acids are involved in mediating the effects of SCS on neuropathic pain and may lead to new paradigms in neuropathic pain treatment.
Isoflurane Anesthesia in Rats

Masaaki Tanino, M.D., Motomu Kobayashi, M.D., Ph.D., Yoshimasa Takeda, M.D., Ph.D., Ken Takata, M.D., Ph.D., Satoshi Mizobuchi, M.D., Ph.D., Kiyoshi Morita, M.D., Ph.D., Anesthesiology and Resuscitology, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama, Japan, Anesthesiology and Intensive Care Medicine, Kawasaki Medical School, Kurashiki, Japan. Postoperative cognitive dysfunction is a common and well-known complication after surgery. Although an assessment of visual spatial memory has been used in animal experiments, there are few reports on an animal model that clarifies the effect of general anesthesia on cognitive function in the early period after general anesthesia. In the current study, the effects of isoflurane-anesthesia on spatial working memory in the rat were evaluated with a delayed spatial win-shift task in an eight-arm radial maze. The results suggest that general anesthesia with isoflurane induces impairment of spatial working memory in rats.

Dexmedetomidine Inhibited Stimulation Evoked Glutamatergic Epics to the Trigeminal Sensory Neurons and Spontaneous Gabaergic Ipscs to Cardiac Vagal Neurons

Xin Wang, M.D., Ph.D., David Mendelowitz, Ph.D., Pharmacology and Physiology, Anesthesiology and Critical Care Medicine, The George Washington University, Washington, D.C. Anesthetics can alter the TCR at many sites within the brainstem circuitry including the primary afferent pathway that synapses upon neurons in the sensory trigeminal nucleus, as well as the synaptic pathway from second order neurons to the cardiac vagal neurons (CVNs) in the nucleus ambiguous by acting on synaptic neurotransmission at either presynaptic or postsynaptic targets. In this study we examined dexmedetomidine, a selective α₂-adrenoreptor agonist anesthetics, alters neurotransmission at two sites in the TCR reflex circuitry and found that dexmedetomidine blocked the stimulation evoked synapse onto trigeminal neurons upon activation of trigeminal sensory fibers. Dexmedetomidine also inhibited spontaneous inhibitory neurotransmission to the CVNs.

Isoflurane Modulates Microglial Function Via the Activation of ATP-Sensitive Potassium Channels

Takashi Kawano, M.D., Haidong Chi, Ph.D., Hideki Iwata, Student, Satoru Eguchi, D.D.S., Daiki Yamanaka, M.D., Fumimoto Yamazaki, M.D., Masataka Yokoyama, M.D., Ph.D., Anesthesiology, Kochi Medical School, Kochi, Japan. Isoflurane has shown neuroprotective effects against brain ischemia, whereas precise mechanisms remain obscure. In the present study, we hypothesized that isoflurane activates microglial K_ATP channels and provides neuroprotection. To test this hypothesis, we investigated the effects of isoflurane on K_ATP channel activity in cultured microglia. Isoflurane attenuated LPS-induced TNF-β release, whereas co-treatment with glibenclamide abolished the action of isoflurane. In patch-clamp experiments, bath application with isoflurane during cell-attached recording increased K_ATP channel activity. Our results indicate that isoflurane could modulate microglia function via the activation of microglial K_ATP channels.
A546 Co-Administration of JM-1232(-) and Propofol Produced Quick Emergence From Hypnosis and the Repeated Injections Demonstrated Minute Increases of Recovery Time From Anesthesia in ddY Mice

Yushi Adachi, M.D., Ph.D., Junpei Tochikubo, M.D., Tetsumasa Tamura, M.D., Naoyuki Matsuda, M.D., Ph.D., Department of Emergency Medicine, Nagoya University Hospital, Department of Emergency & Critical Care Medicine, Nagoya University Graduate School of Medicine, Nagoya, Japan. The mixture of propofol and JM-1232(-) (JM) demonstrated rapid recovery profiles comparing to propofol itself by the reduction of anesthetic dose in ddY mice. At first, JM showed the shortest recovery. After the 4 times of sequential multiple injections, the prolongation of recovery time, indicating the increase of recovery sensitive half time, was observed, however, the extension of anesthesia might be considered as negligible in the mixture comparing to both propofol and JM alone. The mixture might be ideal for anesthesia requiring quick emergence from anesthesia after the long-lasting administration.

A547 Modeling the Effects of Ketamine on the Electroencephalogram

David T. Liley, M.D., Ph.D., Michel Mf Struys, M.D., Ph.D., Hugo Vereecke, M.D., Cortical Dynamics Ltd, Perth, Australia, Dept. Anesthesiology, University Medical Center Groningen, Groningen, Netherlands. The electroencephalographic effects of ketamine, a putative NMDA receptor antagonist, appear to be qualitatively modified by the presence of propofol, an agent that has minimal/nonexistent NMDA receptor activity. However both ketamine and propofol have been shown to cause dose-dependent membrane hyperpolarization. By using a mean field model of brain electrical activity we argue that these qualitative differences can be explained by assuming the differential and synergistic action of propofol and ketamine on cortical neuronal membrane hyperpolarization. The results of such modeling will assist in motivating better methods for the clinical EEG monitoring of anesthetic effect.

A548 Isoflurane Induces Endoplasmic Reticulum Stress Through Ryanodine Receptor

Haiyun Wang, Ph.D., Yuanlin Dong, M.D., Yiyong Zhang, M.D., Zhipeng Xu, Ph.D., Zhongcong Xie, Ph.D., Anesthesia, Tianjin Medical University General Hospital, Tianjin, China, Department of Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital and Harvard Medical School, Boston, MA. These results show that RyRs-associated ER stress may contribute to the isoflurane-induced neuronal apoptosis. As the RyRs-mediated ER stress is the underlying mechanism of malignant hyperthermia, these findings further suggest the potential association of malignant hyperthermia and anesthesia neurotoxicity.

A549 Xenon Reduces Neuronal Thalamocortical Activity Propagation: A Voltage-sensitive Dye Imaging Study

Stephan Kratzer, M.D., Corinna Mattusch, M.Sc., Rainer Haseneder, M.D., Matthias Eder, Ph.D., Eberhard Kochs, M.D., Gerhard Rammes, Ph.D., Department of Anesthesiology, Klinikum Rechts Der Isar, RG Neuronal Network Dynamics, Max-Planck Institute of Psychiatry, Munich, Germany. The mechanisms underlying the xenon-mediated loss of consciousness are still unclear and might be mediated by an impairment of the thalamocortical network. In this voltage-sensitive dye imaging study, xenon reversibly reduced thalamocortical and cortical activity propagation in vitro. This might be a key mechanism how xenon leads to loss of consciousness.

A550 Prolonged Dexmedetomidine Administration Increases Tau Phosphorylation In Vivo and In Vitro

Robert Whittington, M.D., Lisélô Virág, M.S., Alexis Bretteville, Ph.D., Emmanuel Planèl, Ph.D., Department of Anesthesiology, Columbia University, New York, NY, Département de Neurosciences, Centre Hospitalier de l’Université Laval, Québec City, QC, Canada. Prolonged dexmedetomidine administration increases tau phosphorylation in the mouse hippocampus and in tau-transfected SH-SY5Y cells. These increases occur in a dose-dependent manner.

A551 Effects of Graded Doses of Propofol in Mitochondrial Function in Rat

Fernando Correia, M.D., Luís Félix, B.Sc., Teresa Summaville, Ph.D., Luís Antunes, Ph.D., Francisco Peixoto, Ph.D., Anesthesiology, Centro Hospitalar do Porto, Porto, Portugal, CITAB, University of Trás-os-Montes e Alto Douro, Vila Real, Portugal, Neuroprotection, Laboratory Animal Science, Institute for Molecular and Cell Biology, Porto, Portugal. This in vivo animal study suggests that sedation with very low propofol doses affects mitochondria complex II enzymatic activity. Leading to a disruption of membrane potential variation for brain mitochondria complex II and implying a decrease in mitochondrial capacity to accumulate calcium from the cytosol. However, propofol anesthesia shows to be safer for neural mitochondria bioenergetics.

A552 Hypotension Induced Depressive Behavior in Adult Mice is Ameliorated by the COX-2 Inhibitor Meloxicam

Nemahun Vincent, B.A., Jeffrey Chan, B.A., Tanya Stolper, B.A., Michael Batchan, B.S., Richard Kline, Ph.D., Alex Bekker, M.D., Ph.D., Michael Haile, M.D., New York University, New York, NY, Department of Anesthesiology, New York University, New York, NY, Department of Anesthesiology, UMDNJ-New Jersey Medical School, Newark, NJ. Hypotension has been implicated in the development of cognitive dysfunction. Several studies have suggested that hypotension is also associated with depression. We hypothesized that anhedonia may occur after acute nitroglycerin NGT induced hypotension. We saw that depressive behavior due to hypotension was ameliorated by meloxicam suggesting an inflammatory origin for our observed effect.

A553 Calcium and Heme Set the BK Channel Intracellular Gating Ring Apparatus Into Different Conformational States

Taleh Yusifov, Ph.D., Anoosh Javaherian, B.S., Stefan Heinemann, Ph.D., Toshinori Hoshi, Ph.D., Riccardo Olcese, Ph.D., Anesthesiology, UCLA, Los Angeles, CA, Biophysics, Friedrich Schiller University of Jena, Jena, Germany, Physiology, UPenn, Philadelphia, PA. While both Ca and heme increase the probability of channel activation, these results suggest that they do so by setting the Gating Ring in two functionally distinct structural states, possibly explaining their different effects on the steepness of voltage-dependent channel activation.

A554 Relative Transmembrane Segment Rearrangements During Human BK Channel Activation Resolved by Structurally-Assigned Fluorophore/Quencher Pairing

Antonios Pantazis, Ph.D., Riccardo Olcese, Ph.D., Anesthesiology, UCLA, Los Angeles, CA. Human BK channels are sensitive to membrane potential changes, by virtue of transmembrane helix bundles that rearrange upon depolarization. We combined site-directed fluorescence labeling and quenching to reveal that transmembrane helix S4 diverges from other helices upon activation, while S2 approaches S1.
A555 Pore Blockade Reveals the Voltage Sensor/Pore Interplay in Human BK Channels
Antonios Pantazis, Ph.D., Lu Xu, B.S., Daniel Sigg, M.D., Ph.D., Riccardo Olcese, Ph.D., Anesthesiology, UCLA, Los Angeles, CA, Neuroscience Institute, Peking University, Peking, China. BK channels possess voltage-sensor domains (VSDs) which confer voltage dependence to their ion-selective pore. Voltage clamp fluorometry revealed that pore blockade locks the pore shut, which imposes increased load on the VSDs via their strong allosteric coupling, impairing their activation.

A556 The Human BK Channel Gating Ring is a PIP2 Sensor
Taleh Yusifov, Ph.D., Anoosh Javaherian, B.S., Stefan Heinemann, Ph.D., Toshinori Hoshi, Ph.D., Riccardo Olcese, Ph.D., Anesthesiology, UCLA, Los Angeles, CA, Biophysics, Friedrich Schiller University of Jena, Jena, Germany, Physiology, UPenn, Philadelphia, PA. We are reporting the first evidence that the BK Gating Ring undergoes conformational changes upon binding PIP2 under physiologically-relevant conditions. The corresponding structural changes in this sensor may represent elementary steps in the BK channel modulation by lipids.

A557 Measurement of Respiratory Depression: Saturation or Respiratory Rate and Evaluation of Respiratory Rate Using a Novel Device Based on Exhaled Moisture Measurement
Marieke Nieters, M.D., M.S., Leon Aarts, M.D., Ph.D., Albert Daan, M.D., Ph.D., Anesthesiology, Leiden University Medical Center, Leiden, Netherlands. Measurement of respiratory rate is more relevant than SpO2 measurements to get an indication of respiration. Respiratory rate tracks respiratory depression when the patient inhales an oxygen rich gas mixture. A novel method to measure respiratory rate based on exhaled humidity measurement gives a reliable measure of respiratory frequency that is superior to respiratory rate measurements derived from the ECG and which may be used in every postoperative patient.

A558 The Relationship Between Tissue Oxygenation Measured With Near-Infrared Spectroscopy and Central Venous Oxygen Saturation in Patients Undergoing Elective Gastrointestinal Surgery
Yoshifumi Kotake, M.D., Ph.D., Mitsue Fukuda, M.D., Daisuke Toyoda, M.D., Ririko Iwasaki, M.D., Ryoichi Ochiai, M.D., Ph.D., Anesthesiology and Perioperative Care, Toho University Ohashi Medical Center, Anesthesiology, Toho University Omori Medical Center, Tokyo, Japan. This prospective, observational study demonstrated the correlation between ScvO₂ and StO₂ measured with NIRS technology was highly patient-dependent in elective surgical population.

A559 Performance of I-STAT™ Versus Hemochron™ in Point of Care Testing for Anticoagulation During Coil Embolisation for Ruptured Intracranial Aneurysms
Thakoor K. Bhismadev, M.B., B.S., Musa Sesay, M.D., Cristelle Pellerin, M.D., Maachi Boujeema, M.D., Geneviève Freyburger, M.D., Karine Nouette-Gaulain, Ph.D., Pierre Maurette, Ph.D., Anesthesiology & Critical Care, University of Bordeaux, Bordeaux, France, Anesthesiology & Critical Care, Hematology, Anesthesiology & Critical Care, University of Bordeaux, Bordeaux, France. The thrombotic risk associated with coil embolisation for ruptured intracranial aneurysms and the hemorrhagic risk of excessive anticoagulation mandate rapid and reliable hemostatic monitoring following unfractionated heparin administration. I-Stat™ and Hemochron™ are POC devices used to monitor activated clotting time but their performance has not been validated in this set up. This study aimed to compare the correlation between ACT, measured by the POC devices, with anti Factor Xa activity determined at the central laboratory.

A560 Continuous SpHb Monitoring Does not Impact Maintenance of Target Hemoglobin During Spinal Fusion
Eugenie S. Heitmiller, M.D., Michael C. Smith, M.P.H., Robert S. Greenberg, M.D., Chinwe Ajuba-Iwuji, M.D., Melania Bemba, M.D., Anesthesiology and Critical Care Medicine, Johns Hopkins University Medical School, Baltimore, MD. Continuous SpHb monitoring provided Hb trends over time, but did not decrease deviation from a preoperative assigned target Hb or impact amount of blood transfusion during spinal surgery.

A561 Accuracy of Continuous Non-Invasive Respiratory Rate Derived From Pulse Oximetry in Obese Subjects
Michael L. Mestek, Ph.D., Paul S. Addison, Ph.D., Anne R. Kinney, M.P.H., Scott D. Kelley, M.D., Respiratory & Monitoring Solutions, Coviden, Boulder, CO. Continuous non-invasive respiratory rate monitoring from a standard pulse oximeter (RRoxi) provides continuous respiratory rate monitoring from a standard pulse oximeter (RRoxi) provides continuous respiratory rate monitoring from a standard pulse oximeter (RRoxi) provides continuous respiratory rate monitoring from a standard pulse oximeter (RRoxi) provides continuous respiratory rate monitoring from a standard pulse oximeter (RRoxi) provides continuous respiratory rate monitoring from a standard pulse oximeter provides continuous respiratory rate in obese subjects breathing spontaneously with acceptable clinical accuracy.

A562 A Demonstration of the Storz C-CAM in Endoscopic Imagery Projection for Far Forward Battlefield Telemetric Support
Thomas A. Nicholas, IV, M.D., Ben Boedeker, M.D., Mary Bernhagen, B.S., Douglas C. Derrick, Ph.D., Alberto Hernandez Abadia de Barbara, M.D., Anesthesiology, University of Nebraska Medical Center, Research Service, VA Nebraska-Western Iowa Healthcare System, College of Information Science & Technology, University of Nebraska, Omaha, NE, Telemedicine Service, Hospital Central de la Defensa, Madrid, Spain. A demonstration of the Storz C-CAM in endoscopic imagery projection. This study included communications between several medical facilities located on different continents.
A563 Description of a Novel Device (C-HUB™) to Link the Karl Storz Video Laryngoscope to a Telemedicine Monitor for Far Forward Battlefield Support

Thomas A. Nicholas, IV, M.D., Ben Boedecker, M.D., Mary Bernhagen, B.S., Douglas C. Derrick, Ph.D., Alberto Hernandez-Abadía de Barbara, M.D., Anesthesiology, University of Nebraska Medical Center, Research Service, VA Nebraska-Western Iowa Healthcare System, College of Information Science & Technology, University of Nebraska, Omaha, NE, Telemedecine Service, Hospital Central de la Defensa, Madrid, Spain. Description of the use of a Novel Device (C-HUB™) to Link the Karl Storz Video Laryngoscope to multiple medical facilities located on different continents. This novel device improved remote medical direction of airway management by allowing the real time sharing of video obtained from a videolaryngoscope.

A564 Reliability of Blood Glucose Measurement Using a Novel Point-of-Care Glucometer (Statstrip) in Postoperative Critically Ill Patients

Yukiko Hikasa, M.D., Moritoki Egi, M.D., Satoshi Kimura, M.D., Hiroyuki Nishie, M.D., Ph.D., Kiyoshi Morita, M.D., Ph.D., Okayama University Hospital, Okayama City, Japan. This is a prospective observational study to assess the accuracy of a novel glucometer (StatStrip) and compare with arterial blood gas (ABG) analyzer in 21 postoperatively critically ill patients. We defined 3 acceptable limits (± 10%, 15% and 20% of difference from central laboratory data). Among 57 paired arterial blood samples, measurements by StatStrip were outside acceptable limits in 4 (7.0%), 1 (1.8%) and 0 (0%) of the samples, respectively, which is not significantly different from 3 (5.3%), 1 (1.8%) and 0 (0%) with ABG analyzer. There was no significant association of percentage error of StatStrip from central laboratory values with hematocrit and PaO₂. Measurements of glucose using StatStrip might have accuracy similar to that of measurements with an ABG in postoperative critically ill patients.

A565 Accuracy of Four Pulse Oximeters Under Modified ISO 9919: Normocapnia and Hypercapnia

David B. MacLeod, M.B., B.S., Keita Ikeda, Ph.D., Joseph Graham, B.Sc., Catherine Cheng, B.S., Andrew Shaw, M.B., B.S., Department of Anesthesiology, Duke University Medical Center, Durham, NC, Trinity College, Dublin, Ireland. The accuracy of four commercially available pulse oximeters under the conditions of normocapnia and hypercapnia in healthy volunteers was determined in accordance with ISO 9919. 1003 blood gas samples from 42 subjects were analyzed. All four pulse oximeters met the accuracy criteria over the arterial oxygen saturation range of 70-100%.

A566 Effects of Multisensory Training on Pitch Perception of a Pulse Oximeter

Joseph Schlesinger, II, M.D., Mark Wallace, Ph.D., Ryan Stevenson, Ph.D., Vanderbilt University Medical Center, Nashville, TN. Application of multisensory integration and perceptual training to improve the attentional load processing and vigilance of anesthesia residents in high stress clinical situations. Evidence of improved pitch perception without aural training, a novel approach to anesthesia education and patient safety.

A567 Endotracheal Tube Cuff Pressures: Does Experience Matter?

Marianne Chen, M.D., John Brock-Utne, M.D., Ph.D., Richard Jaffe, M.D., Ph.D., Anesthesia, Stanford University, Stanford, CA. Endotracheal tube cuff pressures should be inflated to an optimal pressure of 15-22 mmHg to prevent aspiration and ischemic damage to tracheal wall mucosa. Experienced anesthesiologists who have inflated more endotracheal tube cuffs should be expected to be more proficient at inflating to the optimal pressure. Anesthesiologists with less than 1 year of experience to 30 years of experience inflated 3 different sized endotracheal tubes by manual palpation of the pilot balloon. Our study found that all anesthesiologists regardless of their experience tend to overinflate endotracheal tube cuffs suggesting a need for better intraoperative monitoring of cuff pressures.

A568 In-Vivo Calibration Improves Accuracy of Non-Invasive Hemoglobin Measurements

Klaus Torp, M.D., Steven Aniskevich, III, M.D., Sher-Lu Pai, M.D., Timothy Shine, M.D., Prith Peiris, M.D., Claudia Crawford, M.D., Anesthesiology, Mayo Clinic Florida, Jacksonville, FL. We have shown that a simple mathematical one-time in-vivo calibration of non-invasive hemoglobin measurements, using the Masimo Radical 7, improves accuracy and can be a valuable tool to follow Hgb trends. The concept of in-vivo calibration is used already in other laboratory instruments as well as hemodynamic monitors to improve accuracy.

A569 Next Generation Hemoximeter Accuracy During Rapid Desaturation Procedures

Sebastian Brandt, M.D., Alexander Opp, M.Eng., Hartmut Gehring, M.D., Ph.D., Anesthesiology and Intensive Care Medicine, University Medical Center Schleswig-Holstein Campus Luebeck, Institute of Medical Engineering, University of Luebeck, Luebeck, Germany. At the present time there is a change to the next generation hemoximeters. We study the accuracy of first and next generation hemoximeters regarding SaO₂ and ctHb during rapid desaturation protocols for the calibration of sensors and pulse oximeters.

A570 Early Identification of Deteriorating Patients With Continuous Non-Invasive Respiratory Monitoring: A Systematic Review

Kim van Loon, M.D., Els Bosch, M.D., Bas van Zaane, M.D., Ph.D., Aart T. van Rheineck Leysius, M.D., Ph.D., Cor J. Kalkman, M.D., Ph.D., Linda M. Peelen, Ph.D., University Medical Center Utrecht, Julius Center for Health Sciences and Primary Care, University Medical Center Utrecht, Utrecht, Netherlands. Failure to recognize deterioration in hospitalized patients may contribute to cardiopulmonary arrest, unscheduled ICU admission and increased mortality. Continuous respiratory monitoring was suggested for early identification of deterioration patients. This systematic review found insufficient evidence to recommend implementation of continuous respiratory monitoring on general hospital wards. Future scientific evaluation of monitoring should be executed with particular focus on all elements of the monitoring system, including sensing principle, data modelling, caregiver notification and protocolised therapy.
A571 Correlation Between RRetro2 and Masimo RRA in Patients Under Deep Sedation: A Pilot Assessment
Pedro Tanaka, M.D., David Drover, M.D., Maria Tanaka, M.D., Anesthesia, Stanford University School of Medicine, Stanford, CA. To our knowledge this is the first study addressing the accuracy of measuring respiratory rate either by end-tidal CO2 or acoustic respiration rate in patients submitted to regional anesthesia and deep sedation. The RRA provided similar respiration rate values as RRetro2 and RRA detected apnea as often as RRetro2.

A572 Point-of-Care Testing: A Prospective, Randomized Clinical Trial of Efficacy in Coagulopathic Cardiac Surgery Patients
Christian F. Weber, M.D., Klaus Gölzinger, M.D., Kai Zacharowski, Ph.D., Clinic for Anesthesiology, Intensive Care Medicine and Pain Therapy, Goethe-University Hospital Frankfurt, Frankfurt am Main, Germany. Clinic of Anesthesiology and Intensive Care Medicine, University Hospital Essen, Essen, Germany. In coagulopathic cardiac surgery patients, hemostatic therapy algorithms in conjunction with POC testing reduced the number of transfused PRBCs when compared to conventional laboratory coagulation testing.

A573 Performance of Pronto-7 Noninvasive Hemoglobin Pulse CO-Oximeter in a Dark Skinned Population
Nitin Shah, M.D., Deval Modi, M.B., B.S., Anesthesiology, VA Long Beach Healthcare System, Long Beach, CA. Evaluation of Pronto-7 Pulse Co-Oximeter in dark skinned and light skinned people to measure hemoglobin noninvasively. Even though requirement to repeat measurements as well as failure rates were higher in dark skinned people they were not significant.

A574 Extremes of Weight May Lead to Inaccurate Reporting of Body Surface Area (BSA) Indexed Hemodynamic Parameters
Adam C. Adler, M.D., Brian T. Nathanson, Ph.D., Kartik Raghunathan, M.D., Kartik Raghunathan, M.D., William T. McGee, M.D., Anesthesiology and Pain Medicine, Baystate Medical Center, Springfield, CT, OptiStatim, LLC, Longmeadow, MA, Anesthesiology and Pain Medicine, Internal Medicine-Critical Care Division, Baystate Medical Center, Springfield, MA. The cardiac index (CI) and stroke index (SI) are the cardiac output (CO) and stroke volume (SV) divided by the body surface area (BSA). The index values may be distorted in morbidly obese patients. This distortion may suggest a therapeutic intervention opposite to the true needs of the patient. We provide threshold BSA values that cause normal SV or CO values to be high or low CI and/or SI. Clinicians should interpret the CI and SI cautiously when treating morbidly obese patients.

A575 Accuracy of Non-invasive Hemoglobin Measurement by Pulse Co-oximetry at Various Peripheral Circulatory States
Noriko Nanishi, M.D., Ken Yamaura, M.D., Sumio Hoka, M.D., Department of Anesthesiology and Critical Care, Kyushu University Graduate School of Medicine, Operating Rooms, Kyushu University Hospital, Fukuoka, Japan. The accuracy of a non-invasive continuous measurement of hemoglobin with pulse co-oximetry (SpHb) was studied by comparison of SpHb with actual arterial blood Hb during general anesthesia. SpHb varied from actual Hb dependently on peripheral circulation. The larger skin-surface temperature gradient caused the greater difference between SpHb and actual Hb. It is suggested that peripheral vasoconstriction may decrease the accuracy of SpHb.

A576 Determination of Sevoflurane MAC Awake in Pigs
Aura Silva, Ph.D., Carlos Venâncio, D.V.M., Alexandra Seixas, D.V.M., Pedro Amarim, M.D., David A. Ferreira, Ph.D., Laboratório de Toxiciologia, REQUIMTE - Faculdade de Farmácia, Porto, Portugal, CECAV - Universidade de Trás-os-Montes e Alto Douro, Vila Real, Portugal, EdenVet Hospital Veterinário, Seixal, Portugal, Hospital Geral de Santo António, Porto, Portugal, Universidade Lusófona das Humanidades e Tecnologias, Lisboa, Portugal. In this study, the sevoflurane MAC awake was determined in Large White male pigs and was concluded to be around 0.5%. The electroencephalogram derived indexes reflected this superficial depth.

A577 Remote Airway Assessment
Thomas Hemmerling, M.D., Nora Terrassini, M.D., Pablo Moreno, B.A., Mohammad Wehbe, M.Sc., Joshua Morse, Student, Shantale Cyr, Ph.D., University of Montreal, Montreal, QC, Canada, Pisa, Pisa, Italy, Polytechnical Faculty, McGill, Montreal, QC, Canada. We present a simple technology for remote airway assessment, tested out on the authors.

A578 Routine Intracuff Monitoring of Airway Devices Should Be Standard Practice
Darwin C. Viernes, M.D., Aaron M. Joffe, D.O., University of Washington, Seattle, WA. Overinflation of airway device cuffs may increase the incidence of infra and supraglottic pharyngolaryngeal morbidity. In 290 prospectively observed patients, 61% (150/246) of endotracheal tubes and 68% (30/44) of supraglottic airways had excessive intracuff pressures. Intracuff pressures exceeding twice the recommended pressure were found in 23% (56/246) of endotracheal tubes and 30% (13/44) of supraglottic airways. Despite high quality literature evidence supporting an association between cuff overinflation and pharyngolaryngeal morbidity, practitioners appear to pay little attention to this aspect of anesthetic care. To avoid increased airway morbidity, manometry-based pressure-limiting cuff inflation should be regarded as best practice.

A579 Generation Change in Hemoxyemetry and the Impact on Methemoglobin and Carboxyhemoglobin Measurements
Hartmut Gehring, M.D., Ph.D., Alexander Opp, M.Eng., Sebastian Brandt, M.D., Anesthesiology, University Medical Center Schleswig-Holstein, Institute of Medical Engineering, University of Lubeck, Lubeck, Germany. Currently there is a change from the first hemoximeter generation to the next generation. Rapid detection of dyshemoglobins (e.g. methemoglobin; MetHb, carboxyhemoglobin; COHb) is essential in anesthesia, emergency medicine and critical care. In this study we test the precision of next generation CO oximeters compared to the reference system regarding MetHb and COHb.

A580 Preoperative and Postoperative Platelet Function Assessment by Thromboelastogram® Through Platelet Mapping™
Davide Cattano, M.D., Ph.D., Alfonso Altamirano, M.D., Carin A. Hagberg, M.D., Evan G. Pivalizza, M.D., Anesthesiology, University of Texas Health Science Center Houston, Houston, TX. Thromboelastograph® 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.
Bench Evaluation of Noninvasive Positive Pressure Ventilation Mask Leak-Compensated End-Tidal CO₂ Measurement

Lara Brewer, Ph.D., Boaz Markewitz, M.D., Branden Rosenhan, M.D., Joseph Orr, Ph.D., University of Utah, Salt Lake City, UT. We developed and evaluated a system which can be used to monitor a patient’s PₐCO₂ during treatment with noninvasive positive pressure ventilation. In a bench study, we found that PₐCO₂ was measured accurately by the system which compensated for large mask leaks and other variations in test lung settings in order to measure PₐCO₂. Use of the new system to monitor trends in PₐCO₂ may be useful for identifying whether a patient’s NPPV therapy is successful.
ORAL PRESENTATIONS

OR11-1 HISTORY AND EDUCATION

PI
10-11:30 a.m.
Room 101

A043 Teaching Fiberoptic Intubation Skills With an iPhone Application: A Randomized, Controlled Trial
Raymond Glassenberg, M.D., Gildasio De Oliveira, Jr., M.D., M.S., Paul Fitzgerald, B.A., Samuel Glassenberg, M.A. Anesthesiology, Northwestern University Feinberg School of Medicine, Chicago, IL. We developed an iPhone application to teach fiberoptic intubation skills using a video-game format. Medical students were tested on a standardized mannequin to determine if an iPhone application is more conducive to learning than a didactic lecture.

A044 Can Scholarly Activity Points During Residency Predict the Research Productivity of an Anesthesiologist?
Trent Emerick, M.D., David G. Metro, M.D., Rita M. Patel, M.D., Tetsuro Sakai, M.D., Ph.D., Anesthesiology, University of Pittsburgh Medical Center, Pittsburgh, PA. A Scholarly Activity Point (SAP) system has been advocated as a method to quantify the value of scholarly productivity. The objective of this study is to determine if SAPs accumulated during residency training can predict the future research productivity as an anesthesiologist.

A045 Development of an Annotated 3D TEE Educational Tool for Tablet Devices
Brandi A. Bortriger, M.D., ArtiRaja, M.D., Katherine Grichnik, M.D., Madhav Swaminathan, M.D., Manuel Fontes, M.D., Anesthesiology, Duke University Medical Center, Durham, NC. Because of the increasing emphasis on 3-D TEE education in cardiothoracic anesthesia training, we developed a series of instructional videos on 3-D TEE image acquisition and optimization for use on a portable iPad device. The next phase for this project includes evaluating this platform for educational content in all trainees and establishing its validity.

A046 Creating Resident Profiles From ACGME and AIMS Records: Usable Clinical Decision Support for O.R. Assignments
Jonathan P. Wanderer, M.D., Keith H. Baker, M.D., Ph.D. Department of Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital, Boston, MA. Our clinical and educational environments are filled with increasing quantities of digital data, yet retrieving the right pieces of information in a convenient manner when needed can be challenging. We have demonstrated that automated analysis of AIMS and ACGME data can create detailed anesthesia resident profiles. These profiles can be browsed in a lag-free manner within existing scheduling tools to allow informed clinical assignment decisions to be for maximal educational benefit.

A047 First Impressions of an Ipad Initiative: Is It Worth the Investment?
Daniel Katz, M.D., Alan Sim, M.D., Andrew Schwartz, M.D., Matthew Levin, M.D., Patrick McCormick, M.D., Jaon Epstein, M.D., Samuel DeMaria, M.D., Adam I. Levine, M.D. Anesthesiology, Mount Sinai School of Medicine, New York, NY. The integration of technology into medicine is rapidly occurring. Drawbacks to this integration have been a lack of portability and high cost. While a possible solution exists in devices such as the iPad, its use has not been formally evaluated. We therefore investigated the utility and financial feasibility of purchasing iPads for residents at a major academic center in lieu of an educational stipend. Based on the results of our survey based study, we found that our iPad initiative was well received, improved the ability of residents to care for patients and resulted in cost savings for the department.

A048 Significant Others’ Perceptions and Awareness of the Exposure of Anesthesiology Residents to Occupational Hazards
Shahla K. Escobar, M.D., Enrique D. Escobar, M.D., Kara Bennett, M.D., Charles W. Whitten, M.D., Catherine Barden, M.D., James D. Griffin, M.D. Anesthesiology and Pain Management, University of Texas Southwestern Medical Center at Dallas, Dallas, TX. Anesthesiology trainees are exposed to various occupational hazards such as substance abuse during their residency training. Little is known about the significant others of residents and how they perceive these occupational hazards. We studied the significant others’ awareness and perceptions of occupational hazards inherent to the field of anesthesiology and the methods currently in use by these couples to promote wellness. We found that educating the significant others of anesthesiology residents to recognize the possibility and signs of substance abuse may have salutary effects on the overall well-being of residents. The perceptions of significant others suggest that they value formal education in resident wellness.

OR07-1 DRUG DISPOSITION

FA
1-2:30 p.m.
Room 103A

A049 Response Surface Model Predictions of Wake Up Test During Scoliosis Surgery: A Retrospective Evaluation of Patients From a Desflurane and Fentanyl Anesthetic
Chien-Kun Ting, M.D., Ph.D., Dwayne R. Westenskow, Ph.D., Noah D. Syroid, M.S., Department of Anesthesiology and Bioengineering, University of Utah, Salt Lake City, UT. The wake-up test performed during scoliosis surgery represents a special challenge for anesthesiologist because of the need to provide adequate analgesia while the patient is awake enough for the assessment of voluntary motor function. Pharmacokinetic models in combination with pharmacodynamic models for inhalation agents and opioids provided good model predictions of patient responses during the wake-up test when the models were adapted to predict OSS/A=2 and response to a painful tibial pressure stimulus.
**A050 Nitrous Oxide Anesthesia and Postoperative Myocardial Infarction: The Vitamins in Nitrous Oxide (VINO) Trial**

Peter Nagel, M.D., Frank Brown, B.S., Amber Francis, R.N., Mitchell Scott, Ph.D., Brian Gage, M.D., J. Philipp Miller, Ph.D., Joshua Johnston, M.D., Anesthesiology, Department of Anesthesiology, Department of Pathology & Immunology, Division of Biostatistics, Washington University, St. Louis, MO. This randomized controlled trial provides strong evidence that nitrous oxide does not increase the risk for postoperative myocardial injury and infarction and that carriers of the MTHFR C677T and A1298C gene variants do not experience an increased cardiovascular risk after nitrous oxide anesthesia.

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**A051 Bolus Dose Propofol Concentrations in Man Are Better Described Using Recirculatory Modeling**

Marije Reekers, M.D., Ph.D., Erik Olofson, M.Sc., Fred Boer, M.D., Ph.D., Albert Dahan, M.D., Ph.D., Jaap Vuyk, M.D., Ph.D., Anesthesiology, Leiden University Medical Centre, Leiden, Netherlands. The propofol concentrations in blood after administration of an induction bolus dose of 3 mg/kg in man are well described using a recirculatory model. The concentrations predicted by models applied in current TCI systems underestimate the peak concentrations and may lead to overdosing and generating unwanted side effects.

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**A052 Real-Time Monitoring of Exhaled Propofol Reflects Changes in Propofol Effect Without Hysteresis**

Cyrill Hornuss, M.D., Nancy Sambol, Pharm.D, Kenji Tabata, Ph.D., Gustav Schelling, M.D., Christian C. Apfel, M.D., Ph.D., Department of Anaesthesiology, Klinikum der Universität, Ludwig-Maximilians-University, Munich, Germany, Department of Bioengineering & Therapeutic Sciences, Department of Anesthesia & Perioperative Care, University of California, San Francisco, San Francisco, CA. We investigated the relationship between propofol breath concentrations and propofol effect in human volunteers undergoing propofol anesthesia. The concentration-response curve for exhaled propofol concentrations and propofol effect did not show hysteresis. This lack of hysteresis suggests that propofol may equilibrate equally fast between blood and brain and blood and lung and supports the clinical utility of real-time propofol breath monitoring.

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**A053 Plasma and CSF Thiol Concentrations Following L-Cysteine Reversal of CW002**

Leslie L. Diaz, D.V.M., Jingwei Zhang, B.S., Jaideep K. Malhotra, M.D., John J. Savarese, M.D., Ph.D., Paul M. Heerdt, M.D., Ph.D., Anesthesiology and Pharmacology, Weill Cornell Medical College, New York, NY. The study demonstrates that the normal redox status of L-cysteine within the blood affects the peak concentration of reduced sulphydryl group available for interaction with the novel neuromuscular blocker CW002, and potentially influences the rate at which L-cysteine enters the CNS.

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**A054 Interspecies Scaling of the Kinetics of Alphaxalone, a 5α-Pregnane Steroid**

John W. Sear, Esq., Ph.D., Nuffield Department of Anaesthetics, University of Oxford, Oxford, United Kingdom. Alphaxalone is a steroid intravenous anesthetic agent; the introduction of two new formulations has allowed an allometric analysis across six species, including man. Data follow a simple power function for clearance and volume of distribution and is not affected by solvent.
A059 The SAMBA Clinical Outcomes Registry: Description of the First 20,000 Cases
Lucinda Everett, M.D., Peter Glass, M.B., B.Ch., Anesthesiology and Critical Care, MGH, Boston, MA. Anesthesiology, State University of New York at Stony Brook, Stony Brook, NY. The Society for Ambulatory Anesthesia's Clinical Outcome Registry (SCOR) collects de-identified, per-patient information on ambulatory anesthesia. The results of the first 20,000 case records are discussed in this abstract.

A060 Influence of Nocturnal Desaturation on Conduction Abnormalities in Resting Electrocardiography
Melissa L. Byrne, D.O., Michael Lehmann, M.D., Flavia Consens, M.D., Satya Krishna Ramachandran, M.D., Anesthesiology, Cardiology, Neurology, University of Michigan, Ann Arbor, MI. We conducted a retrospective study of 197 patients undergoing overnight polysomnography and resting EKG. We identified a relationship between severity of nocturnal desaturation and conduction abnormalities seen on EKG. Notably, severe obstructive sleep apnea and significant nocturnal desaturation are associated with QRS prolongation on resting EKG.

OR16-2 Regional Anesthesia and Acute Pain: Emerging Measures of Predictors for Postoperative Pain

RA
3-5 p.m.
Room 103A

Featured Speaker: Timothy J. Brennan, M.D., Ph.D.
University of Iowa City, Iowa

Topic: Emerging Epidemic of Chronic Pain After Surgery

A061 Does Preoperative Heat Pain Sensitivity Predict Postoperative Pain After Total Knee Replacement?
Asokumar Buvanendran, M.D., Lia Vilaro, R.N., Mario Moric, M.S., Sandra C. Toleikis, M.S., Jeffrey S. Kroin, Ph.D., Kenneth J. Tuman, M.D., Anesthesiology, Rush Medical College, Chicago, IL, Rush University Medical Center, Chicago, IL. Preoperative heat pain sensitivity was correlated with early postoperative pain after TKR. Sensitivity was associated with greater consumption of opioids in the recovery room, as well as in the post-anesthesia care unit (p = 0.006) and throughout the remainder of their inpatient stay (p = 0.003). In a linear regression model, preoperative opioid dose (F=15.6, p<0.001) and fibromyalgia (F=2.5, p =0.014) were both highly associated with postoperative opioid consumption (R² = 0.786).

A062 Naloxone Does Not Inhibit Subjective Analgesia Caused by Virtual Reality Distraction
Ava Alamdari, M.B., B.S., Christine Hoffer, B.S., Hunter G. Hoffman, Ph.D., David R. Patterson, Ph.D., Mark P. Jensen, Ph.D., David K. Blough, Ph.D., Sam R. Sharar, M.D., Department of Anesthesiology & Pain Medicine, University of Washington, Seattle, WA. The neurophysiologic mechanism of virtual reality (VR) distraction analgesia is not known. Using the opioid receptor antagonist naloxone in human volunteers receiving experimental pain, we demonstrated that VR analgesia is not mediated by an endogenous opioid-dependent pathway.

A063 The Impact of Centralized Pain on Perioperative Opioid Consumption in the Lower Extremity Joint Arthroplasty Population
Chad M. Brummett, M.D., Allison Janda, B.A., Christa M. Schueller, B.S., Michelle Morris, M.S., David A. Williams, Ph.D., Daniel J. Clauw, M.D., Anesthesiology, University of Michigan Health System, Ann Arbor, MI, University of Michigan School of Medicine, Ann Arbor, MI, Wayne State University School of Medicine, Detroit, MI. Patients undergoing total knee and hip arthroplasty were prospectively phenotyped preoperatively using validated self-report measures. The American College of Rheumatology Survey Criteria for Fibromyalgia (FM) was used as a measure of centralization of pain. FM+ patients used significantly more opiates preoperatively (p = 0.021), as well as in the post-anesthesia care unit (p = 0.006) and throughout the remainder of their inpatient stay (p = 0.003). In a linear regression model, preoperative opioid dose (F=15.6, p<0.001) and fibromyalgia (F=2.5, p =0.014) were both highly associated with postoperative opioid consumption (R² = 0.786).

A064 Predictors for Moderate to Severe Acute Postoperative Pain After Total Hip and Knee Replacement
Spencer S. Liu, M.D., Asokumar Buvanendran, M.D., James P. Rathmell, M.D., Colin J.L. McCartney, M.B., Ch.B., James J. Bae, M.Sc., Anesthesiology, Hospital for Special Surgery, New York, NY. Anesthesiology, Rush University Medical Center, Chicago, IL, Anesthesia, Critical Care & Pain Medicine, Massachusetts General Hospital, Boston, MA, Anesthesia, Sunnybrook Health Sciences Centre, Toronto, ON, Canada. Perioperative risk factors for moderate-severe pain after total knee and hip replacement were identified. These predictors may be used to identify high-risk patients that may benefit from expert pain management to improve analgesia and satisfaction.

POSTER DISCUSSIONS
All Poster Discussion sessions will be presented as e-posters.

PD12-1 Obstetric Anesthesia and Perinatology: Cesarean Delivery

OB
8-9:30 a.m.
Room 101

A127 Oxygen Desaturation After Cesarean Section
Rie Kato, M.D., Toshiyuki Okutomi, M.D., Division of Obstetric Anesthesia, Kitasato University Hospital, Sagamihara, Japan. We monitored SpO₂ for 24 hr after cesarean section to estimate the incidence of postoperative hypoxia. Subjects were women who underwent cesarean section under spinal anesthesia with bupivacaine and fentanyl and morphine. A desaturation episode was defined as SpO₂ <90% lasting for more than 30 sec. Seventeen out of 143 (12%) patients had one or more desaturation episodes. Naloxone was not administered in any cases. Oxygen was given in 3 out of 17 patients who had desaturation episodes.
A128 Ketorolac Prevents Nausea and Vomiting During Cesarean Section

Seth Landa, M.D., Eugene Wong, M.D., Lars Galldin, M.D., Anesthesia, St. Joseph’s Regional Medical Center, Paterson, NJ. During cesarean section, repositioning the exteriorized uterus in the abdominal cavity after repair may result in hypotension, nausea, vomiting and headache. We studied the use of ketorolac to reduce the incidence of these symptoms, most likely through cyclooxygenase inhibition.

A129 Outcomes After Institution of a New Oxytocin Infusion Protocol During the Third Stage of Labor and Immediate Postpartum Period

Justin DaGraca, M.D., Barbara Scavone, M.D., Melissa Pant, M.D., Department of Anesthesia and Critical Care, University of Chicago, Chicago, IL. Rapid infusion of large doses of oxytocin is associated with risks of serious side effects. Adoption of a new protocol to infuse oxytocin in a more controlled manner than had been practiced previously is not only feasible but also improves maternal safety without increasing the risk of postpartum bleeding.

A130 Venous Air Embolism During Cesarean Delivery With Transesophageal Echocardiogram

Ki Jun Kim, M.D., Anesthesiology and Pain Management, Yonsei University, Seoul, Republic of Korea. The incidence of VAE during cesarean section is very high and therefore anesthesiologists must be vigilant in detecting the signs and symptoms of severe VAE especially during placenta delivery to uterus closure. In addition, patients with placenta previa and/or surgeon preferring uterus externalization must be monitored closely for severe VAE.

A131 Targeting Uterine Smooth Muscle TMEM16 Calcium Activated Chloride Channels to Suppress Oxytocin Induced Contractions and Calcium Handling


A132 Hemodynamic Changes Associated With Phenylephrine Administration as a Prophylactic Infusion Compared to Bolus Administration

Ashraf S. Habib, M.D., FR.C.A, Basem M. Mishriky, M.D., William D. White, M.P.H., Terrence K. Allen, M.D., FR.C.A., Anesthesiology, Duke University Medical Center, Durham, NC. We compared hemodynamic changes in 64 women undergoing cesarean delivery under spinal anesthesia and receiving phenylephrine as a prophylactic infusion or as boluses for treating established hypotension. Significant hemodynamic changes were seen with administration as a prophylactic infusion compared to bolus administration.

A133 Is Transversus Abdominis Plane Block Advantageous for Postoperative Analgesia Following Cesarean Delivery Performed Under Spinal Anesthesia? A Systematic Review

Faraj W. Abdallah, M.D., Stephen Halpern, M.D., Clarita B. Margarido, M.D., Anesthesia, University of Toronto, Toronto, ON, Canada. The analgesic role of Transversus Abdominis Plane block in cesarean delivery performed under spinal anesthesia is not clear. This systematic review suggests that TAP block reduces first 24 hour analgesic consumption when the analgesic regimen used excludes spinal morphine.

A134 The Effect of Phenylephrine Administration on Maternal Cerebral Tissue Oxygenation Following Spinal Anesthesia for Cesarean Delivery

Terrence K. Allen, M.D., FR.C.A, William D. White, M.P.H., Basim Mishriky, M.D., Ashraf S. Habib, M.D., FR.C.A., Department of Anesthesiology, Duke University Medical Center, Durham, NC. The effect of phenylephrine (PE) on cerebral tissue oxygenation (SctO2) in obstetric patients having spinal anesthesia (SA) has not been described. In an observational study we demonstrate that a continuous PE infusion is associated with a greater reduction in maternal SctO2 when compared with PE bolus administration during the first 15 min following intrathecal drug administration. These findings may have implications for patients at increased risk of peripartum cerebrovascular events.

PD15-3 Pediatric Anesthesia: Pediatric Regional/Pain Management

PD
8:9:30 a.m.
Room 103A

A135 Preoperative Nocturnal Hypercarbia on Polysomnography Correlates With Post-Adenotonsillectomy Respiratory Complications in Pediatric Obstructive Sleep Apnea Patients

Nicholas M. Dalesio, M.D., Stacey L. Ishman, M.D., Emmett Whitaker, M.D., D. Hale McMichael, B.S., Deborah Schwengel, M.D., Anesthesiology and CCM, Departments of Otolaryngology Head and Neck Surgery, Pediatrics & Internal Medicine School of Medicine, Johns Hopkins University, Baltimore, MD. We conducted a retrospective database analysis containing children presenting for adenotonsillectomy that had preoperative polysomnography studies. We noted that patients with elevated nocturnal carbon dioxide had higher respiratory complications within 2 hours postoperatively as noted by a decrease in pulse oximetry. In addition, elevated BMI did not correlate to patients with preoperative hypercarbria.
**A136**  Effect of Increasing Depth of Dexmedetomidine and Propofol Anesthesia on Upper Airway Morphology in Children/Adolescents With History of Obstructive Sleep Apnea

Mohamed A. Mahmoud, M.D., Dorothy Jung, M.A., Sheila Salisbury, Ph.D., John McAauliffe, M.D., Joel Gunter, M.D., Mario Patino, M.D., Lane Donnelly, M.D., Robert Fleck, M.D., Anesthesia, Cincinnati Children's Hospital Medical Center, Cincinnati, OH. Nemours Children’s Hospital, Orlando, Orlando, FL. Increasing doses of dexmedetomidine is less likely to be associated with a reduction in airway dimensions than increasing doses of propofol in spontaneously breathing children/adolescents with history of obstructive sleep apnea.

**A137**  Inflating Cuffed Endotracheal Tubes in Pediatric Patients: Are We Doing it Right?

Senthil Gopalakrishnan, M.D., Joseph Tobias, M.D., Anesthesiology, Nationwide Childrens Hospital, Columbus, OH. Recently, there has been an increase in the use of cuffed endotracheal tubes in pediatric patients. Disappearance of air-leak around the cuff while maintaining positive pressure in the circuit is used routinely by anesthesiologists as an end-point for inflating the cuff. There is a presumption that this technique avoids hyperinflation of the cuff. Intracuff measurements obtained in our study after using this technique shows that this practice used as a guide to determine the end-point for cuff inflation is safe and should not compromise tracheal microcirculation.

**A138**  Sevoflurane Inhibits Neurogenesis and the Wnt-Catenin Signaling Pathway in Mouse Neural Progenitor Cells

Yiying (Laura) Zhang, M.D., M.S., Yuanlin Dong, M.D., M.S., Vivian L. Shie, B.S., Josh Buscher, M.D., Zhongcong Xie, M.D., Ph.D., Department of Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital, Boston, MA, Brandeis University, Waltham, MA. We use wild type mouse neural progenitor cells to detect the effort of Sevoflurane inhibits neurogenesis and the Wnt-catenin signaling pathway.

**A139**  The Impact of Contemporary Treatment of Mucopolysaccharidases on Airways Management in Children

Grant M. Stuart, M.B., Ch.B., Carolyne Pehora, R.N., Komudi Siriwardena, M.B., Ch.B., Julian Aj Raiman, M.B., B.S., Gail K. Wong, M.B., B.S., Department of Anesthesia and Pain Medicine, Division of Clinical and Metabolic Genetics, The Hospital for Sick Children, Toronto, ON, Canada. Patients with mucopolysaccharidosis present significant perioperative challenges and have been described as the “worst airway problem in pediatric anesthesia.” Over the past decade new clinical therapies have been developed which alter the natural history of these disorders, and novel anesthetic and airway management techniques have expanded our options for the management of these children. We have described the impact of these therapies on airway management in the pediatric mucopolysaccharidosis population through a retrospective 10-year case series review.

**A140**  Common Anaesthetic and Sedative Agents Cause Persistent Mitochondrial Dysfunction and mtDNA Damage

Grant M. Stuart, M.B., Ch.B., Vanessa Chin, M.B., B.S., Sadiq Shaik, M.D., Jason T. Maynes, M.D., Department of Anesthesia and Pain Medicine, and Molecular Structure and Function, The Hospital for Sick Children, Toronto, ON, Canada. Clinical and laboratory data show that exposure to anesthetic agents induces neuronal apoptosis and likely causes long-term cognitive and behavioural impairment in young children. The mechanism by which this occurs remains elusive; growing evidence implicates a mitochondrial pathway. Our data shows that common anesthetic agents interact with mitochondria, altering their morphology, reducing their function and damaging their DNA at concentrations that are used clinically, and within the time frame of common surgical procedures. This contributes to research linking anesthetic induced neuronal apoptosis to mitochondrial dysfunction.

**A141**  Pilot Study of Pediatric Anesthesia and NeuroDevelopment Assessment (PANDA) Project

Lena S. Sun, M.D., Guohua Li, M.D., Mary Byrne, Ph.D., Caleb Ing, M.D., Charles J. DiMaggio, Ph.D., Tonya Miller, M.D., David Bellinger, M.D., Sena Han, B.A., Arthur Roh, B.A., Francis X. McGowan, M.D., Anesthesiology and Pediatrics, Anesthesiology and Epidemiology, Columbia University, New York, NY, Anesthesiology, Children's Hospital of Boston, Boston, MA, Neurology, Harvard Medical School, Boston, MA. Anesthesiology, University of South Carolina School of Medicine, Charleston, SC. We present pilot study results in 28 sibling pairs recruited and tested for the Pediatric Anesthesia NeuroDevelopment Assessment (PANDA) Project. Our results support the feasibility of an ambi-directional study approach that combines the collection of relevant historical clinical information related to anesthesia exposure with prospective assessment of neuropsychological and behavioral outcome.

**A142**  The Use of Laryngeal Mask, But Not the Endotracheal Intubation, Increases the Overlap of Internal Jugular Vein and the Common Carotid Artery With Head Rotation in Pediatric Patients: A Pilot Ultrasonographic Study

Zekeriyya Alanoglu, M.D., Menekse Ozcikel, M.D., Basak Ceyda Orbay Meco, M.D., Cigdem Yildirim Guclu, M.D., Saban Yalcin, M.D., Ahmet Kucuk, M.D., Neslihan Alkis, M.D., Anesthesiology and ICM, Ankara University School of Medicine, Ankara, Turkey, Anesthesiology and ICM, Harran University School of Medicine, Sanli Urfa, Turkey. In this study we aimed to evaluate the impact of the laryngeal mask insertion or endotracheal intubation and the role of head rotation on the overlap of the IJV and CCA in pediatric patients.
A148 Hemodynamic Parameters During Robotic Radical Prostatectomy in Elderly Patients With Increased Cardiac Risk

Hjeeong Lee, Ph.D., Jisun Jeong, M.D., Kyosang Kim, Ph.D., Anesthesiology and Pain Medicine, Hanyang University Hospital, Seoul, Republic of Korea. We studied the hemodynamic changes associated with steep Trendelenburg position and prolonged pneumoperitoneum during robot-assisted laparoscopic prostatectomy in elderly patients with cardiac disease. Hemodynamic variables were measured at baseline supine position, at 30 min, 1, 2, 3, and 4 h during CO2 insufflation in post-Trendelenburg position, and after deflation in the supine position. In comparison with normal subjects, the cardiac index and systemic vascular resistance index of patients with cardiac disease were significantly affected by the Trendelenburg position and pneumoperitoneum. We conclude that prolonged pneumoperitoneum in the Trendelenburg position is feasible in patients with cardiac disease, but attention should be paid to maintain adequate hemodynamic status.

A149 Effect of Dexmedetomidine on Early Postoperative Cognitive Function After Sevoflurane Anesthesia in the Elderly: A Double-Blinded Randomized Controlled Trial

Hui Xu, M.D., Pei Lu, M.A., Ailin Luo, M.D., Yuke Tian, M.D., Department of Anesthesiology, Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China. To investigate the effect of dexmedetomidine on the postoperative cognitive function after sevoflurane anesthesia in the elderly, 60 patients were allocated to either the dexmedetomidine+sevoflurane group (group D) or the sevoflurane group (group S). Patients received either simultaneous infusion of dexmedetomidine (1 μg/kg, over 15 mins) or saline before sevoflurane anesthesia. MMSE scores in group S were significantly lower postoperatively, and recovered to the level before induction later. S100β and CRP values in group S were significantly higher then those in group D. Dexmedetomidine is effective in promoting postoperative cognitive function and associated with an earlier return to preoperative levels after sevoflurane anesthesia in elderly.

A150 Comparison of General vs. Spinal Anesthesia for Hip Fracture Repair in the Aging Population

Jason Yu, M.D., Bryan Noorda, M.D., Marissa Lyttle, M.D., Piyush Gupta, M.D., Kalpana Tyagaraj, M.D., Darlene Saberito, R.N., Peter Homel, Ph.D., Jack Choueka, M.D., Kevin Kang, M.D., Yvette Ho, M.D., Anesthesia, Statistics, Orthopedics, Maimonides Medical Center, New York, NY. The increased incidence of hip fractures in the elderly is responsible for a substantial degree of the resources utilized among orthopedic and anesthesia departments. Current studies suggest that despite operative correction of hip fractures, functional status post surgery is not determined by the particular choice of procedure, but rather by the presence of pre- and postoperative complications. In addition, the optimum choice of anesthetic technique in the geriatric population based on ASA Physical Status and its impact on length of hospital stay has not been definitively studied.

A143 The Prevalence of Obstructive Sleep Apnea Characteristics in Patients With Barrett’s Esophagus

Medhat Hannallah, M.D., F.R.C.A, Yonette Exeter, M.S.N., Maggie Gillespie, M.D., Jason Hoebling, M.D., Anesthesiology, Gastroenterology, Georgetown University Hospital, Washington, D.C. Consented patients with Barrett’s esophagus were prospectively screened for obstructive sleep apnea (OSA) risk using the modified neck circumference test. The study demonstrated a statistically significant association between Barrett’s esophagus and high OSA risk when compared to the general GI endoscopy population.

A144 Are State Regulations for Liposuction Preventing Deaths? The Case of Los Angeles County

Selma Calmes, M.D., J. Daniel Augustine, M.D., Department of Coroner, Los Angeles County, Los Angeles, CA. We studied 7 deaths from liposuction surgery in Los Angeles County from 1999-2011. All cases were reviewed by a pathologist and an anesthesiologist. Causes of death were lidocaine and sedative intoxication, fat and venous emboli and CAD. Few patients had adequate monitoring. Although state regulations are in place, the regulations do not prevent deaths, and the number of deaths from liposuction is actually increasing.

A145 Perioperative Intravenous Dexamethasone for Knee Arthroscopy: Does It Decrease Postoperative Pain?

Karthikeyan K. Srinivasan, M.D., M. Stephen Melton, M.D., Stephen M. Klein, M.D., Karen C. Nielsen, M.D., William D. White, Anesthesiology, Duke University Hospital, Durham, NC. Intraoperative intravenous dexamethasone 4 mg (0.03 to 0.10 mg/kg), typically used for PONV prophylaxis, may be associated with decreased average and worst pain scores at 24 hours in patients undergoing knee arthroscopy with intra-articular block.

A146 The Geriatric Surgical Patient: Stress, Anesthetics, and Functional Outcomes

Stacie G. Deiner, M.D., Jeffrey H. Silverstein, M.D., Mary Sano, Ph.D., Anesthesiology, Psychiatry, The Mount Sinai School of Medicine, New York, NY. In the geriatric population, surgery and anesthesia have been associated with perioperative delirium and cognitive dysfunction. In this study, we examine two maintenance techniques: gas (GS-sevoflurane) vs. total intravenous anesthesia (TIVA) to clarify the association between the physiologic response to stress and cognition.

A147 Exposure to Anesthesia Could Increase the Risk for Dementia in Elderly

Francois Stark, M.D., Ph.D., M. Le Gof, Ph.D., Denis André, M.D., K. Ritchie, Ph.D., C. Berr, Ph.D., C Tzourio, Ph.D., J.F. Dartigues, M.D., Ph.D., Catherine Helmer, Ph.D., Department of Anesthesiology and Critical Care, CHU de Bordeaux, Bordeaux, France, ISPED - INSERM, Université Bordeaux Segalen, Bordeaux, France. Using the French 3-Cities population-based cohort study on 7,746 dementia-free participants aged 65 and over, we have shown an increased risk for dementia several years after an anesthetic.
A151 Cardioprotection After a Short Episode of 70% Helium Inhalation at Early Reperfusion Is Abrogated by Prolonged Inhalation During Reperfusion

Getina Oei, M.D., Markus W. Hollmann, M.D., Benedikt Preckel, M.D., Nina C. Weber, Ph.D., Anesthesiology, Department of Anesthesiology, Academic Medical Centre, University of Amsterdam, Amsterdam, Netherlands. Fifteen min of helium inhalation according to the established postconditioning protocol protects the rat myocardium in vivo, an effect that was not observed after helium inhalation of 30 and 60 min.

A152 Lactate Minimizes Liver Reperfusion Injury After Cold Ischemia in Fasting Rats

Berengere Papegay, Sr., M.D., Vincent Nuyens, B.Sc., Veronique Kruys, Ph.D., Jean G. Boogaerts, M.D., Ph.D., Laboratory of Experimental Medicine, University Hospital Center, Charleroi, Belgium, Laboratory of Experimental Medicine, University Hospital Center, Charleroi, Belgium, Institut de Medecine et de Biologie Moleculaire, Gosselies, Belgium. Feeding and lactate minimize reperfusion injury after cold ischemia of rat liver. Lactate, a precursor of glucose, could protect the liver of fasting rats by acting as a nutritional support for hepatocytes.

A153 Relationships Between Biological Variables and Liver Reperfusion Injury After Cold Ischemia in Fasting and Fed Rats

Vincent Nuyens, B.Sc., Marjorie Knafel, B.Sc., Berengere Papegay, M.D., Jean G. Boogaerts, M.D., Ph.D., Laboratory of Experimental Medicine, University Hospital Center, Charleroi, Belgium, Anesthesiology, University Hospital Center, Charleroi, Belgium. Nutritional support could form part of a treatment strategy in clinical conditions where livers are exposed to a temporary stress situation.

A154 NS1619-Induced Cardioprotection Against Ischemia Reperfusion Injury Is Lost After Kcnma1 Gene Ablation

Ligia Toro, Ph.D., Harpreet Singh, Ph.D., Enrico Stefani, M.D., Ph.D., Jean C. Bopassa, Ph.D., Anesthesiology, Division of Molecular Medicine, UCLA, Los Angeles, CA. Kcnma1 gene expression is required for the cardioprotective action of NS1619 against ischemia/reperfusion injury. NS1619 beneficial effects on heart function, infarct size, and mitochondria CRC and ROS production observed after ischemic insult are abolished in hearts from Kcnma1 knockout mice which lack mitoB2KCa.

A155 Volatile Anesthetic Conditioning and Hepatoprotection: Effects of Sevoflurane Against Experimental Liver Ischemia/Reperfusion Injury

Estela R. Figueira, M.D., Ph.D., Joel A. Rocha Filho, M.D., Ph.D., Beatrice Beck-Schimmer, M.D., Ph.D., Mauro Nakatani, Student, Eduardo R. Tatebe, Student, Vitor O. Andre Filho, Student, Marcelo F.S. Buto, Eleazar Chaib, M.D., Ph.D., Pierre A. Clavien, M.D., Ph.D., Luiz A.C. D’Albuquerque, M.D., Ph.D., Gastroenterology/ LIM 37, University of São Paulo, São Paulo, Brazil. This study investigated the effects of sevoflurane in experimental warm liver ischemia/reperfusion injury.

A156 MicroRNA-146b Attenuates Myocardial NF-kB Signaling Following Ischemia-Reperfusion: Early Translation to Perioperative Cardioprotection

Kevin A. Friede, B.A., Michael P. Smith, M.Sc., Zhiqian Zhang, Ph.D., Qing Ma, M.D., Kyle KL Phua, M.S., Kam W. Leong, Ph.D., Mihai V. Podgoreanu, M.D., Anesthesiology, Biomedical Engineering, Duke University, Durham, NC. microRNA-146b exerts antiinflammatory and cardioprotective effects in the setting of ischemia-reperfusion.

A157 Xenon and Isoflurane Preconditioning Elevate the Mitochondrion Function Related Gene Expression in the Liver in Rat

Ting Yang, M.D., Natalie Serkova, Ph.D., Lee Lim, Ph.D., Mervyn Mace, M.B., Ch.B., Claus U. Niemann, M.D., University of California San Francisco, San Francisco, CA. University of Colorado, Denver, CO. Xenon and isoflurane preconditioning in liver ischemia reperfusion injury.

A158 Four-Dimensional Contrast Micro-CT for in Vivo Characterization of Cardiac Function and Infarct Size Following Surgical Ischemia-Reperfusion in the Rat

Kevin A. Friede, B.A., Qing Ma, M.D., Cristian T. Badea, Ph.D., Mihai V. Podgoreanu, M.D., Anesthesiology, Biomedical Engineering, Duke University, Durham, NC. Novel in vivo characterization of LV systolic function and infarct size following surgical ischemia-reperfusion using contrast 4D-microCT in the rat.

PD13-1 OUTCOMES AND DATABASE RESEARCH: O.R. MANAGEMENT

FA
1-2:30 p.m.
Room 101

A159 Initiation of a Computerized Physician Order Entry System in the PACU: Perceptions of an Academic Anesthesiology Department

Paul G. Loubser, M.B., Ch.B., Katherine C. Normand, M.D., Semhar J. Ghebremichael, M.D., Anesthesiology, University of Texas Medical School at Houston, Houston, TX. Computerized physician order entry was initiated in a PACU. Faculty and residents were surveyed 1 month after initiation of the survey as to their perceptions with the process. Divergence of opinion was encountered, and some clinical inefficiency occurred during CPOE initiation. The survey indicates that CPOE implementation is a challenging task for anesthesiology department.
A160 Predictors of Delayed First Case Starts in Operating Rooms
Letha Mathews, M.B., B.S., Koffi M. Kla, M.D., Khensani N. Marolen, M.P.H., Jesse M. Ehrenfeld, M.D., Anesthesiology and Biomedical Informatics, Vanderbilt University, Nashville, TN. A retrospective study looking at predictors of delayed first case start in operating rooms. ASA Physical Status, patient gender, day of the week and in-room provider status were identified as factors that had an influence on starting first cases on time.

A161 The Effect of Case Frequency on Surgical Speed
Im Hofer, M.D., David L. Reich, M.D., Anesthesia, Mount Sinai School of Medicine, New York, NY. Approximately 220,000 surgical cases were examined to determine the effects of surgical volume on operative speed. Higher volume was associated with shorter operative times for individual cases; however, surgeons who were able to perform one procedure quickly were not necessarily able to do the same for other procedures. This indicates that repetitive performance of the same procedure may have a greater effect on operative time than other surgeon-specific factors.

A162 The Use of an Anesthesia Information Management System (AIMS) to Investigate Postoperative Mortality Following Surgical Management of Ischemic Colitis: Lessons Learned Over a Ten-Year Period at a Tertiary Care Center
Thomas J. Hopkins, M.D., Anthony Castleberry, M.D., Ryan Turley, M.D., Christopher Mantyh, M.D., John Migaly, M.D., Anesthesiology, General Surgery, Section of Colon & Rectal Surgery, Duke University Medical Center, Durham, NC. The purpose of this study was to retrospectively review cases of surgical intervention for ischemic colitis (IC) and subsequent ostomy reversal and determine if anesthesia-specific factors influenced postoperative, in-hospital mortality. We determined that ASA Class ≥ 4, EBL > 500 mL, and need for postoperative dialysis predict poor outcomes following surgical intervention for ischemic colitis at our institution.

A163 A Structured Transfer of Care Process Reduces Perioperative Complications in Cardiac Surgery Patients
Michael L. Hall, M.D., Matthias J. Merkel, M.D., Ph.D., Michael F. Aziz, M.D., Michael P. Hutchens, M.D., Anesthesiology and Perioperative Medicine, Oregon Health and Science University, Portland, OR. Perioperative complications in cardiac surgery patients are common. We hypothesized that a structured handover process from the operating room to the ICU would reduce complications. We tested this hypothesis by introducing a comprehensive multidisciplinary transfer of care process (Cardiac Surgery Transfer of Care, CaStoC) and measuring patient outcomes before and after the intervention from an ICU complication registry. A retrospective review of complications over a 3-year period was compared for patient complications and demographics before and after the intervention. In this study, CaStoC was associated with a reduction in preventable complications.

A164 Identification of Intraoperative Anesthetic Record Documentation Failures
Meghan B. Lane-Fall, M.D., Kristin B. Brennan, M.D., Warren J. Levy, M.D., Anesthesiology and Critical Care, University of Pennsylvania, Philadelphia, PA. We describe a novel method to identify documentation failures in an anesthesia information management system, describe the documentation failure rate and identify factors associated with documentation failure at a large urban academic tertiary referral center.

A165 Development of a Methodology for Identification of Cost Variation Among Anesthesia Providers
Doug Hester, M.D., Jonathan Wanderer, M.D., M.P.H., Jesse M. Ehrenfeld, M.D., M.P.H., Vanderbilt University, Nashville, TN. Massachusetts General Hospital, Boston, MA. The advent of more advanced intra-operative electronic records and automated data collection systems provide the ability for accurate, timely and detailed quantification of anesthetic-related costs. This study reports a multidisciplinary effort to identify the median cost of single knee arthroplasty. The results support the future use of drug-cost data to improve pharmaceutical stewardship and increase anesthetic value.

A166 Evaluation of Operating Room (O.R.) Delays at RWJMS
Shruti Shah, M.D., Tatiana Shkolnikova, M.D., Candy Amin, M.D., Shaul Cohen, M.D., Adil Mohiuddin, M.D., Christine W. Hunter, M.D., Anesthesiology, RWJMS-UMDNJ, New Brunswick, NJ. The goal will be to utilize this data to create a multidisciplinary team to look into solutions that can be implemented for improvement of operating room efficiency.

PD08-3 Equipment, Monitoring and Engineering Technology: Point of Care and Noninvasive Monitoring
FA
1:23:00 p.m.
Room 103B
A167 Analysis of Intraoperative Secretions Using Endotracheal Tubes With Above the Cuff Suction: A Pilot Study
Glen D. Quigley, M.D., Neil Patel, M.D., Jung-Won Park, M.D., Angelo Andonakakis, D.O., Jian-Zhong Sun, M.D., Jeffrey Joseph, D.O., Boris Mravcic, M.D., Department of Anesthesiology, Thomas Jefferson University Hospital, Philadelphia, PA. Pulmonary aspiration of gastric contents during anesthesia is a serious but rare event. The objective of this pilot study was to analyze routine secretions suctioned from the trachea via an endotracheal tube with above the cuff suction for pH, volume, and weight in elective surgical cases in patients with no risks for difficult intubation. Ten patients were enrolled. Secretions were obtained from 9 of 10 patients. Analysis of the secretions showed: pH 6.5 ± 1.6, total secretion volume per patient 33.8 ± 35.4 mL, total secretion weight per patient 30.1 ± 35.9 g. Three out of the 39 secretion samples obtained (all from a single patient) had a pH of < 3.0, suggesting aspiration of gastric contents into the trachea.
A168 Determination of the Volatile Propofol Concentration in Parts Per Billion Range From the Signal Intensity of a Multi-Capillary Column Coupled Ion Mobility Spectrometer
Heiko Bachinger, M.D., Thomas Volk, M.D., Ph.D., Sascha Kreuer, M.D., Ph.D., Sasidhar Maddula, Ph.D., Patrick Favrod, Joerg Ingo Baumbach, Ph.D., Department of Anesthesiology, Intensive Care and Pain Therapy, Saarland University Medical Center and Saarland University Faculty of Medicine, Homburg, Germany, Department of Microfluidics and Clinical Diagnostics, Korea Institute of Science and Technology Europe, Saarbruecken, Germany. Propofol can be identified and quantified in exhaled air directly with different techniques. One of the methods for measuring propofol is a β-radiation ion mobility spectrometer coupled to a multi-capillary column (MCC-IMS). To compare different measurement methods it is necessary to use a standardized measurement unit, such as, parts per billion by volume (ppb). We describe the correlation between the signal intensity of propofol measured with a MCC-IMS and the corresponding gas phase concentration of the propofol in ppb.

A169 Does Intraoperative Point-of-Care INR Testing Reduce the Transfusion of Fresh Frozen Plasma in Patients Undergoing Major Surgery?
Natalie Urwyler, M.D., Lorenz Theiler, M.D., Maren Kleine-Bruenggeney, M.D., Nicole Mealing, M.Sc., Robert Greif, M.D., Anesthesiology and Pain Therapy, University Hospital of Bern, Bern, Switzerland, Department of Anesthesiology and Pain Management, University of Miami Miller School of Medicine, Miami, FL, Department of Anesthesiology and Pain Medicine, University of Washington, Seattle, WA, Clinical Trials Unit, Bern, Switzerland. The objective of this randomized controlled trial was to determine the effectiveness of intraoperative point-of-care INR testing in reducing the administration of fresh frozen plasma to patients undergoing major surgery. We assessed 924 patients, of whom 228 (25%) patients experienced major blood loss (&gt;20% of estimated total blood volume, 70ml/kg body weight) and were randomized. Point-of-care INR testing did not lead to a reduction in the perioperative use of fresh frozen plasma.

A170 Pilot Study of the Multiple Coagulation Test System
Sheldon Goldstein, M.D., James D. Kelleher, B.S., Steven M. Shulman, M.D., Michael Kagan, B.S., Fatemah Mamdani, M.P.H., Coagulation Sciences LLC, Riverdale, NY, Anesthesiology, UMDNJ - New Jersey Medical School, Newark, NJ, M. Kagan & Associates, Bangor, ME. This pilot study of the Multiple Coagulation Test System (MCTS) suggests that “theranostic” testing may deliver patient-specific guidance to transfusion management. This would be especially useful in patients with severe hemorrhage. This would improve patient safety and decrease health care costs.

A171 Non-Invasive Measurement of Hemoglobin in Low Perfusion
Aharon Weinstein, M.Sc., Olga Herzenstein, M.Sc., Alex Kononenko, Ph.D., Ef Gabis, B.A., Avraham Korenberg, M.D., OrSense Ltd., Nes-ziona, Israel, OrSense Ltd., Nes-Ziona, Israel, Department of Hematology and Blood Bank, Assaf Harofeh Medical Center, Zerifin, Israel. We evaluated the performance of the non-invasive NBM-200 system in measurement of hemoglobin and compared its performance in normal and low perfusion conditions. The performance was similar: very small bias, correlation of 0.89 and accuracy of less than 1 g/dL.

A172 Continuous Non-invasive Hemoglobin Monitoring in Infants and Neonates Undergoing Cardiac and Abdominal Surgery
Arne G. Carstens, M.D., Ole Broch, M.D., Helga Francksen, M.D., Henning Ohnseorge, M.D., Jens Scheewe, M.D., Berthold Bein, M.D., Jochen Renner, M.D., Department of Anesthesiology and Intensive Care Medicine, Department of Thoracic and Cardiovascular Surgery, University Hospital Schleswig-Holstein, Campus Kiel, Germany, Kiel, Germany. The non-invasive continuous estimation of total hemoglobin using pulse-CO-oximetry could not be used interchangeably with invasive measurements of hemoglobin in infants and neonates.

A173 A Comparison of Concurrent Arterial and Noninvasive Blood Pressure Measurements
Markus Bendel, M.D., Anun Subramanian, M.B., B.S., Mayo Clinic, Rochester, MN. A comparison of concurrent arterial and non-invasive blood pressure measurements across a large sample size.

A174 Validation of Continuous Noninvasive Arterial Blood Pressure Measurements During General Anesthesia
Alain F. Kalmar, M.D., Ph.D., Jaap Jan Vos, M.D., Marloes Weening, Student, Eline A.Q. Mooyaart, M.D., Marieke Poterman, M.D., Michel M.R.F. Strays, M.D., Ph.D., Thomas W.L. Scheeren, M.D., Ph.D., Department of Anesthesia, University Medical Center Groningen, Groningen, Netherlands. Invasive arterial blood pressure (IBP) is compared with Nexfin noninvasive continuous blood pressure and classical noninvasive blood pressure (NIBP) in 110 patients over a 30 minute period during general anesthesia. Nexfin has superior accuracy than NIBP and an overall precision of 9 mmHg compared to IBP. Nexfin is stable over the course of the measurement without requiring a long equilibration time.

PO14-4 Patient Safety and Practice Management: Systems-Based Practice General Topics (e-posters)

PO14-4 Patient Safety and Practice Management: Systems-Based Practice General Topics (e-posters)

PI 8-9 a.m.
Hall C, E-Poster area

A582 Integration of Academic and Clinical Performance-Based Faculty Compensation Plans: The System and Its Impact on an Anesthesiology Department
Tetsuro Sakai, M.D., Ph.D., Mark E. Hudson, M.D., M.B.A., Peter J. Davis, M.D., John P. Williams, M.D., Department of Anesthesiology, University of Pittsburgh School of Medicine, Pittsburgh, PA. An academic anesthesiology department has used a comprehensive academic and clinical performance-based compensation program since fiscal year 2004. Faculty who choose academic track can devote 10-80% to non-clinical activities, which portion of salary should be claimed by academic activities annually (salary at risk). Review of the system showed stable retention of academic faculty, successful gain of salary at risk, and increased number of peer reviewed original research publications per academic FTE.
**A583** **Respiratory Depression: The Common Fatal Pathway for Non Fatal Conditions**

Frank Overdyk, M.D., M.S., Marieke Niesters, M.D., Ph.D., Albert Dahan, M.D., Ph.D., Anesthesiology, Hofstra University School of Medicine, Hemstead, NY. Leiden University Medical Center, Leiden, Netherlands. Preventable deaths in hospitalized patients remain a serious patient safety hazard. Although deaths due to alarm fatigue and PCA have been identified through regulation of medical devices, deaths in patients with benign admission diagnoses experiencing unrecognized respiratory depression from opioids and sedatives, and who are not even monitored continuously, occur with regularity. Mechanisms to quantify the scope of this problem need to be urgently devised.

**A584** **Capnography During Deep Sedation With Propofol by Non-Anesthesiologists: A Randomized Controlled Trial**

Kim van Loom, M.D., Aart T. van Rheineck Leysius, M.D., Ph.D., Bas van Zaane, M.D., Ph.D., Mirjam Denteneer, M.D., Cor J. Kalkman, M.D., University Medical Center Utrecht, Utrecht, Netherlands, CASA, Leiden, Netherlands. In this randomized trial the additional value of capnography was studied during propofol sedation by non-anesthesiologists. Despite an increased number of airway interventions in the capnography group, hypoxemia (oxygen saturation below 91%) was not prevented.

**A585** **Behavior of Chinese Anesthesiologists Practicing General Anesthesia With Sevoflurane: A Multi-Center Trial**

Yan Luo, Ph.D., Jie Shen, M.D., Qingsheng Xue, Ph.D., Fujun Zhang, Ph.D., Buewei Yu, Ph.D., Anesthesia, Shanghai Ruijin Hospital, Shanghai, China. This was an open-label, multi-center observational registry that included 4,000 anesthesiasts from 40 hospitals in 8 cities across China, to observe the behavior of Chinese anesthesiologists practicing general anesthesia with sevoflurane. Ten cases of general anesthesia with sevoflurane performed by each anesthetist were observed. The results showed that neither patient satisfaction nor anesthetist satisfaction was associated with the experience of anesthesiologists. This could be due to easy learning and practicing of the inhaled agents. This study also suggested pharmaceutical economic benefits from sevoflurane solo maintenance group over combined sevoflurane/propofol maintenance group.

**A586** **Factors of Influence on the Postoperative Care Level After Pancreaticoduodenectomy**

Renee J. van den Broek, M.D., Erik Olofsen, M.Sc., Bert A. Bonsing, M.D., Ph.D., Leon P.H.J. Aarts, M.D., Ph.D., Jaap Vuyk, M.D., Ph.D., Anesthesiology, Surgery, Leiden University Medical Center, Leiden, Netherlands. We studied perioperative parameters of influence on the required level of care after pancreaticoduodenectomy. A high POSSUM score and presence of epidural anesthesia were associated with a need for stay in the postsurgical ICU after pancreaticoduodenectomy. Four additional criteria were selected by statistical analysis and used in a prediction model. When using international recognized criteria, 45% of patients after pancreaticoduodenectomy were assigned inappropriately to the postsurgical ICU during the study period. Using the optimal model this may be halved to 23%, thus increasing perioperative efficiency.

**A587** **Changing Practitioner Behavior Through Provider Performance Dashboards: The Next Frontier**

Shermeen Vakharia, M.D., M.B.A., Yasameen Faizy, MHA, Zeev Kain, M.D., M.B.A., Anesthesiology & Perioperative Care, University of California, Irvine, Orange, CA. Provider Performance Dashboards were implemented as an innovative method of tailored intervention to improve practitioner performance on key quality indicators. Significant improvement was seen in individual provider’s efficiency metrics and medication labeling practices. Total expected revenue dollars lost due lack of documentation or compliance attestations required for medical direction dropped significantly. Due to high baseline compliance rates with PQRS indicators (97-100%), no significant difference was observed on this metric.

**9-10 a.m.**

**Hall C, E-Poster area**

**A588** **Characteristics of State Prescription Drug Monitoring Programs and Drug Overdose Mortality**

Guohua Li, M.D., Ph.D., Joanne E. Brady, M.S., Barbara H. Lang, B.S., James Giglio, M.D., Charles J. DiMaggio, Ph.D., Anesthesiology, Columbia University, New York, NY, Medicine, Columbia University, New York, NY. This evaluation study indicates that the effectiveness of state prescription drug monitoring programs in reducing drug overdose mortality appears to be limited to those more restrictive monitoring programs. State prescription drug monitoring programs that are governed by non-health professional agencies, that do not have an oversight committee, or that explicitly release practitioners from the obligation to access the prescription database, do not have any measurable effect on drug overdose mortality and should be strengthened.

**A589** **Evaluation of Predictive Variables of Unexpected Admission to the ICU After Elective Surgery**

Masayuki Akatsuka, M.D., Shinichiro Yoshiha, M.D., Yoshi Masuda, M.D., Ph.D., Hitoshi Imaiuzumi, M.D., Ph.D., Tomohiko Kimijima, M.D., Michiaki Yamakage, M.D., Ph.D., Anesthesiology, Traumatology and Critical Care Medicine, Sapporo Medical University, Sapporo, Japan. The incidence of unexpected ICU admission within the first 72 hours after elective surgery was 0.088%. The main reason for admission was respiratory failure and most of the patients required respiratory support.

**A589** **Evaluation of Predictive Variables of Unexpected Admission to the ICU After Elective Surgery**

Masayuki Akatsuka, M.D., Shinichiro Yoshiha, M.D., Yoshi Masuda, M.D., Ph.D., Hitoshi Imaiuzumi, M.D., Ph.D., Tomohiko Kimijima, M.D., Michiaki Yamakage, M.D., Ph.D., Anesthesiology, Traumatology and Critical Care Medicine, Sapporo Medical University, Sapporo, Japan. The incidence of unexpected ICU admission within the first 72 hours after elective surgery was 0.088%. The main reason for admission was respiratory failure and most of the patients required respiratory support.

**A590** **Perioperative Skin Assessment Audit: The Importance of Pre-Induction Evaluation**

Daniel K. O'Neill, M.D., Barbara Delmore, Ph.D., Phillip Baldock, B.S.N., John Ard, M.D., Anesthesiology, New York University School of Medicine, New York, NY. Hospital acquired pressure ulcers (HAPU) have significant costs to the health care system and patient morbidity. Three audits were performed. As a result of the perioperative process, there are two major skin issues that can occur: First, skin tears and shearing injuries can deteriorate into pressure ulcers. Second, previous skin injuries and pressure ulcers can deteriorate. Therefore, skin should be evaluated prior to anesthesia induction and tracked into the postoperative period.
A591 Compliance With Surgical Antibiotic Prophylaxis Policy for Elective Surgical Procedures – Before and After Introduction of WHO Safety Checklist

Mohan Kumar Muthukumaraswamy, M.D., Pemmaraju Murthy, M.D., Raghraranth Thippa, M.D., Shirin Dastur, M.D., Anesthesia and Intensive Care, Medway Hospital, Greenhithe, Kent, United Kingdom, Anesthesia and Intensive Care, Medway Hospital, Gillingham, United Kingdom, Anesthesia and Intensive Care, Darent Valley Hospital, Dartford, United Kingdom. The audit clearly outlines the effectiveness of the WHO Surgical Safety Checklist in the administration of antibiotic prophylaxis for surgical procedures. A pre-checklist overall compliance percentage of 75% to post-checklist overall compliance percentage of 92% indicates, firstly, its value in the prevention of surgical site infection (SSI). Second, combined with patient safety and prevention of further complications, including sepsis, prolonged hospital stay and associated costs involved, the WHO Surgical Safety Checklist and its effective implementation brings along with it immense benefits.

A592 The Impact of Education on Hand Hygiene Practices in the Pediatric Operating Room

Ami R. Vikani, Student, Jessica A. Lawrence-George, M.D., Samuel Baxter, Student, Michael Smith, Student, Eugenie S. Heitmiller, M.D., The George Washington University School of Medicine, Washington, D.C., Department of Anesthesiology and Critical Care Medicine, Division of Pediatric Anesthesiology, Johns Hopkins School of Medicine, Baltimore, MD. A targeted educational intervention for pediatric anesthesia providers, in addition to an ongoing multifaceted hospital initiative, was enough to improve compliance, but not enough to reach a goal of 90%. The challenge for the future is to determine what resources, incentives and changes in workflow are required to further improve and sustain compliance with hand hygiene and other infection control practices.

A593 Aerobic and Anaerobic Bacterial Infection of Mobile Communication Devices (MCD) in a Tertiary Care Hospital

Jyotsna Punj, M.D., Rama Choudhry, M.D., Prof Chandrakekha, M.D., All India Institute of Medical Sciences, New Delhi, India, AIIMS, Delhi, India. Mobile phones are commonly used by HCWs, even during patient contact and may serve as a potential vehicle for the spread of nosocomial pathogens.

10-11 a.m.
Hall C, E-Poster area

A594 What Is Missing in Guidelines for Statins and Alpha-2 Agonists: The Need for Clinical Discretion

Joanna Thomas, M.D., Sara Neves, M.D., Roberta L. Hines, M.D., Shamuddin Akhtar, M.B., B.S., Anesthesiology, Yale New Haven Hospital, New Haven, CT. We demonstrate that the evidence on which statin and alpha-2 agonist therapy is developed is largely dependent on studies that excluded patients undergoing emergency and trauma surgery. Adding a third reference, “clinical discretion (CD),” to Class and LOE, when stating the recommendations will further strengthen the clinical applicability of guidelines.

A595 New Anesthesia Billing Matrix: Medicare Undervalues Reimbursement for Anesthesiology Services

David R. Sinclair, M.D., David Lubarsky, M.D., M.B.A., Michael Vigoda, M.D., M.B.A., Vicente Behrens, M.D., Richard Bazan, M.D., Keith Candiotti, M.D., Steve Williams, M.B.A., Anesthesiology and Perioperative Medicine, University of Miami. A new billing matrix for anesthesiology services has been proposed that bases the payment schedule on a level of visit and complexity of anesthetic management that correspond to E/M CPT codes. According to the matrix, current Medicare reimbursement undervalues anesthesiology services.

A596 Why Are We Seeing Warning Cards About Anesthesia From Post-Polio Patients? Where Are These Coming From and Are They Evidence-Based?

Selma Calmes, M.D., Joan L. Headley, M.S., Post-Polio Health International, St. Louis, MO. This study examined 6 recently-produced wallet cards designed to warn anesthesiologists of possible problems during anesthesia in post-polio patients. There were 3 cards from the U.S. and 3 international cards. The cards were produced by patient-support groups/organizations and 1 state public health department and had little helpful information for anesthesiologists or other hospital staff. For example, none had a warning about the risk of postop respiratory failure. There is little scientific evidence about the safety of anesthesia for post-polio patients, and it is not yet possible to make the recommendations listed on these cards. Two expert-based sources are listed.

A597 The Incidence of DVTs Following Elective Surgery

David B. Glick, M.D., Mary Ann Onyecali, B.A., Obinna Orji, M.D., Kimberly Clinite, B.A., Jonathan Yin, B.A., Michael F. O’Connor, M.D., Anesthesia & Critical Care, University of Chicago, University of Illinois College of Medicine, Chicago, IL. While routine duplex surveillance after elective surgery did not turn up any DVTs, three DVTs (two in the lower extremities and one in an upper extremity) were noted at longer turn follow-up.

A598 Keeping Up With the Joneses: Relative Changes in SCIP Performance in the Hospital Compare Database

David B. Glick, M.D., Samantha Neuwirth, M.D., Avery Tung, M.D., Anesthesia & Critical Care, University of Chicago. Even though overall SCIP scores have risen significantly across the board over the past 5 years, the relative ranks of individual hospitals has changed little during this period.

A599 Evidence-Based Red Blood Cell Transfusion Education Should Target All Levels of Health Care Providers

Thomas M. Chalifoux, M.D., Jonathan H. Waters, M.D., Anesthesiology, University of Pittsburgh School of Medicine, Pittsburgh, PA. A review of the computerized order entry system in a multi-hospital health system found that a high percentage of the computerized clinical decision support alerts regarding red blood cell transfusion thresholds are not heeded. Physicians entered less than one-half of the orders for red blood cell transfusion. Future educational efforts to use evidence-based transfusion practices should target not only physicians, but physician extenders and nurses as well.
A600 Use of Thrombelastograph™ to Evaluate Coagulation in Patients With End-Stage Liver Disease: A Prospective Cohort Study

Cassandra B. Howell, Student, Evan G. Pivalizza, M.B.,Ch.B., Anesthesiology, University of Texas Medical School at Houston. This summer research project was a prospective evaluation of the TEG in patients with liver disease in response to recent recommendations to explore global coagulation analysis in these patients. In a heterogeneous cohort, we found all measured TEG parameters within anticipated normal limits, despite elevated PT, INR, PTT, and decreased platelet count. Associations were found between MA, G and platelet count as well as SP and PTT. This preliminary data suggested that TEG has a role in global coagulation assessment. Although we did not investigate an association with bleeding or transfusion this appears to be the next step in evaluation of the TEG in liver disease.

A601 Effect of Intraoperative Intensive Glycaemic Control on Postoperative Infection in Cardiac Surgery: A Randomised Controlled Trial

Panthila Rujirojindakul, M.D., Tippawan Liabsuetrakul, M.D., Ph.D., Edward McNeil, M.Sc., Thavat Chanchuyanon, M.D., Wirat Wasinwong, M.D., Maliwan Oofuvong, M.D., Voravit Chittithavorn, M.D., Anesthesiology, Epidemiology Unit, University, Cardiothoracic Surgery, Prince of Songkla University, Songkhla, Thailand. Intensive intraoperative glycaemic control significantly increased the risk of hypoglycaemia but its effect on postoperative infection on clinical assessment cannot be concluded, possibly due to the small sample size resulting from early termination of the study. Postoperative IL-6 level can independently predict postoperative infection.

A602 Preoperative Left Atrial Volume Index Predicts Postoperative Outcome in Patients With Severe Aortic Valve Stenosis

Yoshifumi Naito, M.D., Anesthesiology, Kobe City Medical Center General Hospital, Kobe, Japan. The aim of this study was to investigate the efficacy of the preoperative left atrial volume index (LAVI) in predicting postoperative outcome in patients with severe AS. Forty-seven patients with severe AS who underwent aortic valve replacement were examined. Patients were divided into two groups (Group S: LAVI < 52 ml/m, Group L: LAVI ≥ 52 ml/m). Development of postoperative atrial fibrillation (POAF), ventilation time, inotropic support time, duration of stay in intensive care, and overall duration of hospital stay were compared. In patients with severe AS, preoperative LAVI ≥ 52 ml/m may be a useful predictor for POAF (Group S: 25.9% vs Group L: 65%, P <0.01), although effects on other postoperative outcomes have yet to be determined.

A603 Effect of 6% Hydroxyethyl Starch 130/0.4 as a Priming Solution on Coagulation and Blood Loss Following Complex Heart Valve Surgery: A Comparison With 5% Albumin

Jang-Eun Cho, M.D., Ph.D., Ye Yoo, M.D., Yl Kwak, M.D., Ph.D., Jk Shim, M.D., Ph.D., Korea University College of Medicine, Seoul, Republic of Korea, Yonsei University College of Medicine, Seoul, Republic of Korea. This study addressed the effect of 6% hydroxyethylstarch (HES) 130/0.4 as a component of priming solution on coagulation compared to 5% human albumin. In conclusion, HES as priming solution conveyed similar or less adverse influence on coagulation after complex heart valve surgery without exposing the patients to increased risks of postoperative bleeding and transfusion requirement.

A604 Dexmedetomidine Reduces Pentraxin 3 Level After Cardiac Surgery Using Cardiopulmonary Bypass

Kotaro Hamada, M.D., Takashi Kawasaki, M.D., Ph.D., Masaya Ueki, M.D., Kazutoshi Habe, M.D., Chika Kawasaki, M.D., Takeyoshi Sata, M.D., Ph.D., Anesthesiology, University of Occupational and Environmental Health, Kitakyushu, Japan. We examined the effect of dexmedetomidine on inflammatory mediators in patients undergoing open-heart surgery. PTX3 was significantly greater in the control group than the dexmedetomidine group at postoperative day 1 (p<0.05). Dexmedetomidine may inhibit inflammatory responses associated with PB.
A607 Diastolic Dysfunction in Patients Undergoing Cardiac Surgery: The Role of Gender and Age-Gender Interaction

Renata Ferreira, M.D., Barbara G. Phillips-Bute, Ph.D., Carmelo A. Milano, M.D., Joseph Mathew, M.D., Jochen D. Muehlschlegel, M.D., Madhav Swaminathan, M.D., Alina Nicoara, M.D., Duke University Medical Center, Durham, NC. Brigham and Women’s Hospital, Harvard University, Boston, MA. Left ventricular diastolic dysfunction (LVDD) is common in ischemic heart disease and is associated with adverse outcomes after coronary artery bypass (CABG) surgery. Gender and age may play a role in the pathogenesis of LVDD, as evidenced by the higher observed incidence of LVDD among elderly women. However, there is limited perioperative data that help define the role of gender and age on risk of LVDD in patients presenting for CABG. We confirmed our hypothesis that women undergoing CABG surgery are at higher risk for LVDD. Additionally, this effect is stronger with increasing age.

A608 Left Ventricular Mass by 3D Transesophageal Echocardiography

Zak Hillel, M.D., Kiran Kalal, M.D., Daniel G. Swistel, M.D., Sandhya Balaram, M.D., Michal Gajewski, M.D., Anesthesiology, Cardiothoracic Surgery, St. Luke’s Roosevelt Medical Center, New York, NY. Left ventricular mass was determined using 3D TEE data in patients undergoing cardiac surgery with cardiopulmonary bypass.

A609 Using Intra-Operative Plateletpheresis to Reduce Allogeneic Platelet Transfusion During Complex Cardiac Surgery

Ian Welsby, M.B., B.S., Melissa Alberts, R.N., Jeffrey Gaca, M.D., Evelyn Lockhart, M.D., Stanlin Alexander, R.N., Ian Shearer, R.N., Anesthesiology, Duke University, Durham, NC. We report our experience with intraoperative, autologous plateletpheresis utilizing blood bank technology to harvest a high yield platelet product and compare the function of fresh autologous versus stored allogeneic platelets.

A610 Sevoflurane Does Not Induce Conditioning in Patients Undergoing Off-Pump Coronary Artery Bypass Grafting With and Without Cardiopulmonary Bypass

Hiroshi Sakamoto, M.D., Ph.D., Katsumi Harasawa, M.D., Ph.D., Maki Akiyama, M.D., Taku Kojima, M.D., Norigaki Kanaya, M.D., M.B.A., Department of Anesthesia, Cardiovascular Center Hokkaido Ohno Hospital, Sapporo, Japan, Department of Anesthesia, Sapporo Masui Clinic, Sapporo, Japan. No matter when sevoflurane is administered, sevoflurane does not induce pharmacologic conditioning during OPCAB.

A611 Demonstration of the Decrease of Systemic Vascular Resistance Index Measured With FloTracSensor That Occurs During Mesenteric Traction Syndrome: A Comparison With the Non-Abdominal Surgery

Motoshi Takada, M.D., Ph.D., Yuki Uematsu, M.D., Chieko Tarushi, M.D., Tomoko Sudani, M.D., Akira Suzuki, M.D., Ph.D., Daiyukai Gen Hosp Anes Dept, Ichinomiya, Japan. We demonstrated the time course changes of systemic vascular resistance index (SVRI) measured with FloTrac sensor. In the case of abdominal surgery, mesenteric traction syndrome (MTS) was observed in all patients, and SVRI decreased after the onset of MTS. In the case of non-abdominal surgery which did not induce MTS, SVRI decreased gradually to the end of the observation period. Thus the pattern of time course changes of SVRI was quite different. We would like to devise an index which can distinctly express the difference of SVRI change pattern to evaluate MTS with continuous measurement of SVRI using FloTrac sensor.

A612 Cerebral Oxygenation During Transcatheter Aortic Valve Implantation

Jessica Brodt, M.B., B.S., Edward Maratea, M.D., Department of Anesthesiology, Perioperative Medicine and Pain Management, Jackson Memorial Hospital, Miami, FL. Cerebral oximetry is a useful monitor in patients with significant comorbidities or those undergoing procedures with expected hemodynamic perturbations, and may be used to tailor intraoperative management to improve cerebral oxygenation. In patients undergoing transcatheter aortic valve implantation (TAVI), significant declines in cerebral oxygenation were frequently seen. Full analysis of the trends in cerebral oximetry is presented as well as a discussion of the utility of this monitor in TAVI patients.

A613 Pericardial Effusion Affects Accuracy of Dynamic Variables for Fluid Responsiveness

Ole Broch, M.D., Matthias Gruenewald, A.A.-C., Jochen Renner, Ph.D., Patrick Meybohm, Ph.D., Bernhold Bein, Ph.D., Anesthesiology and Intensive Care, University Schleswig-Holstein, Campus Kiel, Kiel, Germany. 10 pigs were investigated and measurement included SVV, PPV, GEDV, central venous pressure (CVP), stroke volume, e:a ratio and mitral flow propagation before and after a fluid bolus at baseline and after induction of pericardial effusion. ROC analysis was performed. In presence of diastolic dysfunction due to pericardial effusion, SVV fail to reliably predict fluid responsiveness in contrast to PPV and GEDVI showing acceptable accuracy. Therefore, SVV should be interpreted carefully in patients with left ventricular hypertrophy and diastolic dysfunction.

A614 Left Ventricular Mass in Patients Undergoing Surgery for Hypertrophic Obstructive Cardiomyopathy

Zak Hillel, M.D., Kiran Kalal, M.D., Daniel G. Swistel, M.D., Sandhya Balaram, M.D., Michal Gajewski, M.D., Mark Sherrid, M.D., Anesthesiology, St. Luke’s Roosevelt Hospital Center, New York, NY. Anesthesiology, Cardiothoracic Surgery, Medicine, St. Luke’s Roosevelt Hospital Center, New York, NY. Left ventricular mass was determined using 3D transesophageal echocardiography (TEE) in patients with hypertrophic obstructive cardiomyopathy (HOCM) undergoing cardiac surgical correction.
**A615 Effects of Steep Trendelenburg Position and CO₂ Pneumoperitoneum on Hemodynamic and Pulmonary Function During Robot-Assisted Radical Prostatectomy**

Hyungsun Lim, M.D., Ph.D., Jeongwoo Lee, M.D., Deokkyu Kim, M.D., Dong-Chan Kim, M.D., Ph.D., Ji-Seon Son, M.D., Ph.D., Anesthesiology and Pain Medicine, Chonbuk National University Medical School, Jeonju, Republic of Korea. The aim of this study was to investigate the influence of the combination of the steep Trendelenburg position and pneumoperitoneum during robot-assisted laparoscopic radical prostatectomy on cardiovascular and respiratory variables according to the operation time. Pneumoperitoneum and 30° Trendelenburg position are the cause of increase in CVP and PAP 2-fold without cardiovascular compromise. Increased airway pressure and decreased lung compliance had little effect on gas exchange. Minute ventilation should be increased for preventing gradual increase of PaCO₂.

**A616 Intravascular Expansion With Nitroglycerin Enhances Tissue Oxygenation**

Steven J. Voskanian, M.D., Audrey Yen, M.D., Peter Roffey, M.D., Mariana Mogos, M.D., Gaston Cudemus, M.D., Mark Haney, M.D., Duraiyah Thangathurai, M.D., USC, Los Angeles, CA. We hypothesize that perioperative intravascular volume expansion with vasodilators increases tissue perfusion via enhancement of the microcirculation. By administering appropriate fluids along with vasodilating the microcirculation, we observed an increase in tissue perfusion as indicated by ScvO2 values. The mechanism by which this occurs may be related to improved microcirculation. A number of studies have demonstrated an increase in postoperative complications associated with impairment in oxygenation and maldistributed microcirculation. Whether NTG with volume loading improves global tissue oxygenation by increasing the microcirculatory flow, and whether this enhancement leads to a reduction in morbidity and mortality in certain high-risk patients needs to be further investigated.

**PO08-5 Equipment, Monitoring and Engineering Technology: Depth of Anesthesia, Neuromuscular Monitoring and Temperature**

**FA**

8-11 a.m.
Hall C-Area B

**A617 Perfusion Index as a Predictive Factor of Postoperative Shivering**

Atsushi Yoshikawa, M.D., Maiko Hasegawa-Moriyama, M.D., Ph.D., Chiharu Kuroki, M.D., Kohei Godai, M.D., Kei Enohata, M.D., Akira Matsunaga, M.D., Ph.D., Yuichi Kannura, M.D., Ph.D., Anesthesiology, Kagoshima University School of Medicine, Kagoshima-shi, Japan. Perfusion Index, or PI, derived from the pulse oximeter waveform, is responsive to peripheral blood flow and body temperature. We performed intraoperative PI monitoring to investigate the correlation with the incidence of postoperative shivering. In the shivering group, PI was significantly decreased from the point of abdominal closure, compared with the non-shivering group. Although there was no difference in plasma concentrations of Ad/NAd between groups, these were increased at the level of room exit in the shivering group, indicating that the decrease in PI precedes the changes in the level of catecholamines. Postoperative shivering could be predicted by PI monitoring during anesthesia before plasma concentrations of catecholamines change.

**A618 The Warming Efficacy of Forced-Air System is Decreased in Elderly Patients During Upper Abdominal Surgery**

Takao Kato, M.D., Daisuke Nishimura, M.D., Takashi Ouchi, M.D., Ph.D., Ryoei Serita, M.D., Ph.D., Toshiya Koitabashi, M.D., Ph.D., Department of Anesthesiology, Ichikawa General Hospital, Tokyo Dental College, Ichikawa-City, Japan. The warming efficacy of forced-air warming system (EQ-5000 and SW-2003) during upper-abdominal surgery is different between elderly patients (aged 70 and over) and younger patients (aged less than 70). Anesthesiologists should perform perioperative, careful temperature management based on the warming efficacy differences with age.

**A619 A New Anesthesia Multimodal Indicator Design: Prototype Index Calculation Time Delays are Shorter Compared to BIS**

Matthias Kreuzer, M.Sc., Denis Jordan, Ph.D., Adem Omerovic, M.Sc., Sebastian Berger, M.Sc., Gerhard Schneider, M.D., Eberhard F. Kochs, M.D., Anesthesiology, Technische Universität Witten-Herdecke, Wuppertal, Germany. The new multimodal indicator evaluating depth of anesthesia shows considerable faster reaction times to altered anesthetic states or electrode detachment than the bispectral index.

**A620 Design and Development of a New Electromyographic Neuromuscular Monitor**

Sorin J. Brull, M.D., Jolanda A. Witteveen, M.Sc., David R. Hampton, Ph.D., Anesthesiology, Mayo Clinic, Jacksonville, FL. Applied Biomedical Systems, Maastricht, Netherlands, T4Analytics, Atlanta, GA. We present proof-of-concept design of a battery-operated neuromuscular monitor prototype, development of monitoring and stimulating units, and initial results in volunteers.
A621 Changes of Motor-Evoked Potentials in Surgical Repairs of Descending and Thoracoabdominal Aortic Aneurysms (dTAAs and TAAAs) in Mild Hypothermia
Yukihiko Tomita, M.D., Kenji Yoshitani, M.D., Masahide Shinzawa, M.D., Yuzuru Inatomi, M.D., Yoshiko Ohnishi, M.D., National Cerebral and Cardiovascular Center, Osaka, Japan. Paraplegia is a devastating complication of surgical repairs of descending and thoracoabdominal aortic aneurysms. Intraoperative monitoring of transcranial motor evoked potentials (MEP) provides a method to monitor the functional integrity of motor pathways. There are few human data of the change of MEPs amplitude during mild hypothermia in dTAAs and TAAAs surgery. Therefore, we investigated the change of MEPs in the cooling phase and rewarming phase. The result showed that MEP amplitude significantly increased in the cooling phase and significantly decreased in the rewarming phase. In the rewarming phase we need to take a decrease in MEP amplitude without paralysis into account.

A622 Evaluation of Myogenic Motor Evoked Potentials Monitoring During Craniotomy
Ryuichi Abe, M.D., Masahiko Kawaguchi, M.D., Yuu Tanaka, M.D., Hironobu Hayashi, M.D., Kyoko Hasuwa, M.D., Hitoshi Furuya, M.D., Anesthesiology, Nara Medical University, Kashihara, Japan, Nara Medical University, Kashihara, Japan. We reviewed the results of intraoperative MEP monitoring during craniotomy and evaluated the usefulness of MEPs monitoring elicited by transcranial stimulation (Tc-MEP) and direct stimulation (D-MEP). The technique for stimulation during craniotomy can affect the usefulness of intraoperative MEPs monitoring.

A623 Evaluation of Reliability of Visual Evoked Potentials Monitoring During Neurosurgical Procedures
Kyoko Hasuwa, M.D., Masahiko Kawaguchi, M.D., Hironobu Hayashi, M.D., Ryuichi Abe, M.D., Tsunenori Takatami, Hitoshi Furuya, M.D., Department of Anesthesiology, Nara Medical University, Kashihara, Japan, Nara Medical University, Kashihara, Japan. Reliability of visual evoked potentials (VEPs) monitoring with a combination of a new light-stimulating device and electroretinography was evaluated in neurosurgical patients. Although VEPs monitoring was feasible during neurosurgical procedures, further improvements would be required to predict reliably the postoperative visual function changes.

A624 Intraoperative Temperature Management for Major Open Abdominal Surgery: A Comparison of Forced Air Warming to a Negative Pressure Conductive Warming Sleeve
Enrico M. Camporesi, M.D., Thanh Tran, B.S., Collin Spenker, B.S., Ami Patel, B.S., Ren Chen, M.D., M.P.H., Devanand Mangar, M.D., Rachel Karlnoski, Ph.D., Surgery, Center for Evidence-Based Medicine and Health Outcomes Research University of South Florida, Florida Gulf to Bay Anesthesiology, Tampa, FL. In this prospective, randomized study we compared patient core temperature during and after major open abdominal surgery up to three hours, while warming with a commonly used forced air system or a warming sleeve (vitalHEAT). The vitalHEAT System is an efficient warming alternative to the forced-air warming method and might be preferable for cases in which the entire abdominal area and upper body need to be accessible.

A625 Detection of Painful Stimulation Using Analgesia Nociception Index (ANI) During Propofol-Remifentanil Anesthesia
Matthias Gruenewald, M.D., Jonas Herz, Student, Thelka Schoenher, Student, Christoph Ilies, M.D., Jan Höcker, M.D., Berthold Bein, M.D., Anesthesiology and Intensive Care, University Hospital Schleswig-Holstein, Kiel, Kiel, Germany. The present study examined the new Analgesia Nociception Index (ANI) during propofol anesthesia and increasing remifentanil concentrations. ANI consistently reflected nociceptive activation to painful tetanic stimulation; however, it did not predict movement following stimulation.

A626 The End-Tidal Sevoflurane Concentration for Maintaining Bispectral Index Below 50 Changes With Aging in Infants and Children
Tsuyoshi Satsue, M.D., Junko Tokuwaka, M.D., Taro Mizutani, M.D., Shinichi Inomata, M.D., Makoto Tanaka, M.D., Anesthesiology, University of Tsukuba, Tsukuba, Japan, Emergency and Critical Care Medicine, University of Tsukuba, Tsukuba, Japan. The MAC\textsubscript{50} of sevoflurane in children was higher than those in adults and tended to decrease with advancing age. Since EEG forms are different between adults and children, we should pay attention to assess appropriately the depth of anesthesia using BIS values in children.

A627 Deep Neuromuscular Blockade Give the Same Intraabdominal Volume at 8 mm Hg as No Blockade at 12 mm Hg During Laparoscopy
Astrid Lindke, M.D., Olav Istre, M.D., Ph.D., Henrik Springborg, M.D., Anesthesiology, Gynecology, Aleris-Hamlet Private Hospitals, Soeborg, Soeborg, Denmark. The distance from the promontorium to skin surface at the umbilicus is the same at 8 mmHg of CO\textsubscript{2} insufflation with deep neuromuscular relaxation as at 12 mm Hg of CO\textsubscript{2} insufflation with no relaxation. This may indicate that the volumes are identical.

A628 Forced-air Warming Using Lateral Access Blanket Can Prevent Hypothermia During Total Hip Replacement
Takashi Ouchi, M.D., Ph.D., Takao Kato, M.D., Daisuke Nishimura, M.D., Ryohei Serita, M.D., Ph.D., Toshiya Koitabashi, M.D., Ph.D., Anesthesiology, Ichikawa General Hospital, Tokyo Dental College, Ichikawa, Japan. A new type of air blanket for forced-air warming system has been developed in order to warm up patients under lateral decubitus position. This study demonstrated that forced-air warming system and this lateral access blanket could prevent hypothermia during total hip replacement. Although initial temperature decrease was observed by 0.4 °C, the combination of air blower and this new air blanket contributed to recovery from this initial redistribution temperature decrease.

A629 Differential Effect of Droperidol on Bispectral Index and Auditory Evoked Potential Index
Akira Ando, M.D., Shinshu University School of Medicine, Mastumoto, Japan. We investigated the effect of an an antiemetic dose of droperidol on the AEP index and bispectral index (BIS) during anesthesia with sevoflurane. The addition of an an antiemetic dose of droperidol causes a reduction in the BIS but not in the AEP index. These results indicate that an antiemetic dose of droperidol may enhance the hypnotic effect of sevoflurane with fentanyl/remifentanil. The difference caused by droperidol administration is probably due to the fact that the AEP index, derived from changes in MLAEP, is different from the BIS, derived from a spontaneous electroencephalogram.
A630 The Efficacy of Prewarming on Postoperative Analgesia and Incidence of Shivering in Patients Undergoing Laparoscopic Surgery

Yoshie Taniguchi, M.D., Isao Utsumi, M.D., Department of Anesthesiology, The Jikei University School of Medicine, Tokyo, Japan. After 30 minutes of prewarming with forced-air, core temperature and mean body temperature was not significantly reduced intraoperatively. For this not being only a feasible strategy as effective treatment for preventing intraoperative hypothermia, also could be used for reduction of risk for postoperative hypothermia and incidence of postoperative nausea and vomiting and shivering.

A631 Efficacy of a New Convective Prewarming System in the Prevention of Perioperative Hypothermia

Juan M. Zaballos, M.D., Ph.D., Thorsten Perl, M.D., Lena H. Peichl, Student, Koen Reynjens, M.D., Isabel Deblaere, M.D., Anselm Brauer, M.D., Ph.D., Anesthesiology and Perioperative Medicine, Policlinica Guipuzcoa, San Sebastian, Spain, Anaesthesiology, Emergency and Intensive Care Medicine, George-August University Gottingen, Gottingen, Germany, Anaesthesiology, University Hospital Ghent, Ghent, Belgium. In this prospectively, randomised, multicentre, controlled study with 90 patients undergoing surgery of 30-120 min duration under general anesthesia, we validated the hypothesis that prewarming with a new convective active prewarming system (Mistra-Air™ Warming Gown with a Mistral-Air™ blower (The Surgical Company International (TSCI), Amersfoort, Netherlands) is more effective in the prevention of perioperative hypothermia during general anesthesia than preoperative passive insulation.

A632 Subjective Evaluation of Discomfort to Train-of-Four Monitoring in Volunteers

Sorin J. Brull, M.D., Jolanda A. Witteveen, M.Sc., David R. Hampton, Ph.D., Mayo Clinic, Ponte Vedra Beach, FL. Applied Biomedical Systems, Maastricht, Netherlands, T4Analytics, Atlanta, GA. We examined the unpremedicated volunteers’ subjective discomfort elicited by a prototype quantitative monitor that uses lower current intensities than other available monitors.

A633 Generation of Electromyographic Evoked Response Curves Over a Range of Stimulating Currents

Sorin J. Brull, M.D., Jolanda A. Witteveen, M.Sc., David R. Hampton, Ph.D., Anesthesiology, Mayo Clinic, Ponte Vedra Beach, FL. Applied Biomedical Systems, Maastricht, Netherlands, T4Analytics, Atlanta, GA. We describe evoked neuromuscular response and stimulus-response curves measured by a new electromyographic device, the T4-EMG, over a range of stimulating currents.

A634 Consistency of Ulnar and Median Nerve Electromyographic Evoked Responses

Sorin J. Brull, M.D., Jolanda A. Witteveen, M.Sc., David R. Hampton, Ph.D., Anesthesiology, Mayo Clinic, Ponte Vedra Beach, FL. Applied Biomedical Systems, Maastricht, Netherlands, T4Analytics, Atlanta, GA. Single-twitch stimulus/response curves generated by increasing stimulating current are sigmoidal for ulnar and median nerves; TOF ratio is invariant of nerve tested.

A635 Are Orthopedic Trauma Patients at Increased Risk of Awareness During Procedures?

Talia Ben-Jacob, M.D., Irwin Gratz, M.D., Erin W. Pukenas, M.D., Marc C. Torjman, Ph.D., Edward Deal, M.D., Department of Anesthesiology, Cooper University Hospital, Cooper Medical School at Rowan University, Camden, NJ. The purpose of our study was to determine if trauma patients or a specific subset of trauma patients that are intubated prior to arrival to the operating room are at an increase risk of awareness based on a BIS reading of >70. A trend was noted with more patients being aware in the orthopedic group compared to the trauma group (76% vs. 60%, p=0.07). The elevated BIS scores seen in these patients indicate that not only is this population at risk for recall and awareness during arrival to the O.R. but during procedures that have occurred prior. Future studies should be designed to determine likelihood of recall in these patients and identify where the “awareness” occurred.

A636 The Accuracy and Precision of a Disposable Non-Invasive Core Thermometer

Cameron Egan, B.A., Oliver Kimberger, M.D., Ivan Parra Sanchez, M.D., Jochim Koch, Ph.D., Andrea Kurz, M.D., Department of Outcomes Research, Cleveland Clinic Foundation, Cleveland, OH. Medical University of Vienna, Vienna, Austria, Draegerwerk AG & Co. KGaA, Luebeck, Germany. This study assessed the accuracy of a non-invasive core temperature monitor in patients undergoing orthopedic surgery with regional anesthesia. We found the non-invasive core temperature to be sufficiently accurate to replace the bladder thermometer in routine clinical practice.

A637 Core and Mean Skin Temperature Redistribution During General Anesthesia. A Pilot Study

Koen M. Reynjens, M.D., An Sturtewagen, M.D., Luc Debaerdemaeker, M.D., Ph.D., Jurgen Van Limmen, M.D., Patrick Wouters, M.D., Ph.D., Stefan De Hert, M.D., Ph.D., Anesthesiology, University Hospital Ghent, Ghent, Belgium. Core body temperature is not superior to average skin temperature monitoring in assessing redistribution of body heat. Average skin temperature is an earlier indicator of rewarming and may be a more suitable feedback tool when applying forced air warming.

A638 The Effect of Fluid Warming Using the Heated Circuit Kit on the Intraoperative Core Temperature

Sang Hun Kim, M.D., Ph.D., Hyun Young Lee, M.D., Ki Tae Jung, M.D., The Anesthesiology and Pain Medicine, The Chosun University, School of Medicine, Chosun University Hospital, Gwangju, Republic of Korea. The Mega Acer Kit is new and effective equipment that can maintain the core temperature and deliver warming fluid with less loss of temperature to patients. Furthermore, this kit is superior rather than non-inferior to the Ringer blood/liquid warmer.

A639 Exploratory Method-Comparison Evaluation of a Disposable Non-Invasive Zero Heat Flow Thermometry System

Yashar Eshraghi, M.D., Daniel I. Sessler, M.D., Anesthesiology, Cleveland Clinic, Cleveland, OH. This trial assessed the agreement of temperature data from a prototype disposable deep-tissue thermometer with simultaneous measurements from a pulmonary artery catheter in eighty patients undergoing cardiac surgery.
**A640** Validation of a New Index, qCON, for Assessment of the Level of Consciousness During Sedation

José F. Valencia, Ph.D., Xavier Borrat, M.D., Pedro L. Gambús, M.D., Anesthesiology, Hospital Clinic, Barcelona, Spain. A recently introduced index of hypnosis derived from raw EEG, the qCON (Quantum Medical, Spain), is compared with the clinical sedation Ramsay scale and the bispectral index (BIS) in patients undergoing Ultrasonographic Endoscopy (USE) under sedation and analgesia with propofol and remifentanil. The qCON index showed a high correlation and agreement with BIS index, and its ability to predict the changes in the sedation Ramsay scale was similar to BIS index. In this order, qCON index was able to satisfactorily assess the level of sedation during administration of propofol and remifentanil in patients undergoing USE.

**A641** Perioperative Analgesia: Analgesia Nociception Index vs. Continuous Pupillometry in Adults Under General Anesthesia

Federica Piana, Student, Marie Laurence L. Guye, Jr., Nada Sabourdin, Jr., Damien Edourd, Jr., Nicolas Louvet, Jr., Isabelle Constant, Jr., Anesthesia and Intensive Care, University Hospital Trousseau, Paris, France. Perioperative analgesia: Analgesia Nociception Index vs. continuous pupillometry in adults under general anesthesia: both ANI and pupillometry seemed to be correlated to the intensity of the tetanic stimulation although with different response time and sensitivity.

**A642** Preoperative Predictors of Vasopressor Requirements in Patients Undergoing Adrenalectomy for Pheochromocytoma

Derek T. Woodrum, M.D., Robert E. Freundlich, M.D., M.S., Matthew J. Sigakis, M.D., Amy Shanks, M.S., Sachin Kheterpal, M.D., M.B.A., Anesthesiology, University of Michigan Hospitals, Ann Arbor, MI. Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital, Boston, MA. Potent vasopressors are frequently, but with improved outcomes.

**A643** Is Low BIS Associated With Decreased Mortality and Neurological Complications in Patients Undergoing Circulatory Arrest?

Andra I. Duncan, M.D., Jing You, M.S., Edward J. Mascha, Ph.D., Dan Sessler, M.D., Cleveland Clinic Foundation, Outcomes Research, Cleveland Clinic, Cleveland, OH. Low bispectral index (BIS) scores, especially BIS scores of zero, may protect the brain from ischemic injury during deep hypothermic circulatory arrest. This retrospective cohort study compared the risk of death and severe neurologic injury in patients who had BIS of zero during circulatory arrest with patients who had higher BIS. The association between time-weighted average BIS and postoperative neurologic morbidity or death was also compared. Low BIS and BIS of zero during circulatory arrest was not associated with improved outcomes.

**A644** Type O Blood Group Is Not Associated With Increased Blood Loss or Blood Transfusion Requirement in Complex Spine Surgery

Ryu Komatsu, M.D., Jarrod E. Dalton, M.S., Michael Ghobrial, M.D., Cameron Egan, B.A., Alexander Y. Fu, Student, Jae H. Lee, B.A., Daniel I. Sessler, M.D., Alparslan Turan, M.D., Anesthesiology Institute, Departments of Quantitative Health Sciences and Outcomes Research, Department of Outcomes Research, Cleveland Clinic, Case Western Reserve University School of Medicine, Cleveland, OH. Although individuals with type O blood group have been reported to have smaller amounts of circulating factor VIII/von Willebrand Factor (vWF) than those with other blood groups, status of blood type O is not associated with intraoperative blood loss, requirement of blood product transfusion, or length of hospital stay among patients having extensive spine surgery.

**A645** Low Stroke Volume Index at the End of Surgery Increases the Risk of Acute Kidney Injury After Esophagectomy

Yusuke Sugawara, M.D., Ph.D., Keisuke Yamaguchi, M.D., Ph.D., Masakazu Hayashida, M.D., Ph.D., Eiichi Inada, M.D., Ph.D., Department of Anesthesiology and Pain Medicine, Juntendo University School of Medicine, Tokyo, Japan. Assess the impacts of SVI at the end of esophagectomy on postoperative renal function. Methods: We reviewed medical records of 128 patients who underwent elective esophagectomy. Depending on whether the SVI indicated by an arterial pressure-based cardiac output system at the end of surgery was 35 ml/m² or more, or less than 35 ml/m², we divided the patients into two groups. Then, we compared between the groups postoperative renal function. We also counted the number of patients who developed postoperative AKI in each group. Results: The postoperative renal function was more deteriorated in the lower SVI group. Maintaining SVI at 35 ml/m² or more may be helpful in decreasing the risk of AKI after esophagectomy.

**A646** The Impact of Intraoperative Hypothermia on Postoperative Adverse Events After Esophagectomy

Hiroyuki Yamasaki, M.D., Katsuki Tanaka, M.D., Ph.D., Yusuke Funai, M.D., Koichi Suehiro, M.D., Mitsuyo Nakamura, M.D., Taku Hamada, M.D., Tomoharu Funao, M.D., Ph.D., Ichiro Hase, M.D., Ph.D., Takashi Mori, M.D., Ph.D., Kyonobu Nishikawa, M.D., Ph.D., Osaka City University Graduate School of Medicine, Osaka, Japan. We evaluated the correlation between intraoperative body temperature and postoperative adverse effects in esophagectomy. Intraoperative hypothermia was an independent risk factor for early postoperative adverse events in esophagectomy.
A647 Brain Natriuretic Peptide is a Predictor of Perioperative Adverse Cardiac Events in Aged Patients Undergoing Hip Fracture Surgery
Sojiro Matsumoto, M.D., Yoshiaki Terao, M.D., Ph.D., Akiko Sakai, M.D., Hiroko Araki, M.D., Mai Okada, M.D., Makoto Fukuksuki, M.D., Ph.D., Koji Sumikawa, M.D., Ph.D., Anesthesia, Nagasaki Rosai Hospital, Sasebo, Japan, Anesthesiology, Nagasaki University Hospital, Nagasaki, Japan. Elderly patients often have multiple comorbidity and are at increased risk of perioperative adverse cardiac events. It is suggested that BNP of the postoperative day 1 would be an independent predictor of perioperative adverse cardiac events in aged patients undergoing hip fracture surgery.

A649 Pre-Hospital Shock Index as a Predictor of Emergency Blood Transfusion Upon Admission to an Advanced Trauma Center
Peter F. Hu, M.S., Colin F. Mackenzie, M.D., Lynn Stansbury, M.D., Hess John, M.D., Chein J. Chang, Ph.D., Joseph DuBose, M.D., Raymond Fang, M.D., Anesthesiology, University of Maryland School of Medicine, Baltimore, MD. Electrical Engineering, University of Maryland Baltimore County, C-STARs, United States Air Force, Baltimore, MD. We used pre-hospital SBP and HR to derive Shock Index (SI=HR/SBP) and predict transfusion of un-cross-matched blood (UnXRBC) in 8,804 adult trauma patients admitted over 2 years, of whom 282 received UnXRBC. Results: SI was significantly associated blood use (odds ratio (OR): 27.5, 95% CI 16.8-45.0). For 18-30 year olds, SI was associated with blood use with OR 74.70 (95% CI 31.20-178.21). Conclusion: Automated SI decision-assist communicated from the field to the blood bank could enable processing of a full range of blood and products to be made available for patient arrival.

A650 LV Diastolic Dysfunction is a Predictor of Postoperative Pulmonary Edema in Renal Transplantation Recipients
Midoriko Higashi, M.D., Ken Yamaura, M.D., Mizuko Ikeda, M.D., Tsukasa Shimauchi, M.D., Haruka Saiki, M.D., Sumio Hoka, M.D., Operating Rooms, Kyushu University Hospital, Fukuoka, Japan, Department of Anesthesiology, Kyushu University Hospital, Fukuoka, Japan. Renal transplantation recipients who developed postoperative pulmonary edema in spite of preserved LV systolic function were significantly higher E/E of tissue Doppler velocity on preoperative echocardiography than those without pulmonary edema. Therefore, meticulous evaluation of LV diastolic function is important in renal transplantation recipients who are necessary to receive strenuous volume therapy during and following surgery.

A651 Chemotherapy Within 30 Days Before Surgery Does Not Augment Postoperative Mortality and Morbidity
Hooman Honar, M.D., Diana Shao, Student, Vafi Salmiasi, M.D., Abdulkadir Atim, M.D., Jarrod E. Dalton, M.A., Leif Saager, M.D., Alparslan Turan, M.D., Outcomes Research, Cleveland Clinic, Cleveland, OH. The effect of preoperative chemotherapy on early surgical outcomes in cancer patients undergoing tumor resection surgeries is controversial. We compared the rates of mortality and major morbidities within 30 days after surgery in 1,348 pairs of chemotherapy recipients and non-recipients. In this study preoperative chemotherapy was not associated with a higher rate of early postoperative complications or mortality.

A652 Association Between Perioperative Hemoglobin and Acute Kidney Injury in Patients Having Noncardiac Surgery
Alexander Y. Fu, B.S., Hooman Honar, M.D., Amit X. Garg, M.D., Ph.D., Maged Y. Argalius, M.D., M.B.A., Michael Walsh, M.D., Ph.D., Department of Outcomes Research, Cleveland Clinic Foundation, Cleveland, OH. London Health Sciences Centre, University of Western Ontario, London, ON, Canada, Departments of Medicine and Clinical Epidemiology and Biostatistics, McMaster University, Hamilton, ON, Canada. Low preoperative hemoglobin concentrations and decrements in postoperative hemoglobin are strongly associated with postoperative acute kidney injury in a graded manner.

A653 Multivariate Analysis of Correlations Between Incidence of Delirium and Delirium-Initiating Factors in Advanced Cancer Patients in a Palliative Care Unit
Mizukami Naomi, M.D., Masanori Yamauchi, Ph.D., Akihiko Watanabe, Ph.D., Kazuhiro Koike, Ph.D., Michiaki Yamakage, Ph.D., Anesthesiology, Sapporo University of Medicine, Sapporo, Japan, Palliative Medicine, Higashi-Sapporo Hospital, Sapporo, Japan, Sapporo University of Medicine, Anesthesiology, Japan. Multivariate analysis was performed to determine which delirium-initiating factors are significantly related to incidence of delirium in advanced cancer patients. Hypercalcemia and medication with narcoleptics had strong correlations with incidence of delirium.

A655 Severity Assessment and Mortality Prediction in the Elderly Neurologically Compromised Patients Within the First 24-Hour of ICU Admission
Alexander F. Bautista, M.D., Rainer Lenhardt, M.D., Cate Heine, Edward Mascha, Ph.D., Ozan Akca, M.D., University of Louisville, Louisville, KY. Cleveland Clinic, Cleveland, OH. In this retrospective cohort, smoking history, GCS, baseline diagnosis of congestive heart failure, fever at ICU admission, APACHE III score, and cardiovascular and neurological components of the SOFA score at admission provided useful information to predict mortality in elderly ICU patients.
A656 Pre-Induction Arterial Blood Pressure and Postoperative Outcomes in Elective Noncardiac Surgery

Alaa Abd-Elsayed, M.D., Jarrod Dalton, M.A., Basem Abdelmalak, M.D., John Doyle, M.D., Ph.D., John Sear, FANZCA, University of Cincinnati, Cincinnati, OH. Quantitative Health Science, Departments of General Anesthesiology and Outcomes Research, Department of General Anesthesiology, Cleveland Clinic, Cleveland, OH. Nuffield Department of Anesthetics, John Radcliffe Hospital, Oxford, United Kingdom. For patients with risk factors for cardiovascular outcomes, the risk for postoperative mortality and cardiovascular outcomes was greatest among patients with normal SBP and diastolic hypotension, specifically when DBP was <70 mmHg.

A657 Gender and Intracranial Hemorrhage: Predictors of Clinical Outcomes

Odera Umeano, B.A., Claire Emery, B.S., Wei Sun, M.D., Marisa C. Gray, B.A., Barbara Phillips-Bute, Ph.D., Peter G. Kranz, M.D., Daniel T. Laskowitz, M.D., David McDonagh, M.D., Michael L. James, M.D., Duke University, Durham, NC. An examination of the factors that predict patient disposition after intracranial hemorrhage.

A658 Postreperfusion Syndrome in Orthotopic Liver Transplantation: Predictors and Influence on Outcome

John D. Kot, M.D., Worapot Apinyachon, M.D., Victor Xia, M.D., Anesthesiology, UCLA Medical Center, Los Angeles, CA. A single center retrospective review of 878 adult patients undergoing orthotopic liver transplantation found the occurrence of postreperfusion syndrome to be associated with prolonged cold ischemia time. During the neohepatic phase, postreperfusion syndrome was associated with an increased need for hemodynamic pressor support and an increased transfusion requirement of all blood products.

A659 Serum Vitamin D Levels and Non-cardiac Outcomes After Cardiac Surgery

Sheryar Sarwar, M.D., Jing You, M.S., Edward Mascha, Ph.D., Leif Saager, M.D., Martin Grady, M.D., Allen Bashour, M.D., Andrea Kurz, M.D., Daniel Sessler, M.D., Alparslan Turan, M.D., Anesthesia Outcomes Research, Cleveland Clinic, Cleveland, OH. This is an evaluation of the association between serum vitamin D concentration and postoperative outcomes (non-cardiac) in patients after cardiac surgery.

A660 Serum Vitamin D Levels and Its Association With Postoperative Cardiac Morbidities in the Cardiac Surgery Patient Population

Awais Ahmed, M.D., Martin Grady, M.D., Jing You, M.S., Edward Mascha, Ph.D., Allen Bashour, M.D., Leif Saager, M.D., Daniel I. Sessler, M.D., Andrea Kurz, M.D., Alparslan Turan, M.D., Outcomes Research-Anesthesiology, Cleveland Clinic Foundation, Cleveland, OH. There has been renewed interest in the effect of vitamin D deficiency in cardiovascular conditions, and this association stems from the numerous vitamin D receptors found throughout the cardiovascular system and the biochemical pathways defined by in vitro studies. Given the current association of vitamin D deficiency in cardiovascular conditions, such as hypertension, heart failure, and ischemic disease, it stands to reasonably question the effect of decreased levels of vitamin D on cardiac morbidities in cardiac surgery patients. In our study, we examined the effect of vitamin D on cardiac morbidities in patients undergoing cardiac surgery.

A661 Identifying Patient Risk Factors Predictive of Early Postoperative Complications and LOS Following Open Radical Cystectomy for Bladder Cancer

Kerri M. Wahl, M.D., Juaying Jin, M.D., Brant Inman, M.D., Lee Jones, Ph.D., Tong J. Gan, M.D., Anesthesiology, Surgery, Duke University Medical Center, Durham, NC. Our series examines early postoperative outcomes and LOS following open radical cystectomy in patients identified preoperatively as high-risk due to cardiac, pulmonary or renal disease. A total of 40.3% of all patients developed at least one postoperative complication. Pre-existing cardiac disease and renal insufficiency were significant risk factors for longer LOS. Transthoracic echocardiogram variables were not predictive of early poor outcomes.

A662 Preoperative Brain Natriuretic Peptide and Atrial Arrhythmias After Coronary Artery Bypass Graft Surgery

Ethann Bernstein, M.P.H., Peter Vezzie, Ph.D., Christine Tompkins, M.D., Robert Block, M.D., M.P.H., Alparslan Turan, M.D., Outcomes Research, Cleveland Clinic, Cleveland, OH. Department of Community and Preventive Medicine, University of Rochester, Department of Medicine, Cardiology, University of Rochester, Rochester, NY. Using retrospective data from the Cleveland Clinic, we observed that increased brain natriuretic peptide increase the risk for atrial arrhythmias following coronary artery bypass graft surgery.

A663 Type of Surgery as an Independent Risk Factor for PONV in Adult Surgical Patients

Katie S. Yang, Student, Juaying Jin, M.D., Ashraf S. Habib, M.B., B.Ch., Mingwen Ouyang, M.D., Tong J. Gan, M.D., School of Medicine, Duke University, Durham, NC. First Affiliated Hospital of Chongqing Medical University, Chongqing, China, Duke University Medical Center, Durham, NC. Nanfang Hospital, Southern Medical University, Guangzhou, China. This retrospective analysis found that surgery type predicts PONV independent of known PONV risk factors, such as age, sex, ASA status, history of PONV, history of motion sickness, and smoking status in adult surgical patients.

A664 Mortality Prediction in Stroke and Non-traumatic Intracranial Hemorrhage Patients Within the First 24-Hour of ICU Admission

Alexander F. Bautista, M.D., Rainer Lenhardt, M.D., Michael Heine, M.D., Edward Mascha, Ph.D., Ozan Akca, M.D., University of Louisville, Louisville, KY, Cleveland Clinic, Cleveland, OH. In this retrospective study, age, GCS, baseline diagnosis of COPD, WBC, APACHE III score, and cardiovascular component of the SOFA score at admission provided useful information to predict mortality in severe stroke and non-traumatic ICH patients in the ICU.

A665 Type of Surgery as an Independent Risk Factor for PONV in Pediatric Surgical Patients

Juaying Jin, M.D., Katie S. Yang, Student, Edmund H. Jooste, M.B., Ch.B., Ashraf S. Habib, M.B., B.Ch., Tong J. Gan, M.D., FR.C.A., The First Affiliated Hospital of Chongqing Medical University, Chongqing, China, Duke University, Durham, NC. This retrospective study suggested that surgery type could predict PONV in pediatric surgical patients independent of known risk factors, such as age, sex, ASA status, and history of PONV using multiple regression analysis.
A666 Associations Between Serum Vitamin D Concentration and Postoperative Outcomes After Non-Coronary Surgery
Jing You, M.S., Martin Grady, M.D., Allen Bashour, M.D., Edward Mascha, Ph.D., Alparslan Turan, M.D., Quantitative Health Sciences and Outcomes Research, Outcomes Research, Cleveland Clinic, Cleveland, OH. Vitamin D deficiency is an alarming global health problem. It has been estimated that 1 billion people worldwide have vitamin D deficiency or insufficiency. Beside its traditional role in bone maintenance, vitamin D level has been linked to several factors that might influence surgical outcomes. Thus, we aimed to assess the association between vitamin D and a composite of in-hospital mortality, cardiovascular morbidity and infectious morbidity.

A667 Glutamine Increase Protein O-GlcNAc Modification and Attenuates the Brain Damage in Septic Shock Rats
Jin Wang, M.D., Zhong-Da Hospital, Southeast University, Nanjing, China. This research demonstrated that glutamine could attenuate the brain damage in septic shock rats. The molecular mechanism appears to be mediated via enhancement of protein O-GlcNAc modification.

A668 Propofol Protects Mouse Cortical Neurons From Oxidative Stress Induced Cell Death
Sarah Smith, M.D., Neil L. Harrison, Ph.D., Anesthesiology, Anesthesiology and Pharmacology, Columbus University, New York, NY. The pathogenesis of brain injury following cerebral ischemia, including that which occurs in the perioperative period, is highly dependent upon the formation of toxic reactive oxygen species. Here we demonstrate that propofol mitigates cell death in an in vitro model of oxidative injury via a putative GABA<sub>α</sub> receptor (GABA<sub>AR</sub>) mediated mechanism.

A669 Dexmedetomidine Improves Neurological and Histological Outcomes After Transient Spinal Ischemia in Rats
Tori Goyagi, M.D., Takashi Horiguchi, M.D., Toshiaki Nishikawa, M.D., Anesthesia and Intensive Care Medicine, Akita University Graduate School of Medicine, Akita-City, Japan. We have investigated whether dexmedetomidine provides neuroprotection against transient spinal ischemia in rats. The current results show that administration of dexmedetomidine improves neurological and histological outcomes following transient spinal ischemia.

A670 The Role of PI3K-AMPA Receptor Glutamate Receptor Subunit 2 Trafficking in Long-Term Neuroprotection Induced by Propofol Postconditioning in a Rat Model of Focal Cerebral Ischemia/Reperfusion
Haiyun Wang, Ph.D., Guolin Wang, M.D., Anesthesia, Tianjin Medical University General Hospital, Tianjin, China, Anesthesiology, Tianjin Medical University General Hospital, Tianjin, China. Our study showed that propofol post-conditioning activated PI3K, promoted the formation of PI3K-AMPA receptor GluR2 complex, and thus inhibited the internalization of GluR2 subunit in the early stage of focal cerebral ischemia/reperfusion injury. Such effects induced by propofol post-conditioning provided long-term neuroprotection.

A671 Therapeutic Potential of Cardiac Glycosides in Experimental Stroke
Miwa Izutsu, M.D., Raphel E. Chaparro, M.D., Ph.D., Huaxin Sheng, M.D., David S. Warner, M.D., Anesthesiology, Duke University Medical Center, Durham, NC. High throughput screening has identified Na,K ATPase as a target for stroke therapeutics. This has been confirmed by intracerebroventricular nerifolin in rat focal ischemia. PBI-05204, a supercritical CO2 extract of Nerium oleander contains cardiac glycosides such as oleandrin, crosses the blood-brain barrier, and protects against in vitro oxygen-glucose deprivation. We hypothesized that oral PBI-05204 will improve outcome from transient focal ischemia in the rat. Oral 100mg/kg PBI-05204 improved neurologic function at 24 h after ischemia; however, the effect was absent after 7d recovery. Doses studied were sub-toxic. Greater doses may offer greater efficacy.

A672 Hypothermia-Induced Neuroprotection in Rats: A Possible Blood Glutamate Scavenging Mechanism
Akiva Leibowitz, M.D., Matthew Boyko, Ph.D., Benjamin F. Gruenbaum, B.S., Yoram Shapira, M.D., M.P.H., Alexander Zlotnik, M.D., Ph.D., Department of Anesthesiology and Critical Care, Soroka Medical Center, Ben-Gurion University of the Negev, Beer-Sheva, Israel. Mild and moderate hypothermia led to a reduction in blood glutamate levels in rats, while severe hypothermia, in contrast, was associated with a significant elevation in blood glutamate levels. We further demonstrated an elevation of glutamate oxaloacetate transaminase and glutamate pyruvate transaminase levels, supporting their involvement in reducing blood glutamate via the conversion of glutamate to 2-ketogluturate. We suggest that the neuroprotective properties of mild hypothermia may be partially due to a blood glutamate scavenging mechanism.

A673 Sevoflurane Induced Immediate Preconditioning Protection Is Dependent on the PKMζ and K<sub>ATP</sub> Channel Activity
Ira S. Kass, Ph.D., Jun Wang, M.D., M.S., Joan Y. Hou, M.D., James E. Cottrell, M.D., Anesthesiology, SUNY Downstate Medical Center, Brooklyn, NY. Sevoflurane preconditioning improves physiologic recovery after hypoxia in CA1 pyramidal neurons. PKMζ activity and the hypoxic hyperpolarization due to K<sub>ATP</sub> channel activation are important for the electrophysiological protection of these neurons.

A674 Glutamate Transporter Type 3 May Be Involved in Isoflurane Preconditioning-Induced Acute Phase of Neuroprotection
Zhidi Zuo, M.D., Ph.D., Liaoliao Li, Ph.D., University of Virginia Health System, Charlottesville, VA. Isoflurane preconditioning-induced acute phase of neuroprotection may involve glutamate transporter type 3. This transporter protein may function not only as a glutamate transporter but also like a receptor.
A675 Senegenin Attenuates Cognitive Dysfunction Induced by Hepatic Ischemia-Reperfusion via NR2B in Hippocampus of Rats
Zhengliang Ma, Ph.D., Fengling Wang, M.D., Xiaoping Gu, Ph.D., Zhong Jiang, M.D., Yan Yang, M.D., Department of Anesthesiology, Affiliated Drum Tower Hospital of Medical School of Nanjing University, Nanjing, China. The root of Polygala tenuifolia, a traditional Chinese medicine, has been used to improve memory and intelligence. Results of the present study showed that cognitive dysfunction induced by hepatic ischemia-reperfusion (HIR) in rats is associated with reduction of NR2B expression. Senegenin, a component of Polygala tenuifolia root extracts, plays a neuroprotective role in HIR via increasing NR2B expression in the hippocampus.

A676 Cholinergic Stimulation Attenuates Postoperative Neuroinflammation and Cognitive Decline Following Endotoxemia
Niccolo Terrando, Ph.D., Ting Yang, M.D., Ph.D., Lars I. Eriksson, M.D., F.R.C.A, Mervyn Maze, M.B., Ch.B., Physiology and Pharmacology, Karolinska Institutet, Stockholm, Sweden, Anesthesiology and Perioperative Care, University of California San Francisco, San Francisco, CA. Resolution of postoperative infection and cognitive decline through cholinergic modulation.

A677 Anesthetic propofol attenuates Aβ-induced neurotoxicity
Haijun Shao, M.D., Ph.D., Yiyong Zang, M.D., M.S., Zhipeng Xu, M.D., Ph.D., Yuanlin Dong, M.D., M.S., Zhongcong Xie, M.D., Ph.D., Geriatric Anesthesia Research Unit, Department of Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital and Harvard Medical School, Charlestown, MA. Anesthetic propofol attenuates aging-associated learning and memory impairment in both 18 month-old WT and AD Tg mice through the potential mechanism that propofol decreases Aβ-associated cytotoxicity via inhibiting the opening of the mitochondrial permeability transition pore.

A678 Betulinic Acid Protects Against Cerebral Ischemia-Reperfusion Injury in Mice by Reducing Oxidative Stress and Increasing Endothelial Progenitor Cells Mobilization
Huixu Xu, M.D., Chenchen Zhang, M.D., Adin Luo, M.D., Yuek Tian, M.D., Department of Anesthesiology, Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China. Oxidative stress is involved in the pathogenesis of cerebral ischemia-reperfusion injury. The pattern of Nox1 mRNA and Nox4 mRNA expression in the brain in response to ischemia-reperfusion are different. It is speculated that Nox1 may be mainly involved in the early damage, while Nox4 may contribute to the delayed tissue repair and remodeling. Betulinic acid inhibits oxidative stress, prevents neuronal apoptosis, reduces infarct size, and increases EPCs mobilization as well. It can produce a protective effect on cerebral ischemia-reperfusion injury.

A679 Neurtropin at Clinical Dose Protects Against Intrathecal Lidocaine Neurotoxicity in Rats
Tami Takenami, M.D., Yoshihiro Nara, D.V.M., Naoko Kaziura, M.D., Kazuhisa Yoshino, M.D., Hirotsugu Okamoto, M.D., Anesthesiology, Kitasato University School of Medicine, Sagamihara, Japan. Neuroprotective properties on neurtropin in lidocaine neurotoxicity.

A680 Anti-spastic Effects of Intrathecally Administered Fluvoxamine, a Selective Serotonin Reuptake Inhibitor, in Mechanically Compressed Spinal Cord Injury-induced Spasticity
Norikazu Mochizuki, M.D., Tomoyuki Kawamata, M.D., Yuki Sugiyama, M.D., Satoshi Tanaka, M.D., Mikito Kawamata, M.D., Anesthesiology, Shinsu University School of Medicine, Matsumoto Nagano, Japan. We assessed the therapeutic effect of fluvoxamine, a selective serotonin reuptake inhibitor, on spasticity following spinal cord injury in a rat model. Intrathecal administration of fluvoxamine at dose of 1.0 and 3.0 μg/day for 4 weeks significantly delayed development of spasticity and decreased Ashworth score compared to vehicle. We showed that intrathecal fluvoxamine, a selective serotonin reuptake inhibitor, at low doses improved spasticity following SCI.

A681 The Protective Effects of Hyperbaric Oxygenation Treatment on Learning and Spatial Memory Function in Microsphere-Embolized Rats
Zhongjin Yang, M.D., Lili Fang, M.D., Fenghua Li, M.D., Anesthesiology, Upstate Medical University, Syracuse, NY. The present study demonstrates that consecutive HBOT is associated with improvement of learning and spatial memory function during cerebral infarction period induced by ICA microspheres injection in rats, particularly after the convalescence of the operative procedure injury.

A682 PPARγ Agonist Rosiglitazone Provides Neuroprotection Following Deep Hypothermic Circulatory Arrest in Atherosclerosis-Prone JCR Rats
Qing Ma, M.D., Zhiquan Zhang, Ph.D., Burkhard G. Mackensen, M.D., Ph.D., Mihai V. Podgoreanu, M.D., Anesthesiology, Duke University Medical Center, Durham, NC. This study demonstrates that targeted PPARγ activation with PPARγ agonists, particularly with Rosiglitazone (ROS1) provides neuroprotection following CPB/DHCA. The results suggest that activation of PPARγ ameliorates perioperative cerebral injury (PCI) via PPAR-γ-mediated deregulation of the cerebral inflammatory response and PPAR-γ-enhanced phosphor-Bad and thereby suppress neuronal apoptosis.

A683 Annexin-A1 Short Peptide Improves Functional Neurologic Outcomes Following Deep Hypothermic Circulatory Arrest in Rats
Qing Ma, M.D., Zhiquan Zhang, Ph.D., G. Burkhard Mackensen, M.D., Ph.D., Mihai V. Podgoreanu, M.D., Anesthesiology, Duke University Medical Center, Durham, NC. This study provides evidence that administration of Annexin-A1 short peptide (ANXA1sp) improves cerebral recovery following CPB/DHCA by inhibiting the cerebral and systemic inflammatory response to CPB/DHCA in a rodent model.

A684 The Apolipoprotein e-Based Small Peptide VR55 Reduces Brain Inflammation and Improves Functional Outcomes in a Mouse Model of Intracerebral Hemorrhage
Haichen Wang, M.D., Beilei Lei, M.D., Ph.D., Bo Wang, M.D., Daniel T. Laskowitz, M.D., Michael L. James, M.D., Medicine (Neurology), Anesthesiology, Duke Medical Center, Durham, NC. The current study demonstrates that VR55, a 5-amino acid, third generation apoE-derived peptide, improves neurological function and reduce brain edema after ICH in mice. The better MAP penetration of this very small apoE peptide would make this an attractive strategy.
A685 Alpha-2 Agonist Dexmedetomidine Attenuates Activation of Microglia Derived From Adult Mice Spinal Cord After Oxygen-Glucose Deprivation

Viktor A. Agoston, M.D., Marshall T. Bell, M.D., Paco S. Herson, Ph.D., Fabia Gamboni, Ph.D., Joseph C. Cleveland, M.D., David A. Fullerton, M.D., Brett T. Reece, M.D., Ferenc Puskas, M.D., Surgery, Anesthesiology, University of Colorado Denver, Aurora, CO. Spinal cord ischemia reperfusion injury remains a devastating consequence of thoraco-abdominal aortic surgery. Our results indicate that alpha-2 agonist dexmedetomidine may exert spinal cord protective effects through the inhibition of microglial activation, thus by decreasing inflammation.

A686 Vocal Cord Paralysis Outcomes After Aortic Surgery

Ralph P. DiLisio, M.D., Michael Mazzeffi, M.D., Carol A. Bodian, Ph.D., Gregory W. Fischer, M.D., Anesthesiology, Mount Sinai Medical Center, New York, NY. Emory University Hospital, Atlanta, GA. We have examined the incidence of vocal cord paralysis in a cohort of 498 patients who underwent thoracic aortic surgery. We further investigated the associations between vocal cord paralysis, postoperative length of stay, and the incidence of tracheostomy.

A687 Introducing a Thrombelastometry and Impedance Aggrometry Based Point-Of-Care Coagulation Management - Results of a One Year Pilot Test

Thomas Ehrlich, M.B.A., Michael Glas, M.D., Ph.D., Dietmar Mauer, M.D., Ph.D., Thomas Volk, M.D., Ph.D., Sascha Kreuer, M.D., Ph.D., Project Management Office, Saarland University Medical Center, Homburg, Germany. During a one year pilot period after introducing a thrombelastometry and impedance aggrometry-based point-of-care coagulation management at the Saarland University Medical Center, we analyzed in a retrospective study the usage of blood products and coagulation concentrates of included patients. There are strong effects in transfusional rates and use of coagulation products with a high potential for cost savings for the hospital.

A688 The University Health Consortium Expected Probability of Mortality and the Mortality Prediction Model III Exhibit Similar Discrimination in Predicting Mortality in the Critically Ill

Angela Lipshutz, M.D., M.P.H., John Feiner, M.D., Michael Gropper, M.D., Ph.D., Department of Anesthesia and Perioperative Care, University of California, San Francisco, San Francisco, CA. The University Health Consortium (UHC) Expected Probability of Mortality (EPM) is used to compare quality across UHC members, but it has not been prospectively validated in the critically ill. In this study, we compared the performance of the UHC EPM and the admission Mortality Probability Model III score in predicting mortality in our ICU population and found that while both models exhibit excellent overall performance and discrimination, both were poorly calibrated.

A689 Predictors of Extubation Failure in ICU Patients

Timothy Miu, M.D., Aaron Joffe, D.O., Steven Deem, M.D., David N. Yanez, Ph.D., Miriam Treggiari, M.D.Ph.D., Anesthesiology and Pain Medicine, Biostatistics, University of Washington, Seattle, WA. Study examining predictors of extubation failure in a large cohort of intubated ICU patients. Study goal is to produce a scoring algorithm to predict extubation failure.

A690 Perioperative Hypothermia: An Indicator of Outcomes in Burn Patients

Benjamin Chen, M.D., Anthony Kovac, M.D., Dhaval Bhavsar, M.D., Anesthesiology, Plastic Surgery, University of Kansas Medical Center, Kansas City, KS. While further studies are required to establish perioperative and intraoperative hypothermia as an independent risk factor for mortality in severely burned patients, the current evidence suggests that minimizing temperature fluctuations and maintaining the goal of normothermia throughout the perioperative care of these patients results in better outcomes.

A691 Perceptions of the Terms Palliative Care and Palliative Medicine Amongst Surgical ICU Nurses, Surgeons, and Critical Care Anesthesiologists

Kerry L. Shannon, M.P.H., Jessica Peters, M.S.N., Lauren Redstone, M.A., Selena J. An, B.A., Wutyi Aung, B.A., Jeffrey Duong, M.S., Erica Koegler, M.A., Maya Nadison, M.S., Peter Pronovost, M.D., Ph.D., Rebecca Aslakson, M.S., M.S., Department of Surgery-Surgical Nursing Administration, Department of Health Policy and Management, The Johns Hopkins Bloomberg School of Public Health, Department of Anesthesiology and Critical Care Medicine, The Johns Hopkins School of Medicine, Baltimore, MD. Despite the emergence of palliative medicine and palliative care as medical fields, preconceptions regarding these terms exist. This study explores the perceptions of these terms amongst surgical ICU nurses, surgeons, and critical care anesthesiologists.

A692 Cerebrovascular Autoregulation After Pediatric Cardiac Arrest

Emmett E. Whitaker, M.D., Devon Aganga, M.D., Jessica L. Jamrogowicz, B.S., Abby C. Larson, B.S., Christoph U. Lehmann, M.D., Melanie Bemba, M.D., Ken M. Brady, M.D., Charles W. Hogue, M.D., Donald H. Shaffer, M.D., Jennifer Lee-Summers, M.D., Anesthesiology and Critical Care Medicine, Pediatrics, Johns Hopkins Medical Institutions, Baltimore, MD. Anesthesiology and Critical Care Medicine, Texas Children’s Hospital, Houston, TX. Autoregulation maintains relatively constant cerebral blood flow across a range of mean arterial blood pressure (MAP). We sought to determine if impaired autoregulation is associated with mortality after cardiac arrest in children using near infrared spectroscopy (NIRS).

A693 Global Muscle Strength but not Grip Strength Predicts Mortality and Length of Stay in a Cross-Sectional Study of Surgical Intensive Care Unit Patients

Jeanette Lee, M.D., Karen Waak, B.S., Mattias Eikemann, M.D., Ph.D., Jarone Lee, M.D., M.P.H., Anesthesia, Critical Care, and Pain Medicine, Massachusetts General Hospital, Boston, MA. Cross-sectional prospective study to evaluate the predictive value of strength via manual muscle testing and handgrip dynamometry at ICU admission for in-hospital mortality, SICU length of stay (LOS), hospital LOS and mechanical ventilation duration. This study demonstrated that manual muscle testing was identified as an independent predictor for mortality, SICU LOS, hospital LOS and duration of mechanical ventilation. Grip strength was not associated with these outcomes.
A694 Outcomes of Elective Surgical Patients Refused ICU Admission Due to Full Unit

Hideyuki Mouri, M.D., Masamitsu Sanui, M.D., Ph.D., Tetsu Ohnuma, M.D., Yusuke Sasabuchi, M.D., Tetsuya Komuro, M.D., Hiroyuki Takeuchi, M.D., Kayo Asaka, M.D., Junji Shiotsuka, M.D., Alan Leflor, M.D., M.P.H., Department of Anesthesiology and Critical Care, Jichi Medical University Saitama Medical Center, Saitama, Japan, Department of Anesthesiology and Critical Care, Jikei University School of Medicine, Tokyo, Japan, Surgery, Jichi Medical University, Tochigi, Japan. We retrospectively evaluated outcomes of elective surgical patients refused ICU admission due to full unit compared with those accepted in our institution. The data suggest that, with adequate triage, the elective surgical patients refused ICU admission can be safely managed without ICU stays.

A695 Prolonged Postoperative Mechanical Ventilation and Sedative Use Increases Risk of Cognitive Complications in Adults

Santosh J. Agarwal, M.S., Mary G. Erslon, M.S.N., Niraj M. Parikh, M.S., Scott D. Kelley, M.D., Healthcare Economics, Medical Affairs, Covidien, Mansfield, MA. The study examines the association of mechanical ventilation and sedative use on the incidence of cognitive complications, using a large national database.

A696 Long-Term Outcomes in Children With Congenital Heart Disease After Cardiac Surgery: Impact of Acute Kidney Injury During the Postoperative ICU Stay

Yuichiro Toda, M.D., Tatsuo Iwasaki, M.D., Kazuyoshi Shimizu, M.D., Tomoyuki Kanazawa, M.D., Noriko Ishii, M.D., Hirokazu Kawase, M.D., Kentaro Sugimoto, M.D., Moritoki Egi, M.D., Hiroshi Morimatsu, M.D., Kiyoshi Morita, M.D., Dept. of Anesthesiology and Intensive Care, Okayama University Hospital, Okayama, Japan. Late survival and renal outcome were measured in children with congenital heart disease at 2 years after cardiac surgery. Children with AKI and without AKI were compared. Late survival was not different. However, the eGFR at 2 years later in children without AKI was better.

A697 Which Variables Predict Better Outcome After Cardiopulmonary Resuscitation in Critically Ill Patients?

Jin-Woo Park, M.D., Hee-Pyoung Park, M.D., Young-Jin Lim, M.D., Department of Anesthesiology and Pain Medicine, Seoul National University Hospital, Seoul, Republic of Korea. Low APACHE II score on admission, normoxia during CPR and VT/VF were prognostic factors for better outcome after CPR in critically ill patients. Once ROSC is achieved, starting enteral nutrition within 48 hours, reevaluating a patient's status using the APACHE II score and maintaining normoxia are associated with better outcome.

A698 Patient Characteristics that Correlate with a New, Early Do-Not-Resuscitate Order in Intracerebral Hemorrhage

Jessica M. McFarlin, M.D., Shariq Khan, M.D., Claire Emery, B.S., Marisa Gray, B.S., Wei Sun, M.D., Barbara Phillips Bute, Ph.D., Peter Kranz, M.D., Daniel Laskowitz, M.D., David McDonagh, M.D., Michael James, M.D., Duke University, Durham, NC. Do not resuscitate orders are often based on provider's perceptions of outcome early in a patient's hospital stay. Though DNR orders do not indicate the withholding of any treatment other than CPR, they are associated with increase risk of death in patients after intracerebral hemorrhage. Neuroanaesthetists are in a unique position to counsel the families of patients with ICH as they treat the patient through the continuum of care in an ICU. We determined that, in our institution, not only do elements of the ICH score correlate with a new DNR order in this population, other characteristics from a patient's past medical history or demographics were also associated with an early DNR order.

A699 Evaluation of Prognostic Factors in Patients With Hematological Malignancies Treated in ICU

Shinichiro Yoshida, M.D., Yoshiki Masuda, M.D., Ph.D., Hiroomi Tatsumi, M.D., Ph.D., Hitoshi Imaiuzumi, M.D., Ph.D., Kanako Takahashi, M.D., Tomohiko Kimijima, M.D., Michiaki Yamagake, M.D., Ph.D., Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan, Traumatology and Critical Care Medicine, Sapporo Medical University School of Medicine, Sapporo, Japan. The mortality rate of hematological malignancy patients needing intensive care remains high. The number of organ failures was associated with high mortality. Moreover, severity of respiratory failure and liver failure and coagulopathy were associated with poor outcome.

A700 Lack of Correlation Between Cardiovascular Lability and Standard Predictive Indices in Surgical ICU Patients

Deepali Dhar, B.S., Saeeda Qadri, M.D., Feng Dai, Ph.D., Michael Ancuta, M.D., Shiveta Cherwoo, M.D., Stephen Luzcky, M.D., Shamsaddin Akhtar, M.D., David G. Silverman, M.D., Anesthesiology, Yale University School of Medicine, New Haven, CT. Measurements of hemodynamic lability did not correlate with established predictors of outcome in ICU patients.

A701 Attending Handoffs in the Intensive Care Unit

Meghan B. Lane-Fall, M.D., Maureen McCunn, M.D., Rebecca M. Speck, M.P.H., Charles L. Bask, Ph.D., Anesthesiology and Critical Care, Sociology, University of Pennsylvania, Philadelphia, PA. We interviewed attending intensive care physicians from multiple specialties and multiple academic medical centers about their handoff practices. Here we present preliminary results of this qualitative study examining three domains of attending physician handoffs in the intensive care unit: mechanics of handoffs between attending intensivists, handoff norms and practices, and the effect of handoffs on patients and families.

A702 Hyperglycemia, Hypoglycemia, and Greater Glycemic Complexity Are Associated With Worse Outcomes After Cardiac Surgery

Milo Engoren, M.D., Thomas A. Schwann, M.D., Yasser Kouatli, M.D., Robert H. Habib, Ph.D., Anesthesiology, University of Michigan, Ann Arbor, MI. Surgery, University of Toledo, Toledo, OH, American University of Beirut, Beirut, Lebanon. In 1011 patients after cardiac surgery, hyperglycemia (<71 mg/dL) and hyperglycemia (>140 mg/dL) were independently associated with postoperative complications. Additionally, glucose complexity, as measured by jackknife approximate entropy, was independently associated with mortality.
A703 Risk Factors in Catheter Related Bacteremia
Alexandra Chaves, M.D., Edgar Celis, M.D., Sonia Echeverry, R.N., Laser Center, Clinica Oftalmologica, Fundación Santafé de Bogotá, Bogotá, Colombia. To identify risk factors for the appearance of catheter-related bacteremia (CRB), in intensive care patients at a University Hospital in Bogotá, Colombia. Nested case control study. The appearance of CRB was correlated with variables like APACHE II score, central venous catheter’s own characteristics and handling procedures. The collected information was analyzed in first instance through univariate and bivariate analysis to explore possible associations between each one of the factors and the outcome in the O.R. was calculated by means of a conditional logistic regression model.

A704 Patterns of Invasive Mechanical Ventilation Usage Among Different Age Strata in California From 2000 to 2009
Seshadri Mudumbai, M.D., Juli Barr, M.D., Anjali Upadhyay, M.S., Paul Heidenreich, M.D., M.S., Edward Bertaccini, M.D., Ciaran S. Phibbs, Ph.D., Edward R. Mariano, M.D., M.S., Brian Cason, M.D., Todd Wagner, Ph.D., Veterans Adm. Med. Ctr., Anesthesia, Veterans Affairs Health Care System, Center for Health Care Evaluation, Palo Alto, CA., Cardiology, Anesthesia, Veterans Affairs San Francisco Health Care System, San Francisco, CA. Overall IMV growth in California over the past decade has been steady but modest, and the use of IMV has actually decreased for older patients.

A705 ICU Surveillance of Anglo-negative Subarachnoid Hemorrhage Patients: Three Year Experience
Enrico M. Camporesi, M.D., Siviero Agazzi, M.D., Harry Van Loveren, M.D., Robit Vasan, M.D., Samy Youssef, M.D., Rachel Karhouski, Ph.D., Department of Surgery, University of South Florida, Department of Neurosurgery & Brain Repair, University of South Florida, Florida Gulf to Bay Anesthesiology, Tampa, FL. A small subset of patients admitted to hospital with CT positive subarachnoid hemorrhage had a negative first cerebral angiography; these angio-negative patients are often monitored with prolonged bed rest. They also need neurological evaluation to detect vasospasm and hydrocephalus, comprising invasive monitoring. We evaluated 58 patients with angio-negative subarachnoid hemorrhage admitted to our hospital; none died, all had repeat negative tests, but a significant number developed pneumonia. We suggest that less stringent monitoring techniques and earlier mobilization may reduce complications.

A706 Do Features of External Ventricular Drain Management Predict Disposition and Risk of Ventriculoperitoneal Shunt?
Jacob H. Bagley, B.S., Rachel A. Williamson, B.S., Vijay J. Agarwal, M.D., Odera A. Umeano, B.A., Gavin W. Britz, M.D., Ali Zomorodi, M.D., David L. McDonagh, M.D., Barbara P. Bute, Ph.D., Michael L. James, M.D., Department of Surgery, Division of Neurosurgery, Department of Anesthesiology, Duke University, Durham, NC. We evaluated the association between characteristics of EVD management and clinical outcomes, such as poor disposition and risk of ventriculoperitoneal (VP) shunt in a retrospective series of 115 patients. Using multivariate regression to control for the effects of patient demographics and severity of disease, we found that VP shunt risk was strongly predicted by total number of EVD days and number of wean attempts. For example, with every additional attempt to wean the EVD, the risk of VP shunt increased by 62%. Only the patient’s age and the experience of the physician with EVDs predicted poor disposition.

A707 Critical Care Outcomes of Intra-Operative Cardiac Events: More Than Just a Bad Day
Vivek Loomba, M.B., B.S., Imani Thornton, M.D., Cheryl Mordis, M.D., Ilan Rubinfeld, M.D., Henry Ford Hospital, Detroit, MI. Intraoperative myocardial infarction and intraoperative cardiac arrest are rare but terrible events. The ICA is associated with an extreme mortality and the IMI associated with high morbidity and significant mortality. Risk factors for such events include anesthetic type, case type, surgical specialty type, case complexity and ASA score.

A708 Impact of the Surgical Home on Mortality
Mark W. Haney, M.D., Duraiyah Thangathurai, M.D., Anesthesiology, University of Southern California, Los Angeles, CA. When a team model for anesthesia cares for patients through the critical aspects of their perioperative experience, the mortality was found to be substantially reduced.

PO16-1 Regional Anesthesia and Acute Pain: Basic Science and Acute Pain
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8-11 a.m.
Hall C-Area F

A709 Epidural Anesthesia Does Not Modulate Lipocalin-2 Up-Regulation in Infected Surgical Site
Toru Igarashi, M.D., Katsuya Mori, M.D., Takeshi Suzuki, M.D., Hiroshi Morisaki, M.D., Junzo Takeda, M.D., Keio University School of Medicine, Tokyo, Japan, Kawasaki Municipal Kawasaki Hospital, Kawasaki, Japan. In a rat model, we demonstrated that lipocalin-2 was significantly expressed in surgical site infection (SSI), while the possible anti-SSI property of epidural anesthesia might not be associated with this pathway.

A710 Effect of Lipid Emulsion on the Central Nervous System and Cardiovascular Toxicity of Bupivacaine and Levobupivacaine
Yutaka Oda, M.D., Yuko Ikeda, M.D., Department of Anesthesiology, Osaka City University Graduate School of Medicine, Osaka, Japan. Effect of lipid emulsion on the central nervous system and cardiovascular toxicity of bupivacaine and levobupivacaine was examined in awake, spontaneously breathing rats. Pretreatment with lipid emulsion significantly increased the dose of both bupivacaine and levobupivacaine for inducing convulsions and cardiac arrest. Lipid also significantly increased the plasma concentrations of bupivacaine and levobupivacaine at the onset of convulsions and cardiac arrest. Dose and plasma concentration of levobupivacaine at the onset of convulsions and cardiac arrest were higher than bupivacaine.
A711 Investigation of Mechanism for Gabapentin Potentiating Antinociception of Tramadol
Xiaoli Dai, M.D., Masaaki Fujii, M.D., Ph.D., Misao Hatanaka, M.D., Ph.D., Anesthesiology, University of Tokyo School of Medicine, Tokyo, Japan. We examined the effects of gabapentin on the antinociception of tramadol in a rat model of neuropathic pain. Gabapentin pretreatment enhanced the antinociceptive effects of tramadol, and this effect was dose-dependent. The results suggest that gabapentin may be effective in the treatment of neuropathic pain.

A712 Differential Changes of AMPA Receptor Glur1 and Glur2 Subunits Trafficking in the Spinal Cord Dorsal Horns in Rats With Incisional Pain
Ruijuan Guo, Yun Wang, M.D., Department of Anesthesiology, Beijing Chaoyang Hospital, Capital Medical University, Department of Anesthesiology, Beijing Chaoyang Hospital, Capital Medical University, Beijing, China. To investigate the intracellular trafficking changes of AMPA receptor Glur1 and Glur2 subunits in the spinal cord dorsal horns in rats with incisional pain. 32 adult male SD rats were randomly divided into four groups. Western blot was used to test the expression of Glur1 and Glur2 in plasmic membrane and cytosolic compartments. Co-immunoprecipitation was used to test the interaction between Stargazin and Glur1 or Glur2. The conclusion is that incision induce the differential trafficking of Glur1 and Glur2 into the plasmic membrane in the spinal cord dorsal horns, which can enhance the excitation of AMPA receptors in plasmic membrane and is implicated in postoperative pain.

A713 Selective Knockdown of Peripheral Nerve-Expressing Phospholipase Cβ3 Reduces Inflammation-Induced Thermal and Mechanical Hyperalgesia
Susumu Ide, M.D., Tomoyuki Kawamata, M.D., Yoshiko Tsukahara, M.D., Norimasa Hishinuma, M.D., Mikito Kawamata, M.D., Anesthesiology and Resuscitology, Shinshu University School of Medicine, Matsumoto, Japan. We examined the effects of selective knockdown of peripheral nerve-expressing phospholipase Cβ3 (PLCβ3) in inflammation-induced thermal and mechanical hyperalgesia. Intrathecal administration of PLCβ3 antisense oligodeoxynucleotides (ODNs) but not mismatch ODNs inhibited thermal and mechanical hyperalgesia induced by complete Freund's adjuvant. The results of the study showed that peripheral nerve-expressing PLCβ3 was involved in inflammation-induced thermal and mechanical hyperalgesia.

A714 Long-Term but Not Short-Term Spontaneous Pain May Trigger Release of Agrp Within the Spinal Cord in an Inflammatory Pain Model
Kumiko M. Ishida, M.D., Tomoyuki Kawamata, M.D., Takayuki Shindo, Ph.D., Mikito Kawamata, M.D., Department of Anesthesiology and Resuscitology, Shinshu University School of Medicine, Department of Organ Regeneration, Shinshu University Graduate School of Medicine, Matsumoto, Japan. Long-term but not short-term spontaneous pain triggers release of αCGRP within the spinal dorsal horn in an inflammatory pain state.

A715 Comparison of Local Anesthetic Agents for Phrenic Nerve Paralysis: A Study in a Rat Phrenic Nerve-Diaphragm Preparation
Kazunobu Takahashi, M.D., Tomohisa Niiya, M.D., Ph.D., Eichi Narimatsu, M.D., Ph.D., Masanori Yamauchi, M.D., Ph.D., Michiaki Yamagake, M.D., Ph.D., Anesthesiology, Sapporo Medical School of Medicine, Sapporo, Japan. We compared the effects of ropivacaine, levobupivacaine and bupivacaine on twitch tension in a rat phrenic nerve-diaphragm preparation. The concentration of ropivacaine to attenuate the isometric twitch tension of the rat hemidiaphragm was significantly higher than that of levobupivacaine and bupivacaine in vitro. The results suggest that ISBPB with ropivacaine will reduce the incidence of hemidiaphragmatic paresis at an equivalent concentration.

A716 Dexamethasone Does Not Prolong Duration of Sciatic Nerve Block With Local Anesthetics in Rats
Jeffrey S. Kroin, Ph.D., Asokumar Buvanendran, M.D., Kenneth J. Tuman, M.D., Anesthesiology, Rush Medical College, Chicago, IL. Dexamethasone did not prolong the duration of sensory or motor blockade of the sciatic nerve with any of the local anesthetics tested.

A717 Carbonic Anhydrase 8 (Car8) Deficiency Increases Mechanical and Thermal Hyperalgesia Following Carrageenan Inflammation in Mice
Eugene S. Fu, M.D., Zhiye Zhuang, Ph.D., Jian G. Cui, M.D., Ph.D., Diana Erasso, B.S., David Mari, B.S., Roy C. Levitt, M.D., Anesthesiology, University of Miami, Miami, FL. Mechanical and thermal hypersensitivity at baseline and during inflammatory pain is regulated by variable expression/functioning of Car8. Higher levels of Car8 are specifically protective from hypersensitivity and the development of persistent pain.

A718 Spatial and Temporal Expression Patterns of c-Fos Protein in the Dorsal Horn Caused by Abdominal Surgery in Rats
Hidenori Tanaka, M.D., Satoshi Tanaka, M.D., Daisuke Sugiyma, M.D., Tomoyuki Kawamata, M.D., Mikito Kawamata, M.D., Anesthesiology and Resuscitology, Shinshu University School of Medicine, Matsumoto, Japan. We investigated the spatial and temporal expression patterns of c-Fos Protein in the Dorsal Horn caused by abdominal surgery in rats. The spatial and temporal patterns of neurons activated by the incision may differ depending on the degree of injury to the abdomen.

A719 Efficacy of Intrathecal Minocycline on Heat and Mechanical Stimuli Evoked Responses in a Postoperative Pain Model
Hitomi Ono, D.D.S., Atsuko Matoba, D.D.S., Kanta Kido, D.D.S., Daisuke Watanabe, D.D.S., Norimasa Ohtani, M.D., Eiji Masaki, M.D., Ph.D., Dento-Oral Anesthesiology, Tohoku University Graduate School of Dentistry, Sendai, Japan. We examined the efficacy of intrathecal (IT) administration of minocycline in a postoperative pain model. IT administration of minocycline did not provide more adequate antinociceptive effects than the IP administration. An alternative approach such as repeated perioperative administrations of IT minocycline for several days is necessary for minocycline to become useful method to control postoperative pain.
A720 The Impact of Postoperative Pain Management on Spatial Memory Impairment After Isoflurane Anesthesia and Surgery in Aged Rats

Hideki Iwata, Student, Takashi Kawano, M.D., Ph.D., Daiki Yamanaka, M.D., Naoya Yukushiji, Student, Haidong Chi, Ph.D., Fumimoto Yamazaki, M.D., Masataka Yokoyama, M.D., Ph.D., Medicine, Kochi Medical School, Nankoku, Japan, Kochi Medical School, Nankoku, Japan. Postoperative cognitive dysfunction (POCD) is an important complication that presents with a decline of cognitive functions after anesthesia and surgery. However, the underlying mechanisms are still unknown. In the present study, we investigated the potential importance of postoperative pain management on POCD after anesthesia and surgery in aged rats. Our results indicated that acute postoperative pain may contribute to the development of spatial memory impairment after isoflurane anesthesia and laparotomy in aged rats. These findings imply that postoperative pain management may be important for prevention of POCD in elderly patients.

A721 CB1 Cannabinoid Receptor Agonist Prevents NGF-induced Sensitization of TRPV1 in Sensory Neurons

Thomas McDowell, M.D., Ph.D., Zun-Yi Wang, Ph.D., Ruchira Singh, Ph.D., Dale Bjorling, D.V.M., Anesthesiology, University of Wisconsin School of Medicine and Public Health, University of Wisconsin School of Veterinary Medicine, Madison, WI. Nerve growth factor (NGF) contributes to inflammatory pain by sensitizing TRPV1 on nociceptive nerve endings. We show that the selective CB1 cannabinoid receptor agonist ACEA prevents NGF-induced sensitization in a population of nociceptive neurons. Cannabinoids may be effective for the treatment of some types of inflammatory pain.

A722 Hemodynamic Changes Following Administration of Intravenous Lipid Emulsion in Swine

Peter Belecoss, M.D., John Capaccione, M.D., Chad Sander, M.D., Chester C. Backenmaier, M.D., DVCIFM, Rockville, MD, Anesthesiology, Uniformed Services University, Walter Reed National Military Medical Center, Bethesda, MD. Intravenous lipid emulsion in clinically relevant doses provokes acute pulmonary hypertension in swine, similar to the changes observed in complement activation related pseudo anaphylaxis. This swine model could explain the species-specific results of previous lipid emulsion resuscitation studies.

A723 TRPV1-positive Afferents and IB4-binding Afferents Sense Different Modalities of Hyperalgesia in an Incisional Pain Model

Tomoyuki Kawamata, M.D., Kumiko Matsuo Ishida, M.D., Hidenori Tanaka, M.D., Yurie Kawamata, M.D., Mikito Kawamata, M.D., Anesthesiology & Resuscitology, Shinshu University School of Medicine, Matsumoto, Japan. In this study, using the technique of selective ablation of IB4-binding or TRPV1-expressing primary afferents, we examined the contribution of two distinct types of unmyelinated primary afferents to hyperalgesia observed in a preclinical model of postoperative pain. The results of this study showed that TRPV1-expressing afferent and IB4-binding afferent were selectively involved in incision-induced thermal hyperalgesia and mechanical hyperalgesia, respectively.

A724 Decoy Strategy Targeting the Brain-derived Neurotrophic Factor Exon I Suppress Pain Behavior in Rat Inflammatory Pain Model

Arata Taniguchi, M.D., Ryuji Kaku, M.D., Ph.D., Naoto Tomotsuka, M.D., Hiroki Omiya, M.D., Noriko Ishii, M.D., Norihiko Obata, M.D., Ph.D., Yoshikazu Matsuoka, M.D., Ph.D., Satoshi Mizobuchi, M.D., Ph.D., Kiyoshi Morita, M.D., Ph.D., Anesthesiology and Resuscitology, Okayama University Graduate School, Okayama, Japan. Brain-derived neurotrophic factor (BDNF) is an important modulator of sensory neurotransmission in nociceptive pathways. In this study, we investigated the effect of decoy oligodeoxynucleotide (ODN) inhibiting BDNF exon I on rat inflammatory pain model. The expression of exon I mRNA significantly increased in the ipsilateral L4 and L5 DRGs compared to the contralateral side. The up-regulated exon I mRNA level in the ipsilateral DRGs after the CFA injection was reduced by intrathecal administration of the decoy ODN. It suggests that BDNF exon I decoy ODN might be a novel strategy for treating intractable pain.

A725 The Effects of the Intrathecal Administration of Methotrexate on Spinal Cord and Meninges in Rabbits

Eliana M. Ganem, M.D., Ph.D., Rodrigo M. Lima, M.D., Ph.D., Laís He Navarro, M.D., Ph.D., Felipe Gilberto Valentinne, Student, Marília Lemos, M.D., Mariangela Marques, M.D., Ph.D., Vania Machado, D.V.M., Ph.D., Anesthesiology, Pathology, Veterinary, Sao Paulo Medical School, Botucatu, Brazil. The effects of subarachnoid administration of methotrexate on spinal cord and meninges in rabbits.

A726 Thoracic Paravertebral Block Spread in the Dog: Single Injection vs. Dual Injection

April K. Peterson, M.D., Melanie Donnelly, M.D., Kristopher Schroeder, M.D., Carrie Schroeder, D.V.M., Department of Anesthesiology, University of Wisconsin, Department of Anesthesiology, Veterinary Medicine, University of Wisconsin, Madison, WI. While the thoracic paravertebral block has gained popularity in human anesthesia over recent years, veterinary medicine has remained limited to brachial plexus and lumbar plexus blocks. We have demonstrated that the paravertebral space may be successfully accessed in the dog under ultrasound guidance, with dual injection likely resulting in improved spread in comparison to a single injection.
A727 A Single Sevoflurane Exposure Decreases Nnos in the Hippocampus of the Developing Rats
Xia Feng, M.D., Ph.D., Department of Anesthesiology, The First Affiliated Hospital of Sun Yat-Sen University, Guangzhou, China. It has been proposed that sevoflurane may have harmful effects on the developing brain. To assess the effect of sevoflurane, we used Fox’s battery test and Morris water maze on the neurobehavior of these sevoflurane-treated rats. In addition, we used Western blotting to examine the protein levels of cleaved caspase-3 and neuronal nitric oxide synthase (nNOS), and Nissl staining to examine the histopathological changes of the hippocampus of sevoflurane-treated rats. The present results indicate administration of sevoflurane might temporally affect the ability of neurobehavior of the neonatal rats through suppressing the nNOS protein and activating caspase-3 in the hippocampus. However, early exposure to sevoflurane does not affect the spatial learning and memory ability at juvenile age.

A728 Evaluation of Analgesic and Hypnotic Effects of Pentobarbital and Propofol Using in Vivo Patch Clamp Recording From Rat Somatosensory Cortex
Hiroaki Shiokawa, M.D., Ph.D., Ken Yamaura, M.D., Ph.D., Yuji Karashima, M.D., Ph.D., Sumio Hoka, M.D., Ph.D., Megumu Yoshimura, M.D., Ph.D., Anesthesiology & Critical Care Medicine, Kyushu University, Fukuoka, Japan, Kumamoto Health Science University, Kumamoto, Japan. In vivo patch clamp analysis from rat somatosensory cortex revealed that the clinical dosage of barbiturates and propofol have analgesic as well as hypnotic effects.

A729 Salsolinol Facilitates Glutamatergic Transmission to Dopamine Neurons in the Posterior Ventral Terminal Area of Rats
Jiang H. Ye, M.D., Guiqin Xie, Ph.D., Anesthesiology, UMD, New Jersey Med. School, Newark, NJ. Our data reveal that salsolinol enhances glutamatergic transmission onto dopamine neurons via activation of presynaptic D1Rs, which contributes to salsolinol's stimulating effect on p-VTA-dopamine neurons. This appears to be a novel mechanism which contributes to rewarding properties of salsolinol.

A730 Propofol Inhibits LPS-Induced BV-2 Microglia Cells Activation via Inhibition of TLR4: Possible Involvement of GSK-3β
Yanning Qian, M.D., Bo Gui, M.D., Mingyan Su, M.D., Dept. of Anesthesiology, 1st Affiliated Hospital, Nanjing Medical University, Nanjing, China, 1st Affiliated Hospital, Nanjing Medical University, Nanjing, China. Microglia play a critical role in the neuroinflammatory processes and TLR4 is an important signaling pathway for inflammation response in the microglia. This study showed that pretreatment with propofol can significantly inhibit the release of inflammatory cytokines from BV-2 microglia cells induced by LPS. Meanwhile, propofol not only increase phosphorylation of GSK-3β but also inhibits TLR4 expression. These results suggest that TLR4 and GSK-3β may be the important cellular mediators involved in the anti-inflammation effects of propofol on LPS-induced neuroinflammation in microglia.

A731 GABA-A Receptor Potentiation Reduces Firing of Neuronal Assemblies in a Computational Cortical Model
Kingsley Storer, M.D., Ph.D., George Reeke, Ph.D., Dept. of Anesthesiology, Weill Cornell Medical College, Laboratory of Biological Modeling, The Rockefeller University, New York, NY. Neural group formation may underlie the phenomena of consciousness. Computer modeling has been used to determine if GABA-A receptor potentiating anesthetics influence the formation of neuronal groups. It was found that the ability of neurons to form groups is significantly degraded by potentiation of GABA-A receptors.

A732 Effects of Dexmedetomidine on Insulin Secretion From Rat Pancreatic β Cells
Daiki Yamanaka, M.D., Takashi Kawano, M.D., Ph.D., Satoru Eguchi, D.D.S., Haidong Chi, Ph.D., Hideki Iwata, Student, Fumimoto Yamazaki, M.D., Masatake Yokoyama, M.D., Ph.D., Kochi Medical School, Nankoku, Japan, Tokushima University School of Dentistry, Tokushima, Japan. We investigated the effects of dexmedetomidine on insulin secretion both in vivo and in vitro rat models. In oral glucose tolerance test, the insulin levels in high dexmedetomidine infused rats were significantly lower than those in control rats at time 30, 60, and 90 min after glucose load. On the other hand, insulin levels in low dexmedetomidine-infused rats were comparable to those in control rats at all time points. In perfusion study, dexmedetomidine (0.1, 1, 10, 100 μM) inhibited both phases of 16.7 mM glucose-stimulated insulin secretion from isolated islets in a concentration-dependent manner. These results indicated that high concentrations of dexmedetomidine may impair glucose-induced insulin secretion.

A733 Massive Activation of SUMO Conjugation in Human Astrocytic Brain Tumors
Wei Yang, Ph.D., Liangli Wang, M.D., Ph.D., Gabriele Roehn, Ph.D., Robert Pearlestein, Ph.D., Francis Ali-Osman, Ph.D., Roland Goldbrunner, Ph.D., Christoph Harns, Ph.D., Wulf Paschen, Ph.D., Duke University Medical Center, Durham, NC. University of Cologne, Cologne, Germany, Charité-Universitätsmedizin, Berlin, Germany. This study shows that the SUMO conjugation pathway is massively activated in human astrocytic brain tumors, and that an active SUMO conjugation pathway is required for the functioning of glioblastoma cells.

A734 SUMO Transgenic Animals to Elucidate the Role of SUMO Conjugation in Various Pathological States
Wei Yang, Ph.D., Shengli Zhao, Ph.D., Liangli Wang, Ph.D., Huaxin Sheng, M.D., Wulf Paschen, Ph.D., Anesthesiology, Duke University Medical Center, Durham, NC. Two novel transgenic mouse models established in this study can be utilized as a valuable tool to elucidate the role played by SUMO conjugation in various pathological states of high clinical relevance associated with the SUMO conjugation pathway.
A735 Change in Gene Expression of Microns on Rat's Hippocampus

Gentaro Goto, M.D., Masashi Ishikawa, M.D., Atshuhiro Sakamoto, M.D., Nippon Medical School Hospital, Bunkyo City Tokyo, Japan. Hippocampus is believed to have an important role of episodic memory processes. We conducted a study on how expression of microRNA was altered by sevoflurane in rat's hippocampus. Compared with the control group, we were able to detect significant difference in 29 kinds of microRNA out of 375 kinds in sevoflurane group.

A736 Optical Reversal of Mitochondrial-Induced Anesthetic Sensitivity in C. Elegans

Phil G. Morgan, M.D., Vinod Singaram, Ph.D., Elyce Opheim, B.A., Margaret M. Sedensky, M.D., Anesthesiology and Pain Medicine, Seattle Children's Research Institute, Center for Developmental Therapeutics, Seattle Children's Research Institute, Anesthesiology and Pain Medicine, University of Washington, Seattle, WA. Genetics, Case Western Reserve University, Cleveland, OH. Expression of an optogenetic construct is able to partially suppress the increased sensitivity to volatile anesthetics caused by a mitochondrial complex I mutation.

A737 BKCa Localization in Brain Mitochondria and Identification of its Molecular Proteome

Harpreet Singh, Ph.D., Enrico Stefani, M.D., Ph.D., Ligia Toro, Ph.D., Anesthesiology, University of California, Los Angeles, Los Angeles, CA. We have established the presence and cluster distribution of BKCa in brain mitochondria, and obtained the mitoBKCa subproteome identifying new protein partners of mitoBKCa.

A738 Effect of Nicotinic Acetylcholine Receptor Antagonists on Intracellular Serine Racemase Expression and D-Serine Levels

Michael E. Goldberg, M.D., Rajib K, Paul, Ph.D., Nagendra S. Singh, Ph.D., Michel Bernier, Ph.D., Irving W. Wainer, Ph.D., Department of Anesthesiology, Cooper University Hospital, Cooper Medical School of Rowan University, Camden, NJ. Laboratory of Clinical Investigation, National Institute on Aging Intramural Research Program, National Institute of Health, Baltimore, MD. Changes in endogenous D-ser levels are associated with CNS disorders that include Complex Regional Pain Syndrome (CRPS). We examined the effect of the α, nAChR antagonist methyllycaconitine (MLA) and α, β antagonist mecamylamine (MEC) on the expression and function of SR in 1321N1 and PC-12 cells. We report that the newly synthesized SR protein by MLA may be inactive. It remains to be determined if the decrease in SR activity is due to inactive phosphorylation of SR.

3-4 p.m.
Hall C, E-Poster area

A739 The Effect of Neurosteroids, Allopregnanolone Sulphate, Pregnanolone Sulphate on Voltage-gated Sodium Channels Expressed in Xenopus Oocyte

Takafumi Horishita, M.D., Dan Ookura, M.D., Takeyoshi Sata, M.D., Anesthesiology, School of Medicine, University of Occupational and Environmental Health, Kitakyushu, Japan. School of Medicine, University of Occupational and Environmental Health. We assessed the effects of neurosteroids, allopregnanolone sulphate, pregnanolone sulphate on Nav1.2, Nav1.6, Nav1.7, and Nav1.8 using Xenopus oocytes system. The inhibitory effect of allopregnanolone sulphate on Nav1.2 is most effective. The inhibitory mechanisms were the blockade of open channels and increasing inactivation, and the effect was use-dependent. These results suggest that suppression of Nav1.2 function by allopregnanolone sulphate might be one of the mechanisms of analgesic effect.

A740 Droperidol, But Not Haloperidol, Enhanced the Hypnotic Activity of Propofol and Co-administration of Haloperidol With Quinolone Showed a Potentiation of Propofol-induced Hypnosis in ddY Mice

Yushi Adachi, M.D., Ph.D., Junpei Tochikubo, M.D., Tetsuya Tamura, M.D., Naoyuki Matsuda, M.D., Ph.D., Department of Emergency Medicine, Department of Emergency & Critical Care Medicine, Nagoya University Graduate School of Medicine, Nagoya, Japan, Nagoya University Graduate School of Medicine, Department of Emergency & Critical Care Medicine, Japan. Droperidol (Dro) and haloperidol (Hal) are typical and classical major tranquilizers. Both butyrophenone derivatives act as dopamine D2 receptor antagonists. In the current study using ddY mice, co-administration of Dro enhanced hypnotic activity of propofol, whereas, Hal did not. Quinolone, a D2 agonist, showed no effect on hypnotic properties of propofol and Dro, however, Hal with quinolone showed additive interaction with propofol. Recently, dopaminergic arousal circuit is focused for the mechanism of general anesthesia and further investigation is required.

A741 Parecoxib, a Selective Blocker of Cyclooxygenase-2, Directly Inhibits Neuronal Delayed-Rectifier K+ Current and Na+ Current

Bing Shuo Chen, M.D., Sheng Nan Wu, M.D., Ph.D., Chi Mei Medical Center, Tainan, Taiwan, Institute of Basic Medical Sciences, National Cheng Kung University Medical College, Tainan, Taiwan. The effects of PARE on ion currents are direct and unrelated to its inhibition of the enzymatic activity of COX-2. We conclude that the inhibition of these ion channels by PARE may partly contribute to the underlying mechanisms by which it affects neuronal function in vivo.

A742 Bone Fracture Following Stroke Exacerbates Neuronal Injury Through Augmented Inflammation

Vincent Degos, M.D., Ph.D., Susana Vacas, M.D., Jan Hirsch, M.D., Hua Su, M.D., William L. Young, M.D., Mervyn Maze, M.B., B.Ch., Anesthesia and Perioperative Care, University of California, San Francisco, San Francisco, CA. Bone fracture is a frequent complication after stroke but the impact of the bone fracture on the outcome of stroke is unknown. We demonstrated that bone fracture, shortly after stroke, exacerbates neuronal injury and behavioral dysfunction accompanied with increases of cytokines and macrophages. Neutralizing HMGB1 or depleting macrophage attenuates the aggravating effects of bone fracture suggesting that bone fracture enhances stroke injury via HMGB1-induced activation of macrophages.
A743 Perioperative Factors Affecting Cancer Survival and Cancer Recurrence After Non-Small Lung Cancer Surgery

Juan P. Cara, M.D., Dinesh Keerly, M.D., Diane D. Liu, M.S., Vijaya Gottumukkal, M.D., Ronaldo V. Purugganan, M.D., Dilip R. Thakar, M.D., Anesthesiology and Perioperative Medicine, Biostatistics, MD Anderson Cancer Center, Houston, TX. The impact of regional analgesia on cancer outcomes is controversial. In the present retrospective study, we analysed the effect epidural analgesia and the use of NSAIDs on overall survival and recurrence free survival in patients with non-small cell lung cancer who underwent tumor resection. We could not demonstrate an association between analgesia technique and better oncological outcomes. Interestingly, an anesthesia time longer than 270 minutes was associated with poor recurrence free survival without affecting overall survival.

A744 Sensitivity to Inhalational Anesthetics in Patients With Dementia

Silvia E. Perez-Protto, M.D., Mariya A. Geube, M.D., Daniel Ontaneda, M.D., Jarrod Dalton, M.A., Andrea Kurtz, M.D., Daniel I. Sessler, M.D., Anesthesiology Institute, Neurological Institute, Outcomes Research Department, Cleveland Clinic Foundation, Cleveland, OH. Demented patients are thought to be abnormally sensitive to anesthesia. We tested the hypothesis that patients having non-cardiac surgery have lower ratio of Bispectral Index Score to Minimal Alveolar Concentration during the five minutes immediately preceding incision. Adult demented patients were matched to non-demented controls to identify risk factors for hypokalemia in patients with aneurysmal subarachnoid hemorrhage (aSAH) with gender matching. We conducted a 3-year retrospective study of patients with aSAH. Patients in the hypokalemia group (K < 3.50 mEq/L) were matched 1:2 by gender with those in the non-hypokalemia group (K > 3.50 mEq/L). Univariate analyses showed a significantly lower GCS (p = 0.048) and higher serum Na level (p = 0.012) in the hypokalemia group. Multivariate analysis showed that serum Na level was an independent related factor (odds ratio: 0.455, 95% CI: 0.13-0.79). Our study shows that hypokalemia in patients with aSAH is accompanied by elevated serum Na level.

A747 Does Intravenous Lidocaine Reduce Postoperative Sore Throat After Laryngeal Mask Airway?

Hiroko Araki, M.D., Makoto Fukusaki, M.D., Ph.D., Yoshiaki Terao, M.D., Ph.D., Mai Okada, M.D., Sojiro Matsumoto, M.D., Akiko Sakai, M.D., Koji Sumikawa, M.D., Ph.D., Anesthesia, Nagasaki Rosai Hospital, Sasebo, Japan, Anesthesiology, Nagasaki University School of Medicine, Nagasaki, Japan. Perioperative intravenous lidocaine may reduce the incidence of sore throat in the early postoperative period, whereas it does not reduce the degrees of sore throat and the incidences of dysphonia and dysphagia after LMA in patients undergoing forarm orthopedic surgery.

A748 Hypokalemia in Patients With Aneurysmal Subarachnoid Hemorrhage Is Accompanied by Elevated Serum Sodium Level

Yoshinobu Kimura, M.D., Masanori Yamauchi, M.D., Ph.D., Michiaki Yamakage, M.D., Ph.D., Shinzo Sumita, M.D., Ph.D., Saori Kimura, M.D., Ph.D., Anesthesia, Asahikawa Red Cross Hospital, Asahikawa, Japan, Sapporo Medical University School of Medicine, Sapporo, Japan. The aim of this study was to identify risk factors for hypokalemia in patients with aneurysmal subarachnoid hemorrhage (aSAH) with gender matching. We conducted a 3-year retrospective study of patients with aSAH. Patients in the hypokalemia group (K < 3.50 mEq/L) were matched 1:2 by gender with those in the non-hypokalemia group (K > 3.50 mEq/L). Univariate analyses showed a significantly lower GCS (p = 0.048) and higher serum Na level (p = 0.012) in the hypokalemia group. Multivariate analysis showed that serum Na level was an independent related factor (odds ratio: 0.455, 95% CI: 0.13-0.79). Our study shows that hypokalemia in patients with aSAH is accompanied by elevated serum Na level.

A749 Postoperative Nausea and Vomiting: Incidence and Risk Factors

Carlos S. Moreno, M.D., Dalila Veiga, M.D., Helder Pereira, M.D., Fernando Abelha, M.D., Ph.D., Anesthesiology, Centro Hospitalar de São João, Porto, Portugal. Prospective cohort study done in a postanesthetic care unit, 157 patients were included. Objectives: PONV incidence, characteristics and risk factors. We conclude that the incidence remains high; however, vomiting and nausea are mostly mild. Patients with PONVIS >50 had higher NVAS. Apfel score >2 was an independent risk factor.

A750 Postoperative Nausea in Patients With Benign and Malignant Brain Tumors Undergoing Awake Craniotherapy: A Retrospective Study

David L. McDonagh, M.D., Mingwen W. Ouyang, M.D., Barbara Phillips-Bute, Ph.D., Michael L. James, M.D., Tong J. Gan, M.D., Anesthesiology, Duke University Medical Center, Durham, NC., Anesthesiology, Southern Medical University, Nanfang Hospital, Guangdong, China. Benign and malignant brain tumors have different tissue growth characteristics. We hypothesized that malignant tumors would cause more postoperative nausea. Retrospective review of 415 patients undergoing a standardized anesthetic for awake craniotomy revealed no influence of tumor type (benign vs. malignant) on the occurrence of postoperative nausea.
A751 Anesthesia Time Associates With Increasing Degrees of Obesity
Christopher Guerry, M.D., Carlos U. Arancibia, M.D., John F. Butterworth IV, M.D., Virginia Commonwealth University, Richmond, VA. The institutional pattern of increasing BMI over the last quarter century was consistent with national statistics, and it exhibited direct correlation with increasing anesthetic time.

A752 Does Midline-Shift Predict Postoperative Nausea in Brain Tumor Patients Undergoing Awake Cranioectomy? A Retrospective Study
David L. McDonagh, M.D., Mingwen W. Ouyang, M.D., Barbara Phillips-Bute, Ph.D., Michael L. James, M.D., Tong J. Gan, M.D., Anesthesiology, Duke University Medical Center, Durham, NC, Anesthesiology, Southern Medical University, Nanfang Hospital, Guangdong, China. We investigated the hypothesis that the presence of midline shift on preoperative neuroimaging would correlate with postoperative nausea. In a large retrospective cohort of patients undergoing a standardized anesthetic for awake craniotomy for tumor resection, surgical time was longer in patients with midline shift on preoperative neuroimaging. Similarly, malignant brain tumors manifested more midline shift than did benign tumors. However, the presence of midline-shift did not correlate with postoperative nausea.

A753 Intraoperative Effects of Beta-Blockade in Vascular Surgery Cases Conducted Under Regional or Local Anesthesia

A754 Perioperative Stress and Inflammatory Response After Carotid Endarterectomy
Atsushi Miyazaki, M.D., Kenji Yoshitani, M.D., Yoshikiko Onishi, M.D., Anesthesiology, National Cerebral and Cardiovascular Center, Suita, Japan. Perioperative surgical stress may induce postoperative cardiac events. N-terminal pro-B-type natriuretic peptide (NT-proBNP) has been used to evaluate cardiovascular events and mortality in patients with stable coronary disease. Therefore, we prospectively measured NT-proBNP, troponin-T (TnT), C-reactive protein (CRP), blood sugar (BS) and lactate concentration (Lac) in CEA. The perioperative stress and inflammatory response were observed 18 and 24 hours after CEA. To prevent perioperative cardiac events we need to take account of the time course of change of stress and inflammatory response.

A755 Perioperative Administration of Ondansetron or Dolasetron is Not Associated with QTc Prolongation
Detlef Obal, M.D., M.S., Dongsheng Yang, M.S., Daniel I. Sessler, M.D., Anesthesiology and Perioperative Medicine/ Diabetics and Obesity Center/ Outcomes Research Consortium, University of Louisville, Louisville, KY., Quantitative Health Science & Anesthesiology Institute/ Outcomes Research Consortium, Department of Outcomes Research, Cleveland Clinic, Cleveland, OH. Our retrospective data analysis of 3,131 patient records from the Cleveland Clinic Patient Registry revealed that an average QTc prolongation of 5% occurred in a general surgery patient population. However, after adjusting for confounding variables, there was no difference in mean change from baseline in QTc interval between patients treated with 5HT3 antagonists and control patients. Our results suggest that 5HT3 antagonist do not produce potentially dangerous perioperative ECG changes.

A756 Efficacy of Single Antiemetic Prophylaxis in Patients With Fentanyl-Based Intravenous Patient-Controlled Analgesia After General Anesthesia
Sung Yeon Ham, M.D., Jeongsoo Lee, M.D., Tae Eun Im, R.N., Jong Seok Lee, M.D., Youn Hee Shim, M.D., Ph.D., Yonsei University College of Medicine, Seoul, Republic of Korea, Gang-nam Severance Hospital, Seoul, Republic of Korea. Incidence of PONV in patients with fentanyl-based IV-PCA after general anesthesia was 23% despite single antiemetic prophylaxis. Female, non-smoker, history of motion sickness or PONV, anesthetic duration > 300 min, use of desflurane, and intraoperative infusion of remifentanil were risk factors, while laparoscopic surgery and higher dose of fentanyl were not. Risk-adapted prophylaxis based on PONV risk scoring system should be applied. In patients at high risk, multimodal or combination therapy might be recommended.

A757 Sugammadex vs. Neostigmine vs. No Reversal: Does the Choice of Reversal Strategy Influence Postoperative Patient Outcome?
Thomas Ledowski, A.A.-C, Laura Falke, Student, Faye Johnston, Emily Gillies, Matt Greenaway, Ayala De Mel, B.Sc., University of Western Australia, Perth, Australia, Christian-Albrechts-University, Kiel, Germany. A retrospective analysis of outcome after 3 reversal strategies in 1,444 patients: sugammadex, neostigmine and no reversal. The need for antiemetics was lower in the sugammadex group and the drug may be associated with improved pulmonary outcome in elderly patients.

A758 Primary Graft Non-Function in Adult Recipients Undergoing Orthotopic Liver Transplantation: A Single-Center Experience
Daniela Damian, M.D., Ramona Nicolau-Raducu, M.D., Raymond M. Planinsic, M.D., Ibtesam Hilmi, M.D., Anesthesiology, UPMC, Pittsburgh, PA. A retrospective chart review of 543 adult patients who underwent first-time orthotopic liver transplantation between January 2005 - December 2009 at UPMC Pittsburgh and were diagnosed with primary graft non-function (irreversible graft dysfunction requiring liver replacement within 7 days post OLTx). Incidence, risk factors and outcome.
A759 Developing a Surgical Blood Order Schedule Stratified by Preoperative Hemoglobin
Matthew E. Dupper, M.D., Wesley T. Stevens, M.D., Richard L. Applegate II, M.D., Department of Anesthesiology, Department of Pathology and Human Anatomy, Loma Linda University School of Medicine, Loma Linda, CA. Preoperative hemoglobin is a known predictor for intraoperative transfusion. We hypothesize a surgical blood order schedule can more accurately predict the number of units required during surgery if stratified by patient preoperative hemoglobin.

A760 Postoperative AKI in Aortocoronary Bypass Surgical Patients: Hespan® Versus Hextend®
Brandy A. Bottiger, M.D., Mark Stafford-Smith, M.D., Barbara Phillips-Bute, Ph.D., Madhav Swaminathan, M.D., Tong Joo Gan, M.D., Frederick Lombard, M.D., Anesthesiology, Duke University Medical Center, Durham, NC. In this retrospective analysis of 3,528 CABG patients from 1998-2002, we tested the hypothesis that a shift in practice from using Hespan® (prepared in normal saline; NS) and Hextend® (prepared in lactated ringers, LR) would result in a change in the adjusted risk index for AKI. Our data does not identify a change in frequency of postoperative AKI coincident with the change in 6% hetastarch suspension solution from normal saline to lactated ringers.

A761 Decreased Drug Abuse, Misuse and Increase Patient Compliance and Treatment Effectiveness With the Introduction of Random Urine Drug Test (UDT): A Four-Year Time Dependent Analysis
Magdalena Anitescu, M.D., Ph.D., Monica Fay, Pharm.D., Department of Anesthesia and Critical Care, University of Chicago Medical Center, Chicago, IL. Medical Affairs, Ameritox Ltd., Baltimore, MD. By introducing random urine drug testing, we were able to demonstrate a decrease of medication misuse and abuse in time as evidenced by decrease in the presence of illicit drugs and decrease of samples with medications from other physicians (measure of adherence of the patients to a sole medication regimen). In addition, increase of samples where medication prescribed was not found suggest increase effectiveness of the analgesic treatment as patients seem to decrease the order schedule can more accurately predict the number of units required during surgery if stratified by patient preoperative hemoglobin.

A762 The Impact of Intestinal Congestion/Ischemia on Graft Survival in Orthotopic Liver Transplantation
Behrouz Ashrafi, M.D., Ernesto A. Prettio, Jr, M.D., M.P.H., Kyota Fukazawa, M.D., Anesthesiology and Perioperative Medicine, University of Miami, Miller School of Medicine, Miami, FL. Based on some animal studies, intestinal congestion/ischemia during Orthotopic Liver Transplantation (OLT) by producing endotoxemia can trigger some immunologic responses that may adversely affect organ survival. We studied Portal Vein Clamp Time (PVCT) as a risk factor for intestinal congestion/ischemia during 230 OLTs without using venovenous bypass, and it showed that prolonged PVCT was significantly associated with reduced 30-day graft survival of these patients.

A763 How Effective Is Prophylactic Antiemetic Therapy for the Management of Postoperative Nausea and Vomiting?
Katie S. Yang, Student, Juying Jin, M.D., Ashraf Habib, M.B., B.Ch., Mingwen Ouyang, M.D., Tong J. Gan, M.D., School of Medicine, Duke University, Durham, NC. First Affiliated Hospital of Chongqing Medical University, Chongqing, China, Duke University Medical Center, Durham, NC. Nanfang Hospital, Southern Medical University, Guangzhou, China. This retrospective study investigates the efficacy of combination prophylactic antiemetic therapy administered for different types of surgery. Despite the use of multiple drugs in patients with higher risk for PONV, the incidence of failure remains high, as assessed by the use of a rescue antiemetic.

A764 An Examination of Obesity and Age on Liver Organ Yield
Nancy Knudsen, M.D., Robert Thiele, M.D., Eugene Moretti, M.D., Anesthesiology, Duke University, Durham, NC. Demand for transplantable abdominal organs exceeds supply. Previously published data suggests that elevated donor body mass index may decrease the suitability for transplantation. We queried our organ procurement organization database and found no relationship between donor BMI and suitability for liver transplantation, but did find a relationship between donor age and suitability for liver transplantation.

A765 Change in Anti-Emetic Prophylaxis Patterns in a Teaching Institution and Impact on PONV in the Postanesthesia Care Unit
Basem M. Mishriky, M.D., Tong J. Gan, M.D., Ashraf S. Habib, M.D., Department of Anesthesiology, Duke University Medical Center, Durham, NC. In a database analysis for postoperative nausea and vomiting prophylaxis in patients receiving volatile agents for general anesthesia, the increase in the use of prophylactic anti-emetic therapy was not associated with a decrease in the need for rescue anti-emetics during PACU stay.

A766 Intravenous Palonosetron Increases Prolonged QTc Patients During Sevoflurane General Anesthesia for Laparotomy
Youn Joung Cho, M.D., Hyun Joo Kim, M.D., Jeong-Hwa Seo, Ph.D., Yunseok Jeon, Ph.D., Jae-Hyon Bahk, Ph.D., Anesthesiology and Pain Medicine, Seoul National University Hospital, Seoul, Republic of Korea. Although there was no difference in the QTc values between two groups, the incidence of clinically significant QTc prolongation (>500 ms) was more frequent by intravenous palonosetron administered before sevoflurane general anesthesia. Therefore, intravenous palonosetron may increase the risk of arrhythmia during sevoflurane general anesthesia in elective laparotomy patients.
A767 Perioperative Factors, Length of Stay, and Costs Associated With Immediate and Delayed Postoperative Endotracheal Extubation

Irving Ye, M.D., M.B.A., Steve Ampah, M.S., Indrani Ray, M.A., Jesse Ehrenfeld, M.D., M.P.H., Matthew B. Weinger, M.D., Anesthesiology, Vanderbilt University, Nashville, TN. In most cases of general anesthesia, immediate extubation in the operating room (O.R.) after surgery is common, effective, safe, and cost-effective. We studied several clinical factors (patient comorbidities, anesthesia duration, estimated blood loss, and total volume of fluid administered) that affect whether or not a patient remains intubated after major spine surgery at our hospital. We also studied the length of stay (LOS) and extra cost burden of these patients relative to those who are extubated immediately in the OR.

A768 Is No-Cost TSE Mask More Efficient than High Nasal Cannula Oxygen Flow in Reducing Severe Desaturation in Patients Under Deep Propofol Sedation During Upper GI Endoscopy?

James T. Tse, M.D., Ph.D., Shaul Cohen, M.D., Branson Collins, M.D., John Denny, M.D., Sylvia Barsoum, M.D., Laurie Spina, M.D., Kristen Dauphinee, M.D., May Fernandez, M.D., Melissa S. Wu, M.D., Christine W. Hunter, M.D., Anesthesia, UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ. Patients undergoing upper GI endoscopy (EGD) receive IV sedation and nasal cannula (NC) O2. NC O2 reservoir is lost when mouth is kept open with a bite-block. Deep-sedation may cause severe desaturation. A plastic sheet was shown to improve oxygenation by transforming NC to a face tent (TSE Mask) during EGD. A review of 235 patients who underwent EGD shows that this technique is more efficient than high NC O2 flow (6-10 l/min) in reducing severe desaturation and bag-mask ventilation in patients under deep propofol sedation. This face tent takes a few sec to prepare at no cost and may improve patient safety. It can be used as a rescue device when patient’s oxygenation deteriorates and should be routinely used prior to sedation.

A769 Effects of Continuous Positive Pressure Ventilation on Upper Airway Patency During Induction of General Anesthesia: Nasal Mask vs. Face Mask

Jun Oto, M.D., Qian Li, M.D., William R. Kimball, M.D., Jingping Wang, M.D., Abdolnabi S. Sabouri, M.D., Priscilla G. Harrell, M.D., Junichi Naganuma, M.D., Robert M. Kacmarek, Ph.D., Yandong Jiang, M.D., Ph.D., Anesthesia, Pain and Critical Care Medicine, Massachusetts General Hospital, Boston, MA. The authors investigated if continuous positive airway pressure (CPAP) and ventilation via the nasal mask (nCPAP) is more effective in preventing upper airway obstruction than full face mask CPAP and ventilation (FmCPAP) during general anesthesia (GA) induction. nCPAP was more effective maintaining airway patency than FmCPAP. Application of positive end expiratory pressure (PEEP) prior to GA induction increased the rate of effective ventilation (expired tidal volume > anatomical dead space).

A770 Combined Use of Airway Exchange Catheter and Cuff Leak Test When Extubating the Difficult Airway

M. Ramez Salem, M.D., Michel J. Sabbagh, M.D., George J. Crystal, M.D., Anesthesiology, Advocate Illinois Masonic Med Ctr, Chicago, IL. The combined use of an airway exchange catheter (AEC) and the cuff leak test was evaluated in 48 surgical patients “at risk of extubation.” Although no reintubations were necessary, the simplicity and potential benefits of the AEC are reasons to continue its use. A positive leak test, a predictor of airway patency, may be complementary to the use of an AEC in enhancing the safety of extubation of the difficult airway.

A771 Esophageal Pressures and Anesthesia: A Comparison Between Obese and Non-Obese Patients

Per Cajander, M.D., Alex de Leon, M.D., Ph.D., Magnus Wattwil, M.D., Ph.D., Anesthesia and Intensive Care, Örebro University Hospital, Örebro, Sweden, Örebro University Hospital, Örebro, Sweden. Evaluation of the esophageal body pressures in obese and non-obese patients before and during anesthesia using high-resolution solid-state manometry.

A772 Effects of the Shape of the Tip and Body of Endotracheal Tube on Airway Scope System-Assisted Intubation

Hitoshi Minemura, M.D., Tomoyuki Kawamata, M.D., Takanobu Hirabayashi, M.D., Fumiko Shimizu, M.D., Mikito Kawamata, M.D., Department of Anesthesiology and Resuscitology, Shinshu University School of Medicine, Matsumoto, Japan. We examined the usefulness of Parker-Flex-Tip reinforced endotracheal tubes in Airway Scope System (AWS)-assisted tracheal intubation. Both curved type and straight types of Parker-Flex-Tip reinforced endotracheal tubes are useful in AWS-assisted intubation compared with Standard-Tip reinforced endotracheal tubes.

A773 Educational Impact of Workshops and Full-Scale Simulation After the Referent’s Difficult Airway Management Education Training (FRTID)

Laurent Brisard, M.D., Didier Pena, M.C., Cécile Magne, M.D., Vincent Pchenot, M.D., Arnaud Winer, M.D., François Lenfant, M.D., Ph.D., Xavier Combes, M.D., Ph.D., Olivier Langeron, M.D., Ph.D., Corinne Lejis, M.D., Ph.D., Department of Anesthesiology and Intensive Care, HD-HME University Hospital Center, Nantes, France, Department of Medical Intensive Care, St-Pierre Hospital Center, La Reunion, France, University Hospital Center, Dijon, France, Emergency Department, Felix-Guyon Hospital Center, La Reunion, France, Department of Anesthesiology and Intensive Care, Pitié-Salpêtrière-APHP, Paris, France. FRTID is a French educational program for difficult airway management. Evaluation of the workshops showed a better outcome for pediatric simulation despite lack of high-fidelity session in 2011. The FRTID influenced the projects of practice change for 65 (9%) participants. Simulation-based training failed to perform better than simple workshops.
A774 How Difficult It Is to Identify Anterior Neck Airway Structures in the CICV Scenario

Christopher Heard, M.D., Andrew Heard, M.D., James E. Dinsmore, M.D., Women & Children's Hospital of Buffalo, Buffalo, NY., Royal Perth Hospital, Perth, Australia, Anesthesia, Queen Alexandra Hospital, Portsmouth, United Kingdom. Rapid and correct identification of anterior neck airway anatomy is important in the “Can’t Intubate, Can’t Ventilate” (CICV) scenario. An online survey of Australian consultant anaesthetists assessed how difficult identifying anterior neck airway anatomy was in CICV situations experienced by respondents. Descriptions of the airway anatomy were obtained for 138 CICV scenarios. In 34% it was not possible to identify the cricothyroid membrane. In 19% it was not possible to identify either the trachea or cricothyroid membrane. These results suggest that anaesthetists should plan for the eventuality that they may face a CICV scenario in which no anterior neck airway anatomy is identifiable by palpation.

A775 Image Quality, Technical Challenges, and Economic Impact of Providing Sedation for MRI in Adult and Pediatric Patients

Linda Chi, M.D., Ammar Al-Ibraheemi, M.B., B.Ch., Elbert Chang, B.S., Hua Ai, Ph.D., Tinsu Pan, Ph.D., David Ferson, M.D., Diagnostic Radiology, MD Anderson Cancer Center, Houston, TX., Department of Anesthesiology and Critical Care, Imaging Physics, MD Anderson Cancer Center, Houston, TX. Our study showed that the image quality was negatively affected by anesthesia/sedation in adults patients. Also, in adult and pediatric patients anesthesia/sedation caused a significant prolongation of the MRI room time that diminished the efficiency of room utilization by at least 50%, caused significant delays for other patients, and reduced patient throughput and satisfaction. Further studies are necessary to better understand the causative factors as well as to evaluate what interventions are necessary to improve the quality of images in patients undergoing MRI studies with anesthesia/sedation.

A776 Reporting of Airway and Anesthetic Mishaps in the Non-Medical Literature: Perhaps a Lapse in Describing Litigation

Mary Funke, Victoria Larkins, Student, Lauren Hoke, B.S., Joseph May, B.S., Yvon Bryan, M.D., High Point University, High Point, NC. Wake Forest School of Medicine, Winston Salem, NC. Cases reported in the non-medical literature leading to death, brain damage, or due to severe injuries during airway management were classified by problems with intubation, ventilation, oxygenation, and aspiration. The majority of cases were most likely preventable since few were due to predicted or expected difficult airways.

A777 Depth of Insertion for a Polyurethane High-Volume Low-Pressure Cuffed Endotracheal Tube: Traditional vs. Topographic Method

Enrico M. Camporesi, M.D., Devanand Mangar, M.D., Rachel A. Karlhouski, M.D., Katheryne Downes, M.P.H., Collin Spreken, B.S., Bill Brashers, C.R.N.A., Robert Dodson, C.R.N.A., Surgery, University of South Florida, Florida Gulf to Bay Anesthesiology, Biostatistics Core, University of South Florida, Tampa, FL. University of North Florida, Jacksonville, FL. The newly introduced HVLP ETTs have a thinner cuff leading to additional mobility. We measured, with a fiberoptic scope, the ETT Depth of insertion in 50 female and 50 male patients and compared with a topographical method. Based on our data, we suggest to insert HVLP cuffed ETTs to 20/21 cm for women and men respectively for a more appropriate tracheal position.

A778 Revisiting Difficult Intubation in the Glidescope Era

Kenneth D. Eichenbaun, M.D., M.S., Aden Bronstein, M.D., Kenneth Scope, M.D., Dennis Feierman, M.D., Ph.D., Kalpana Tyagaraj, M.D., Anesthesiology, Maimonides Medical Center, Brooklyn, NY. Johns Hopkins, Baltimore, MD. In 2003 an American Society of Anesthesiology task force developed an updated set of systematic guidelines to manage the difficult airway. The 2003 guidelines were established prior to the introduction of modern video and optical techniques such as the video fiberoptic laryngoscope. We propose an update to the ASA Difficult Airway algorithm, which incorporates the primary modern equipment to secure a difficult airway, which can serve as a new module for the existing ASA Difficult Airway Algorithm.

A779 Airway and Anesthetic Management in Super-Morbidly Obese Patients: Measuring Outcomes of Intubation, Ventilation, and Oxygenation

Jill Youn, M.D., Joseph May, B.S., Kyle Johnson, M.D., Deborah Whelan, M.D., Melissa Laxton, M.D., Randy Calicott, M.D., Stephen Copeland, M.D., Lauren Hoke, B.S., Yvon Bryan, M.D., Anesthesiology, Wake Forest School of Medicine, Winston Salem, NC. Super-morbidly patients undergoing airway management using either general anesthesia or awake/sedation (for fiberoptic intubation) had similar levels of desaturation. However, if ventilation was attempted under general anesthesia, numerous manual maneuvers using 2-person bag mask ventilation and high levels of CPAP were required.

A780 Video Laryngoscopy: Despite an Excellent View, Still Can’t Intubate More Than a Few

Nicholas Sparler, M.D., Joseph May, B.S., Yvon Bryan, M.D., Anesthesiology, Wake Forest School of Medicine, Winston-Salem, NC., Anesthesiology, Wake Forest School of Medicine, Winston Salem, NC. We measured the problems encountered during video laryngoscopy and intubation using different intubating aids (stylets and maneuvers) and found several reasons for difficulties despite adequate views of the glottis.

A781 Fiberoptic vs. Indirect Laryngoscopic Nasal Intubation Under Sedation

Harold T. Groeben, M.D., Andrea Kramer, M.D., Dirk Müller, M.D., Roman Flöttner, M.D., Kliniken Essen-Mitte, Essen, Germany. Indirect laryngoscopes have been compared to a Macintosh laryngoscope and have been shown to provide an improvement of view at the glottis and success rate in difficult intubations. However, there is no controlled study to compare the effect of an indirect laryngoscope to a fiberoptic intubation under local anesthesia and sedation. Therefore, we compared 100 patients with an expected difficult nasal intubation an indirect laryngoscopic (D-Blade, Storz) to a fiberoptic intubation. Intubation with the indirect laryngoscope were significantly faster with no difference in success rate and anesthesiologists’ satisfaction.

A782 Effectiveness of the Jaw Elevation Device in Prevention of Desaturation During Sedation and Monitored Anesthesia Care: A Prospective QA Audit

John Narr, M.D., Priti Dalal, M.D.,F.R.C.A, Padmani Dhar, M.D., Arne Budde, M.D., Sonia Vaida, M.D., Anesthesiology, Penn State Hershey Medical Center, Hershey, PA. This is a quality assurance audit to assess the performance and efficacy of the jaw elevation device in airway management during sedation and anesthesia. Desaturation rate was 0%. None of the patients required conversion to and LMA or ETI.
A783 Usage Rates of Alternative Airway Devices in Adult Patients Presenting for Elective Surgery in American Teaching Hospitals: Clinical Experience From a Teaching Hospital

Davide Cattano, M.D., Ph.D., Peter V. Killoran, M.D., Hassan Aijazi, M.B., B.S., Carmen Seitan, M.A., Alfonso Altamirano, M.D., Carin A. Hagberg, M.D., Anesthesiology, University of Texas Health Science Center Houston, Houston, TX. Over 9,000 anesthetic records were analyzed to assess the utilization of alternate airway devices at our large tertiary care teaching hospital, Memorial Hermann Hospital-Texas Medical Center, Houston, Texas.

A784 Models for Predicting Laryngeal Anatomy and a Standardized Sizing System for the Supraglottic Airway Devices

Davide Cattano, M.D., Ph.D., Jacky Wojtczak, M.D., Ph.D., Carmen Seitan, M.A., Hassan Aijazi, M.B., B.S., Henrique Vale, M.D., Alfonso Altamirano, M.D., Carin A. Hagberg, M.D., Anesthesiology, University of Texas Health Science Center Houston, Houston, TX, Anesthesiology, University of Rochester, Rochester, NY. We present prediction models of the laryngeal scaffold anatomy derived by analyzing external neck measurements obtained from 200 patients at our institution, Memorial Hermann Hospital Texas Medical Center-Houston. The present results may be helpful to determine by external airway measurements the size of the larynx and appropriate size supraglottic airway devices (SGA) to use.

A785 Evaluation of Pulse CO-Oximetry to Non-Invasively Monitor Hemoglobin Concentration in Pediatrics

Mario Patino, M.D., Lindsay Schultz, B.S., Jessica Prim, B.S., Mohamed Mahmoud, M.D., Joel Gunter, M.D., C. Dean Kurth, M.D., Anesthesia, Cincinnati Children’s Hospital Medical Center, Cincinnati, OH. In this prospective study the accuracy of non-invasive continuous hemoglobin concentration (SpHb) by Masimo Rainbow SET Pulse CO-Oximeter (single use sensor, E version, Masimo Corporation, Irvine, CA) was evaluated against laboratory based blood hemoglobin concentration (tHb) in infants, children, and adolescents using bias, precision, Arms, and regression analysis (R²). An in-vivo adjustment was obtained considering the first bias (adjSpHb = SpHb - bias). The accuracy of SpHb in patients from 2 months to 19 years old was similar to that reported in adults. In-vivo adjustment improves the accuracy similar to that of i-STAT. During blood loss, changes in adjSpHb are similar to that of tHb and i-STAT. The use of in-vivo adjustment improves monitoring accuracy for transfusion decisions.

A786 Effect of Age Difference on Changes in Cerebral Oxygen Saturation During Pediatric Cardiac Surgery for Non-Cyanotic Congenital Heart Defects With Cardiopulmonary Bypass

Hitoshi Saito, M.D., Yosuke Uchida, M.D., Ryoko Ito, M.D., Satoko Ando, M.D., Yuji Morimoto, M.D., Ph.D., Department of Anesthesiology, Hokkaido University Hospital, Sapporo, Hokkaido, Japan. Recently, cerebral oximetry using near-infrared spectroscopy is widely used in pediatric cardiac surgery. However, the clinical significance of this technique has not been determined yet. In this study, we measured regional cerebral oxygen saturation (rSO2) values during pediatric cardiac surgery for non-cyanotic congenital heart defects and evaluated the changes in intraoperative values according to the difference of age.

A787 Incidence of Dilutional Coagulopathy in Children Undergoing Minimally Invasive and Open Craniosynostosis Repair: Relationships Between Blood Loss, TEG Parameters and Need for Coagulation Products

Petra M. Meier, M.D., David Zurakowski, Ph.D., Susan M. Goobie, M.D., Sulpicio G. Soriano, M.D., James A. DiNardo, M.D., Anesthesiology, Children’s Hospital Boston, Boston, MA. Minimally invasive endoscopic strip craniectomy (ESC) for craniosynostosis repair is associated with significantly reduced intraoperative blood loss and rate of blood transfusion compared to open reconstruction procedures. Increased blood loss during FOA/CVR impairs clotting characteristics as assessed by TEG. Intraoperative CBL is a useful diagnostic predictor of perioperative coagulopathy requiring component coagulation factor transfusion with a probability of 57% for infants with CBL ≥73 mL/kg.

A789 Increased Use of Recombinant Activated Factor VII and Need for Re-Exploration in Infants Undergoing Major Congenital Heart Surgery After Switch From Aprotinin to Aminocaproic Acid

John P. Scott, M.D., Eckehard A. Stuth, M.D., George M. Hoffman, M.D., Richard J. Berens, M.D., Rowena C. Punzalan, M.D., Daniel Costigan, M.D., Pippa Simpson, Ph.D., Mahua Dasgupta, M.S., James S. Tweedell, M.D., Pediatric Anesthesiology and Critical Care, Pediatric Anesthesiology, Pediatric Hematology, Biostatistics, Pediatric Cardiothoracic Surgery, Children’s Hospital of Wisconsin, Medical College of Wisconsin, Milwaukee, WI. Infants undergoing cardiac surgery with CPB experienced higher rates of rFVIIa administration and surgical re-exploration following the switch from aprotinin to EACA.
A790 Efficacy and Safety of the Reversal With Sugammadex From Deep Rocuronium-Induced Neuromuscular Blockade in Children

Jose A. Alvarez-Gomez, Ph.D., Mª Dolores Carceles Baron, Ph.D., Gloria Veiga Ruiz, M.D., Raquel Lopez Lopez, M.D., Julian Benavides Meija, M.D., Paloma Domenech Asensi, Ph.D., Rosario Garcia Martinez, M.D., Vicente Roques Escolar, Ph.D., Anesthesia-Resanimation, University Hospital St. Lucia, Cartagena, Spain, Anesthesia & Reanimation, Arrixaca University Hospital, Murcia, Spain, Anesthesia & Reanimation, University Hospital St. Lucia, Cartagena, Spain. The association rocuronium-sugammadex may be a particular indication if a deep NMB is needed, in children. A hundred children 2-11 years scheduled for surgery under general anesthesia and neuromuscular relaxation with rocuronium were enrolled. Sugammadex 4 mg/kg reverses effectively and safely the deep blockade (<2PTC) induced with rocuronium in less than two minutes. The facility and rapidly to extubate, make combination rocuronium-sugammadex extremely useful to restore spontaneously ventilation and neuromuscular function from deep neuromuscular blockade in children when compared with neostigmine.

A791 Intra-Operative Transfusion Trigger for Pediatric Patients Undergoing Non-Cardiac Procedures

Allison Fernandez, M.D., M.B.A., Jessica A. Morgan, M.D., M.B.A., Robert Greenberg, M.D., Eugenie Heitmiller, M.D., Department of Anesthesiology and Critical Care Medicine, Johns Hopkins Hospital, Baltimore, MD. This study analyzed RBC transfusion practices of pediatric anesthesiologists at a single institution. The mean transfusion trigger of 8.5 g/dL lies mid-way between restrictive and liberal transfusion strategies.

A792 Predicting Need for Blood Transfusion and Blood Bank Testing in Pediatric Patients Undergoing Non-Cardiac Procedures

Allison Fernandez, M.D., M.B.A., Jessica A. Morgan, M.D., M.B.A., Robert Greenberg, M.D., Eugenie Heitmiller, M.D., Department of Anesthesiology and Critical Care Medicine, Johns Hopkins Hospital, Baltimore, MD. This study analyzed RBC transfusions of pediatric patients at a single institution. For the 13.4% of patients for whom RBC products were ordered and not used, a pediatric preoperative index to predict need for transfusion for specific surgical procedures may reduce the number of type and screen or cross-match specimens sent for cases that infrequently require transfusion.

A793 Effect of Propofol and Sevoflurane on Base Excess, pH and Lactate During Anesthesia for Pediatric Heart Catheterization

Axel Fudickar, M.D., Kathrin Smigaj, Student, Gunther Fischer, M.D., Peter Duitschke, M.D., Markus Steinfath, M.D., Berthold Bein, M.D., Klinik für Anästhesiologie und Operative Intensivmedizin, Kiel, Germany, Department of Anesthesiology and Intensive Care Medicine, University Hospital Schleswig-Holstein, Campus Kiel, Kiel, Germany. Metabolic acidosis is regarded as an early warning sign of PRIS. In this study the effect of propofol and sevoflurane on serum base excess, pH and lactate have been examined during pediatric heart catheterization. Propofol but not sevoflurane has an effect on base excess and pH during pediatric heart catheterization.

A794 Population Pharmacokinetics of Epsilon-Aminocaproic Acid in Infants Undergoing Craniofacial Reconstruction Surgery

Paul Stricker, M.D., Athena F. Zuppa, M.D., John E. Fiadjoe, M.D., Lynne G. Maxwell, M.D., Emily M. Susman, B.S., Eric Y. Pruitt, B.A., Theodora K. Goebel, R.N., Jesse A. Taylor, M.D., Scott P. Bartlett, M.D., Mark S. Schreiner, M.D., Department of Anesthesiology and Critical Care Medicine, The Children’s Hospital of Philadelphia and Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA. Department of Surgery, The Children’s Hospital of Philadelphia and Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA. The aim of this study was to determine the pharmacokinetics of epsilon-aminocaproic acid (EACA) in children 6-24 months undergoing craniofacial surgery. Cohorts of 6 infants were enrolled sequentially to one of three escalating dose regimens. PK parameters of EACA were estimated using a two-compartment model with weight on drug clearance, inter-compartmental clearance, central and peripheral volume of distributions, and age as covariates.

A795 Intrapulmonary Percussive Ventilator (IPV) Improved P/F Ratio During Surgery in 3 Neonatal Cases

Aki Uemura, M.D., Ph.D., Masayuki Miyabe, M.D., Ph.D., Yousuke Sakakura, M.D., Masahiro Yagihara, M.D., Dept. of clinical Anesthesiology, Mie University, Mie Pref. Tsu-City, Japan, Dept. of Clinical Anesthesiology, Mie University, Mie Pref Tsu-City, Japan, Dept. of Clinical Anesthesiology, Mie University, Tsu-City, Japan. Intrapulmonary Percussive Ventilator (IPV) is used for thoracoscopic repair of 2 congenital diaphragmatic hernia and congenital cystic adenomatoid malformation during surgery. As soon as started ventilation with IPV, ventilation and oxygenation were improved and decreased PaCO2, and P/F ratio improved. IPV compared with HFO, because it is open to the air, barotrauma is avoidable. It is compact, and can use with anesthetic machine. Since ventilation with IPV reduces PaCO2, IPV may suitable for ventilation during thoracoscopic repair in neonates.

A796 Incidence of Hypoxemia During Pediatric Surgery

Joel Musee, Ph.D., Suanne M. Daves, M.D., Dylan Snyder, B.A., Jesse M. Ehrenfeld, M.D., Scott D. Richardson, B.A., Department of Anesthesiology, Vanderbilt University School of Medicine, Nashville, TN. Division of Cardiac Anesthesiology, Vanderbilt University Medical Center, Nashville, TN. Department of Anesthesiology, Vanderbilt University Medical Center, Nashville, TN. The incidence of hypoxemia (SpO2 < 90%, for greater than 1 minute) and severe hypoxemia (SpO2 ≤ 85 for greater than 1 minute) during the perioperative period in pediatric patients (0-18 years) is unknown. In a study of 23,444 patient ages, we report that hypoxemia is present in 5.26% of all encounters with severe hypoxemia present in 3.18% of clinical encounters. We are currently evaluating the relationship between hypoxemia and poor outcomes.
A797 Prevention of Perioperative Hypothermia in Neonatal Intensive Care Unit Patients

Robert S. Greenberg, M.D., Robert Hody, M.S., Karen M. Frank, M.S., Carol M. Gentry, M.S.N., Deborah B. Hobson, B.S.N., Timothy Burroughs, B.S., Peggy McDaniel, M.S.N., Laura Winner, M.S., Renee Densky, B.S.N., Eugenie S. Heitmiller, M.D., Anesthesiology/Critical Care Medicine & Pediatrics, The Johns Hopkins Medical Institutions, Armstrong Institute for Patient Safety & Quality, Pediatrics - NICU, Surgery - Pediatric OR Nursing, JHHS Quality and Clinical Analytics, The Johns Hopkins Medical Institutions, Baltimore, MD. A multidisciplinary team was assembled to develop a quality improvement project using Lean Sigma methodology to eliminate post-operative hypothermia in NICU patients. Several specific interventions were identified and implemented resulting in an improvement in neonatal transport thermoregulation.

A798 Cumulative Volatile Anesthetic Exposure and Neurodevelopmental Outcomes at Age 12 Months After Neonatal Cardiac Surgery

Dean B. Andropoulos, M.D., Ronald B. Easley, M.D., Ken Brady, M.D., Stephen Stayer, M.D., Marcie Meador, M.S., Carol Eisenman, B.S.N., Taha Haq, B.S., Robert Voigt, M.D., Lara Shekerdemian, M.B., B.S., Charles Fraser, M.D., Texas Children’s Hospital - Baylor College of Medicine, Houston, TX, Texas Children’s Hospital/Baylor College of Medicine, Houston, TX. Fifty-nine neonates undergoing cardiac surgery with bypass were enrolled in a prospective neurodevelopmental outcomes study. Cumulative exposure to volatile anesthetic agents (VAA) was quantitated for all anesthetic exposures in the first 12 months of life, including cardiac and non-cardiac anesthetics. After multivariable analysis, increasing total MAC hours of VAA was associated with lower Cognitive (p=0.01), and Language (p=0.02), but not Motor (p=0.49) Scores at 12 months on the Bayley Scales of Infant Development III.

A799 Stroke Volume Variability Doesn’t Predict Cardiac Output Decrease When Prone Positioning Children for Scoliosis Surgery

Matthias Görges, Ph.D., Zoe E. Brown, M.B.Ch.B., Erin Cooke, B.Sc., Heng Gan, M.B., B.Ch., Guy A. Dumont, Ph.D., J. Mark Ansermino, M.B., B.Ch., Electrical and Computer Engineering, Anesthesiology, Pharmacology & Therapeutics, University of British Columbia, Vancouver, BC, Canada. Prone positioning produces significant drop in CI and increase in SVV in children. However, SVV before prone positioning does not predict the magnitude of CI change in children after prone positioning.

A800 Coagulopathy and Outcomes in Pediatric Trauma Patients Requiring an Operative Procedure

Jill M. Jani, M.D., Amy O’Neill, M.D., Tom M. Fazlollah, C.R.N.A., Nina A. Guzetta, M.D., Anesthesiology, Emory University, Atlanta, GA. The presence of a coagulopathy in trauma patients presenting to the operating room (OR) can have an effect on patient outcomes. In particular, the presence of an elevated prothrombin time (PT) upon arrival to the O.R. strongly correlates with a prolonged intensive care unit or hospital length of stay. The length of mechanical ventilation is more strongly correlated with Injury Severity Score but also demonstrates an association with prolonged PT.

A801 The Age of Transfused Blood Is Not Associated With Increased Postoperative Adverse Outcome After Pediatric Cardiac Surgery

Hirokazu Kawase, M.D., Yuichiro Toda, M.D., Ph.D., Moritoki Egi, M.D., Ph.D., Tatsu Kawasaki, M.D., Ph.D., Kazuyoshi Shimizu, M.D., Ph.D., Tomoyuki Kanazawa, M.D., Noriko Ishii, M.D., Kentaro Sugimoto, M.D., Kiyoshi Morita, M.D., Ph.D., Department of Anesthesiology and Resuscitology, Okayama University Hospital, Okayama, Japan. The storage duration (age) of transfused red blood cells (rRBC) has been shown to associate with morbidity and mortality in adult cardiac surgery patients. However, there are few studies to assess its relationship in pediatric cardiac surgery patients. In pediatric cardiac surgery patients, age of rRBC was not significantly associated with the risk of serious adverse events. The number of donors for rRBC was consistently associated with serious adverse events. Future studies should be required to confirm or refute our findings.

A802 Extracorporeal Membrane Oxygenation Support in Children With a Functional Single Ventricle After Congenital Heart Surgery

Tatsu Kawasaki, M.D., Yuichiro Toda, M.D., Kazuyoshi Shimizu, M.D., Tomoyuki Kanazawa, M.D., Kentaro Sugimoto, M.D., Hirokazu Kawase, M.D., Noriko Ishii, M.D., Mari Shibata, M.D., Hiroki Omiya, M.D., Kiyoshi Morita, M.D., Anesthesiology and Resuscitology, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama, Japan, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama city, Japan. Induction of ECMO may be considered earlier when hemodynamics are unstable in children after congenital heart surgery to avoid circulatory collapse. Earlier induction of ECMO may improve the survival rate of the children with a functional single ventricle who required ECMO support after cardiac surgery.

A803 The Correlation Between Vasopressin Levels and Postoperative Hemodynamic Profiles and Adverse Events in Pediatric Cardiac Surgery

Kazuyoshi Shimizu, M.D., Ph.D., Yuichiro Toda, M.D., Ph.D., Tomoyuki Kanazawa, M.D., Ph.D., Noriko Ishii, M.D., Kentaro Sugimoto, M.D., Hirokazu Kawase, M.D., Tatsu Kawasaki, M.D., Ph.D., Kiyoshi Morita, M.D., Ph.D., Anesthesiology, Okayama University Hospital, Okayama, Japan. This prospective, observational study was set up to investigate the association between serum vasopressin (VP) levels and postoperative hemodynamic profiles (max systolic BP, max diastolic BP, max HR in the first 24 hours in the ICU, and max lactate during the ICU stay) and postoperative adverse events in 25 children undergoing cardiac surgery with cardiopulmonary bypass. We measured VP levels at the 2 points- after induction of anesthesia (VP1) and just after admission to the ICU (VP2). VP2/VP1 ratio, considered as responsiveness of neurohormonal activities, correlated with max sBP and max dBP in the first 24 hours after ICU admission. Responsiveness of VP may influence BP in the early phase postoperatively in pediatric cardiac surgery.

A804 Closed Loop Guided Administration of Propofol in Paediatric Patients Undergoing Cardiac Surgery

Goverdhan Puri, M.D., Ph.D., Indranil Biswas, M.B., B.S., Preethy J. Mathews, M.D., Sandeep S. Rana, M.S., PGIMER, Anaesthesiology and Intensive Care, Anaesthesiology and Intensive Care, Cardiothoracic and Vascular Surgery, PGIMER, Chandigarh, India. BIS-guided closed loop anaesthesia delivery of propofol is possible in paediatric patients undergoing cardiac surgery.
A805  The Incidence of Postoperative Events/Complications as Predictors for ICU Admission in Infants and Children Undergoing Open Craniosynostosis Surgery
Susan Goobie, M.D., Petra Meier, M.D., David Zurakowski, Ph.D., Jessica Solari, B.A., Anesthesia, Boston Children’s Hospital, Boston, MA. Pediatric patients undergoing open craniosynostosis repair likely need an ICU bed postoperatively if they are less than 10kg, receive a significant amount of albumin intraoperatively, or have FFP, platelets, cryoprecipitate administered intraoperatively. Intraoperative TXA administration is associated with less postoperative major events/complications and therefore may reduce the requirement for ICU admission.

A806  Fluid Overload and Increased Mortality after Pediatric Cardiac Surgery
Andrea Szekely, M.D., Daniel Lex, Student, Roland Tóth, M.D., Erzsébet Sápi, M.D., János Gál, M.D., Ph.D., Edgar Szekely, M.D., Department of Anesthesia, Semmelweis University, Göteborgs Gyógynövény Hungarian Institute of Cardiology, Budapest, Hungary. Our results indicate that fluid overload in the early postoperative period is associated with mortality. Monitoring fluid balance and early correction of fluid overload should be standardized in the pediatric cardiac surgery setting.

A807  The Effect of Perioperative High Dose Dexamethasone on the Systemic Inflammatory Response and Outcome After Pediatric Cardiac Surgery
Aymen N. Naguib, M.D., Mark W. Hall, M.D., Joseph D. Tobias, M.D., Thomas Preston, Mark Galantowicz, M.D., Timothy Hoffman, M.D., Department of Pediatric Anesthesia and Pain Medicine, Pediatric Critical Care Medicine, Pediatric Anesthesiology and Pain Medicine, The Heart Center/Cardiothoracic Surgery, Nationwide Children’s Hospital, Columbus, OH. The use of high-dose dexamethasone was associated with slightly improved inflammatory response. This reduction in the inflammatory response was not associated with improved clinical outcome or increased morbidities after pediatric cardiac surgery.

A808  Preliminary Investigation of Anesthesia-Related ICU Admission Following Primary Palatoplasty in Children With Pierre Robin Sequence
Kathleen Barrett, M.D., James W. Ibinson, M.D., Cynthia Romero, B.A., Darren M. Smith, M.D., Joseph Losee, M.D., Franklyn P. Cladis, M.D., Doreen E. Soliman, M.D., Anesthesiology, Plastic Surgery, Plastic Surgery, Children’s Hospital of Pittsburgh of UPMC, Pittsburgh, PA. After a retrospective analysis of postoperative outcome following primary palatoplasty in children, we found children with Pierre Robin Sequence had a higher rate of ICU admission postoperatively. This is a preliminary investigation into the causative factors.

A809  Novel Method for Real-Time Measurement of Surgical Blood Loss
Siddarth Satish, M.S., Charles L. Zhao, M.S., Amer G. Abdulla, M.S., Kevin Miller, B.S., David M. Rempel, M.D., Mark L. Gonzalez, M.D., Ph.D., Michael H. Hsieh, M.D., Ph.D., Stanford University School of Medicine, Stanford, CA. Bioengineering, Georgia Institute of Technology, Atlanta, GA. UCLA School of Medicine, Los Angeles, CA. UCSF School of Medicine, San Francisco, CA. Visual estimation of blood loss, although standard, remains highly error-prone. To this end, a computer-vision algorithm for measurement of blood loss via optical scans of surgical surfaces was developed. The aim of this study was to validate the performance of the algorithm in benchtop and clinical settings.

A810  The Relationship Between Plethysmographic Waveform Variation and Stroke Volume and Its Variation
Mitsue Fukuda, M.D., Ririko Iwasaki, M.D., Daisuke Toyoda, M.D., Yoshifumi Kotake, M.D., Ph.D., Ryoichi Ochiai, M.D., Ph.D., Toho University Omori Medical Center, Tokyo, Japan, Toho University Ohashi Medical Center, Tokyo, Japan. This observational study examined the relationship between plethysmographic waveform variability (PWV) stroke volume index (SVI) and stroke volume variation (SVV). There was no clinically meaningful relationship between PWV and SVI but PWV significantly correlated with SVV.

A811  Measurement of Relative Change in Blood Volume and Plasma Refilling Rate During Hemodialysis by Noninvasive Continuous Hemoglobin Monitoring Using Pulse Oximetry
Hiroshi Yamada, M.D., Ph.D., Minako Saeki, M.D., Ph.D., Seiko Sakamoto, M.D., Ph.D., Junko Ito, M.D., Mayuko Saitoh, M.D., Kazuhiro Minoguchi, M.D., Kazuhiro Kawada, M.D., Aya Higurashi, M.D., Saori Takahashi, M.D., Kohji Takeda, M.D., Department of Anesthesiology and Critical Care, Fujisawa Municipal Hospital, Fujisawa, Japan. Relative change in blood volume and plasma refilling rate during hemodialysis were calculated by hemoglobin concentration (SpHb) measured by pulse oximeter (Masimo Rainbow SET CO-Oximeter Radical-7). Relative change in blood volume and plasma refilling rate measured by SpHb showed good concordance with those measured by Crit-Line. Continuous monitoring of SpHb by pulse oximetry enabled us to evaluate relative change in blood volume and adjust ultrafiltration rate to plasma refilling rate, which contributes to effective ultrafiltration and stable hemodialysis.

A812  Pulse Transit Time in Anesthetized Ventilated Patients: Affect of Blood Pressure or Cardiac Output
Dmitri Bystritski, M.D., Arieh Eden, M.D., Reuven Pizov, M.D., The Lady Davis Carmel Medical Center and Rappaport Faculty of Medicine, Technion, Haifa, Israel. We evaluated whether changes in pulse transit time (PuTT) can serve as a predictor of changes in cardiac output (CO) in anesthetized ventilated patients. We found no correlation between changes in CO and PuTT.

A813  Factors Influencing Successful Internal Jugular Vein Puncture in Cardiac Surgical Patients: Gender and Trendelenburg Positioning
Edward A. Maratea, Jr., M.D., Miguel Cobas, M.D., Lebron Cooper, M.D., Catalina Castillo-Pedraza, M.D., Kris Arheart, Ph.D., Henry Olivera, M.D., Anesthesiology, Biostatistics, University of Miami Hospital, Miami, FL. This study evaluates the supine size of the Internal Jugular Vein and its response to the Trendelenburg position in cardiac surgical patients versus surgical patients without cardiovascular disease.
Manipulation Under General Anesthesia Heart Rate Variability During Abdominal Surgical

A816 Heart Rate Variability During Abdominal Surgical Manipulation Under General Anesthesia

Naoyuki Hirata, M.D., Ph.D., Ryo Miyashita, M.D., Daisuke Maruyama, M.D., Ryoichi Kawaguchi, M.D., Hiroshi Shimizu, M.D., Ph.D., Michiaki Yamakage, M.D., Ph.D., Anesthesiology, Sapporo Medical University, Sapporo, Japan, Anesthesiology, Obihira Kyokai Hospital, Obihira, Japan. Anesthesiologists occasionally encounter bradycardia during abdominal surgery and recognize the phenomenon as a vagal reflex. Bradycardia implicates efferent vagal dominance in the autonomic nervous system during this vagal reflex. In this study, we investigated the effect of abdominal surgical manipulations on autonomic nervous activity using heart rate variability analysis. Abdominal surgical manipulation decreased heart rate and enhanced not only high frequency power (0.15-0.4Hz) but also low frequency power (0.04-0.15Hz) of heart rate variability. Our results suggest that both vagal and sympathetic tones could be activated during the vagal reflex caused by abdominal surgical manipulation.

A815 The Flotrac/Vigileo System is Not so Accurate in Severe Heart Failure Patients Due to High Systemic Vascular Resistance

Takuma Maeda, Sr., M.D., Go Sakaguchi, M.D., Kenji Yoshitani, M.D., Yoshihiko Ohonishi, M.D., NCVC, National Cerebrovascular Center, Osaka, Japan, National Cerebrovascular Center, Saita, Osaka, Japan. We hypothesized that output (CO) measured by the Flotrac/Vigileo system (COFT) would be inaccurate in patients with heart failure with sympathetic activation. We compared COFT to cardiac output measured by three dimensional echocardiography (CO3D). Further, we examined whether preoperative systemic vascular resistance (SVR) has an effect on the difference in COFT and CO3D. The regression analysis revealed that statistically significant relationships between preoperative SVR and discrepancy of COFT and CO3D. (>0.001, R=0.53) So we concluded that COFT showed a wide limit of agreement with the CO3D in severe heart failure patients and it may be due to high SVR.

A814 The Current Use of Pulmonary Artery Catheter in Cardiac Surgery: A Survey Study

Onkar S. Judge, M.D., Hong Liu, M.D., Anesthesiology & Pain Medicine, University of California, Davis, Sacramento, CA. Hemodynamic monitoring with pulmonary artery catheterization (PAC) has been an integral aspect of anesthetic management of cardiac surgery patients. However, with the advent of alternative hemodynamic monitoring techniques the use of PAC has significantly decreased over the years. We conducted a survey with the Society of Cardiovascular Anesthesiologists (SCA) to assess current uses of hemodynamic monitoring techniques in patients undergoing cardiac surgery. Results of this study suggest that majority of the respondents prefer to use a PAC for most cardiac surgeries.

A818 Increase of Low- to High-Frequency Ratio of Heart Rate Variability Spectra to Above 5 Predicts Acute Tolerance to Remifentanil During Anesthesia

Masashi Uchida, M.D., Anesthesiology, Syounan Kamakura General Hospital, Kamakura, Japan. Low-frequency/high-frequency ratio (LF/HF) of heart rate variability power spectra was measured in 24 patients during anesthesia using remifentanil (RF) infusion. LF/HF increased to above 5 at RF infusion rate of 0.4 or 0.5 µg/kg/min (1) in 4 patients. In these patients, it is suspected that acute tolerance to RF developed during anesthesia. It is reasonable to consider LF/HF above 5 as a sign of activation of NMDA receptors, because LF/HF increases to above 5 during tourniquet-induced hypertension (T-HTN). Activation of spinal NMDA receptors is involved in the development of T-HTN or acute RF tolerance. Even after acute tolerance to RF has already occurred, ketamine can attenuate the tolerance.

A819 Hemodynamic Response to Passive Leg Raise (PLR) as a Predictor for Intraoperative Fluid Requirements

Nathan H. Waldron, M.D., Timothy E. Miller, M.B., B.Ch., Eugene W. Moretti, M.D., Christopher C. Young, M.D., Tong Joo Gan, M.D., Department of Anesthesiology, Duke University, Durham, NC. We examined the clinical utility of preoperative Passive Leg Raise (PLR) to predict intraoperative response to fluid bolus. Adult colorectal surgery patients had a PLR done preoperatively and hemodynamic changes during PLR were recorded using the NICOM system. We investigated if changes in stroke volume (SV) and cardiac output (CO) during PLR were predictive of intraoperative response to fluids as well as total volume of colloid received intraoperatively. We found that hemodynamic response to PLR as measured by NICOM was not predictive of response to first fluid bolus or total intraoperative colloid requirements. It is possible that hemodynamic changes accompanying induction of anesthesia obscured any meaningful relationship between preoperative PLR and intraoperative response.
A820 Dynamic Variables of Fluid Responsiveness in Patients With Left Ventricular Hypertrophy and Diastolic Dysfunction
Jochen Renner, M.D., Ole Broch, M.D., Arne Carstens, M.D., Markus Steinfath, M.D., Berthold Bein, M.D., Department of Anesthesiology and Intensive Care Medicine, University Hospital Schleswig-Holstein, Kiel, Germany. Dynamic and volumetric variables of fluid responsiveness were not able to reliably predict fluid responsiveness in patients with left ventricular hypertrophy and diastolic dysfunction in this specific study design.

A821 Respiratory Variation in the Pulmonic Arterial System and Intrathoracic Pressure Changes
Robert H. Thiele, M.D., Lauren K. Dunn, M.D., Ph.D., Douglas Colquhoun, M.B.,Ch.B., University of Virginia Health System, Charlottesville, VA. The predictive utility of systemic arterial respiratory variation is compromised by right ventricular dysfunction. Respiratory variation in the pulmonic arterial system has been relatively understudied but may increase the ability of clinicians to predict the hemodynamic response to systemic venous volume administration. This study assessed the impact of intrathoracic pressure changes on pulmonic arterial respiratory variation and found no relationship between the two, suggesting that the low frequency oscillations that occur in the pulmonary artery pressure trace are due to changes in right ventricular loading conditions and not the transduction of airway pressure changes.

A822 Pocket Mobile Systems for the Point-Of-Care Ultrasonography in Anesthesia, Critical Care and Emergency Medicine
Jacek A. Wojtczak, M.D., Ph.D., Peter Bonadonna, Department of Anesthesiology, University of Rochester School of Medicine and Dentistry, Rochester, NY., Monroe Community College Paramedic Program, Rochester, NY. In this study four pocket mobile ultrasound systems were evaluated in healthy volunteers and phantoms. Those systems offer added versatility in outpatient, prehospital, intensive and perioperative care.

A823 Comparison Between Cardiac Output Monitoring Using a New Non-invasive Continuous Method (esCCO) and Using Oesophageal Doppler During Major Liver Surgery
Bruno Saumande, M.D., Vincent Garcia, M.D., Brice Samyn, M.D., Gilles Mahoudeau, M.D., Benjamin Lebas, M.D., Rachid Kalakhly, M.D., Pierre Diemunsch, M.D., Ph.D., Anesthesia and critical care, Hospital de Hautepierre, Strasbourg, France. These study found a poor correlation between SV obtained by esCCO and SV measured by oesophageal doppler. Our results showed that esCCO method is not a reliable alternative to CCOod in liver surgery patients in our conditions. Since in our setting the comparison was not made with the gold standard (thermodilution) and concerned a special clinical setting, our result should be interpreted by taking these limits into account and further clinical evaluation is required.

A824 Accuracy of Impedance Cardiography Derived Cardiac Output to Evaluate Cardiac Output Variations: Evaluation With Oesophageal Doppler
Emmanuel Lorne, M.D., Yazine Mahjoub, M.D., Julien Sleighem, M.D., Clémence Buchalet, M.D., Hervé Dupont, M.D., Anesthesiology and Critical Care Medicine, University Hospital of Amiens, Amiens, France. The study compared the values of cardiac output (CO) and the changes in cardiac output obtained with ICG (Niccomo®) and the esophageal Doppler (CardioQ, Deltex Medical®). CO and variations of CO measured by ICG are well correlated with CO and variations of CO from the OD. ICG seems to be a reliable method for noninvasive monitoring of cardiac output and for detection of changes in cardiac output of patients undergoing general surgery.

A825 Is There an Optimal Location to Measure Non-invasive Blood Pressure in Morbidly Obese Patients?
Megan Olejniczak, M.D., Nicholas Anast, M.D., John Brock-Utne, M.D., Jerry Ingrande, M.D., Richard Jaffe, M.D., Hendrikus Lemmens, M.D., Department of Anesthesia, Stanford University, Stanford, CA. In morbidly obese patients, oscillometric blood pressure measured with an upper-arm blood pressure cuff may be difficult to perform due to the size and shape of the arm. In this study, intraoperative blood pressure measurements were taken with the cuff placed in 3 different positions on the arm and compared to measurements obtained simultaneously using an arterial catheter placed in the ipsilateral radial artery in sixteen morbidly obese patients. There was good agreement between SBP, DBP and MAP as measured by radial arterial line and all variations of oscillometric blood pressure measurements. We conclude that non-invasive oscillometric blood pressure may be measured in several positions in morbidly obese patients with reliable results.

A826 The Effects of Changes From Two-lung Ventilation to One-lung Ventilation on Stroke Volume Variation
Deskyu Kim, M.D., Sang-Kyi Lee, M.D., Ph.D., Hyungsun Lim, M.D., Ph.D., Seonghoon Ko, M.D., Ph.D., Department of Anesthesiology and Pain medicine, Chonbuk National University Hospital, Jeonju, Republic of Korea. This study evaluated the effects of changes from two-lung ventilation (TLV) to one-lung ventilation (OLV) on SVV. Vigileo/FloTrac device (Edwards Lifesciences, Irvine, CA) was used for measuring SVV and other hemodynamic variables. Mean arterial pressure (MAP), heart rate (HR), cardiac index (CI) and SVV were analyzed at the minute for 10 minutes. SVV increased to the highest at 1 minute after OLV and returned to the baseline value at 8 minutes. Our result, that OLV temporarily increasesSVV, has to be considered when the fluid responsiveness is predicted by SVV.

A827 Accuracy of the CNAP Monitor in Providing Beat-to-beat Non-invasive Blood Pressure Readings in the Prone Pediatric Patient
Elisabeth Dewhirst, M.B., B.S., Marco Corridore, M.D., Joseph D. Tobias, M.D., Nationwide Children’s Hospital, Columbus, OH. At times, arterial access for blood pressure monitoring may be desired but extremely difficult to achieve. In this scenario a non-invasive continuous blood pressure monitor would be useful. The CNAP monitor is such a device and has been validated in adults only. We assess the accuracy of the CNAP monitor in the pediatric population undergoing prone surgery.
A828 Comparison Between Continuous Arterial Pressure Measured by Non-Invasive Finger Cuff Caretaker® to Invasive Intra-Arterial Pressure in Patients Undergoing Major Intra-Abdominal Surgery

Irwin Gratz, D.O., Edward Deal, D.O., Francis Spitz, M.D., Elaine Allen, Ph.D., Erin Pukenas, M.D., Eliaz Bojaxhi, M.D., Cooper University Hospital, Cooper Medical school at Rowan University, Camden, NJ. Babson College, Boston, MA. We investigated the accuracy of the CareTaker, the non-invasive arterial BP system, in a patient undergoing major abdominal surgery requiring frequent fluid adjustments. Measurement of mean arterial pressure from the CareTaker showed fairly good accuracy with the radial artery. The non-invasive finger cuff system was able to track changes in BP with reasonable accuracy. Further development of Pulse-Decomposition Analysis technology seems promising but further development is needed.

A829 Plethysmographic Respiratory Changes Induced by Incentive Spirometry in Spontaneously Breathing Dialysis Patients

Nyasha George, B.S., Gourg Atteya, M.D., Beshoy Esmat, M.D., Kristin Richards, M.D., Kirk H. Shelley, M.D., Ph.D., David G. Silverman, M.D., Aymen A. Alian, M.D., Anesthesiology, Yale University School of Medicine, New Haven, CT. In spontaneously breathing ESRD patients undergoing dialysis, the monitoring of PPG respiratory variability is possible by using incentive spirometry. This method of breathing may help in tracking blood volume fluctuation during dialysis.

A830 Ultrasound-Guided Catheterization of Radial Artery at the Forearm

Nicolas Francois, M.D., David Tran Van, M.D., FARUCA, HIA Robert Picqué, Villenave d’Ornon, France. Monitoring of blood pressure is a major way of evaluating hemodynamic condition in critical ill patients. However, cannulation of radial artery may be difficult. Ultrasound guidance allows successfull radial cannulation in a short time with a minimum number of puncture and difficulties encountered are quickly identified.

A831 Closed-Loop Fluid Management During Hemorrhage in Adult Pigs: LIR Versus Anesthesiologists

Joseph B. Rinehart, M.D., Christine Lee, B.S., Brenton Alexander, B.S., Allen Kong, M.D., Cecilia Canales, M.P.H., Maxime Cannesson, M.D., Anesthesiology & Perioperative Care, University of California Irvine, Orange, CA. This study compares the management of hemorrhage resuscitation in Yorkshire swine in practicing anesthesiologists and the LIR closed-loop system. Results to date demonstrate that the closed-loop controller maintains a higher stroke volume and has a narrower coefficient of variance of stroke volume during massive hemorrhage and resuscitation as compared to practitioners.

A832 Ultrasound Measurement of the Internal Jugular Vein as a Non-Invasive Monitor of Volume Status

Kristin L. Richards, M.D., Andrew Taylor, M.D., Suzana Zorca, M.D., Nyasha George, Student, Feng Dai, Ph.D., David Silverman, M.D., Nina Stchenfeld, Ph.D., Wanda Popescu, M.D., Anesthesiology, Emergency Medicine, John B Pierce Laboratory, Yale University School of Medicine, New Haven, CT. Assessing volume status is important for guiding fluid therapy and optimizing hemodynamic management. This purpose of this study was to compare and correlate changes in IJV area in relation to changes in preload in healthy volunteers undergoing increasing increments of lower body negative pressure. We demonstrated that sonographic measurement of the IJV area is a reliable measure of volume assessment and offers the potential to be a non-invasive tool for determining volume status.

A833 Comparison of Ultrasound (US) Guided Versus Landmark Method for Central Venous Access in the Operating Room (OR) - Preliminary Results From a Randomized Controlled Trial

Sara Guzman-Reyes, M.D., Brian Marasigan, M.D., Carlos Artine, M.D., Mahammad Hussain, M.D., Alfonso Alamirano, M.D., Merrick Meese, Student, Hassan Aijazi, M.B., B.S., Evan G. Pivalizza, M.D., Anesthesiology, The University of Texas at Houston Medical School, Houston, TX. Traditionally, central venous catheterization has been guided by anatomic landmarks. The hypothesis of this ongoing study is that use of US for real-time guidance by residents during internal jugular (IJ) central venous line (CVL) placement results in increased success and decreased complication rates.

PO04-5 Clinical Circulation

CA
1-4 p.m.
Hall C-Area L

A834 Making the Case for a Preoperative Anemia Management Program for Total Hip Arthroplasty

Thomas Vetter, M.D., M.P.H., Jill Adamski, M.D., Ph.D., Marisa Marques, M.D., Anesthesiology, Pathology, University of Alabama at Birmingham, Birmingham, AL. Minimizing the need for surgical blood transfusion has physiologic and economic benefits, especially in the face of increasing costs, competing demands, a shrinking pool of blood donors, and uncertainty about the actual clinical benefits of banked allogeneic blood. Given the observed high prevalence of preoperative anemia and blood transfusion rate, a Preoperative Anemia Management Program appears to be a viable, cost-effective opportunity to improve patient outcomes and to more effectively utilize healthcare resources.

A835 Initial Experience of an Anesthesia-Based Service for Perioperative Management of CIEDs

Alec Rokee, M.D., Ph.D., Kris Natrajian, M.B., B.S., Stefan Lombarda, M.B., B.Ch., Jorg Dziersk, M.D., Gail Van Norman, M.D., Jeanne Poole, M.D., Anesthesiology and Pain Medicine, Cardiology, University of Washington, Seattle, WA. In response to the limited availability of trained personnel for the perioperative management of ICDs and pacemakers, an anesthesiology based service was developed with the support of clinical electrophysiologists and industry employed personnel. This service now manages over 90% of the programming performed on these devices in surgical patients. The greatest impediment to the program has proven to be the problems encountered with restoration of the baseline device settings.
**A836 Platelet Activation Increases During the Perioperative Period of Orthopedic Surgery**

Brandon Oberweis, M.D., Germaine Cuff, B.S.N., Andrew Rosenberg, M.D., Luis Pardo, M.D., Mitchell Marshall, M.D., Michael Mobasser, M.D., Yu Guo, M.S., David Steiger, M.D., Steven Stuchin, M.D., Jeffrey S. Berger, M.D., New York University School of Medicine, New York, NY. Platelets are a major contributor to atherothrombosis and may contribute to the heightened risk of perioperative cardiovascular events. Platelet activity was measured using whole blood impedance platelet aggregometry in 70 patients undergoing non-emergent orthopedic surgery at five perioperative time points (1 hour pre-operative, 1 hour into the operation, and postoperatively at 1-hour, 24-hours, and 48-hours. Platelet activity increased significantly during the perioperative period, and was highest in the elderly, current smokers, and those with renal insufficiency.

**A837 The Effect of Beta Blockers on the Outcomes of Patients Undergoing Cardiac Surgery: A Retrospective Study**

Ananthamurthy H. Nagabhushana, M.D., F.R.C.A, George Mckelvey, Ph.D., Ali Kafi, M.D., Brianna Bowery, Student, Hong Wang, M.D., Ph.D., Anesthesiology, Cardiothoracic Surgery, Detroit Medical Center/Wayne State University, Detroit, MI. In a retrospective study of the use of Perioperative Beta-blockers in the patients undergoing cardiac surgery, we found that the use of beta-blockers was associated with a significant decrease in the incidence of postoperative MI and cardiogenic shock, a non-statistically significant decrease in the incidence of arrhythmias, perioperative MI, pulmonary complications and an increase in the incidence of acute renal failure, infection rates and neurological complications.

**A838 Transmural Vortex Ring Formation is Attenuated in Patients With Aortic Stenosis Undergoing Aortic Valve Replacement**

Paul S. Pagel, M.D., Ph.D., Judith A. Hudetz, Ph.D., Clement J. Zablocki VA Medical Center, Milwaukee, WI. Transmural blood flow produces an intraventricular rotational body of fluid (vortex ring) that enhances the hydraulic efficiency of early left ventricular filling. We demonstrate patients with aortic valve stenosis have attenuated vortex ring formation concomitant with diastolic dysfunction.

**A839 Assessment of Local Vasodilation by Photoplethysmography and Laser Doppler Flowmetry**

Samrawit A. Goshu, B.S., Saeeda Qadri, M.D., Hina Nazar, M.D., Michael Ancuta, M.D., Tyler J. Silverman, B.A., Kirk H. Shelley, M.D., Ph.D., David G. Silverman, M.D., Anesthesiology, Yale University School of Medicine, New Haven, CT. Transdermal application of vasodilatory drugs caused similar local increases in laser Doppler and plethysmographic measures of perfusion.

**A840 Effect of Atropine, Norepinephrine and Phenylephrine on Cerebral Oxygenation and Cardiac Output During Anesthesia**

Alain F. Kalmar, M.D., Ph.D., Marieke Poterman, M.D., Eline A.q. Mooyaart, M.D., Jaap Jan Vos, M.D., Michel M.R.F. Struys, M.D., Ph.D., Thomas W.L. Scheeren, M.D., Ph.D., Department of Anesthesia, University Medical Centre Groningen, Groningen, Netherlands. Hemodynamic management is in most cases guided by blood pressure, while organs need mainly flow and oxygen. We compared the effect of phenylephrine, norepinephrine and atropine on blood pressure, cardiac output and cerebral tissue oxygenation. Both Phenylephrine and Norepinephrine caused MAP to increase sufficiently, while only Phenylephrine considerably decreased CO and SctO2. Atropine shows the most beneficial effect with a prominent combined increase in MAP, CO and SctO2.

**A841 Sevoflurane Induces Cardioprotection in Patients Undergoing Cardiac Surgery With Cardiopulmonary Bypass**

Hiroshi Sakamoto, M.D., Katsumi Harasawa, M.D., Maki Akiyama, M.D., Taku Kojima, M.D., Noriaki Kanaya, M.D., Department of Anesthesia, Cardiovascular Center Hokkaido Ohno Hospital, Sapporo, Japan, Department of Anesthesia, Sapporo Masui Clinic, Sapporo, Japan. Sevoflurane induces pharmacologic conditioning during cardiac surgery with CPB.

**A842 Effective Dose of Dobutamine for Improving Free Flap Blood Flow During Reconstrucrative Surgery of the Lower Extremitry**

Sung-Hoon Kim, M.D., Hyungsok Seo, M.D., Joon-Pio Hong, M.D., Ph.D., Jeong-Yeon Hong, M.D., Ph.D., Jai-Hyun Hwang, M.D., Ph.D., Department of Anesthesiology and Pain Medicine, Asan Medical Center, Department of Plastic and Reconstructive Surgery, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Republic of Korea. Success of free flap transfer depends on achieving flap perfusion and maintaining blood flow across the microvascular anastomosis. Infusion rate of dobutamine less than 5.0 μg/kg/min provides significant improvement of blood flow to the tissue flap while minimizing cardiovascular side effects.

**A843 Increased Prothrombotic Property is Associated With Acute Kidney Injury After Surgical Repair of Abdominal Aortic Aneurysm**

Nobuyuki Katori, M.D., Yasushi Innami, M.D., Hiroshi Morisaki, M.D., Junzo Takeda, M.D., Anesthesiology, Keio University, Tokyo, Japan, Keio University, Tokyo, Japan. Kinetics of plasma neutrophil gelatinase-associated lipocalin (NGAL), a biomarker for acute kidney injury (AKI), von Willebrand factor (VWF) and ADAMTS13 (a cleaving enzyme of VWF) was examined after abdominal aortic aneurysm surgery. Plasma NGAL was correlated with VWF/ADAMTS13 ratio significantly. Prothrombotic property could contribute to the development of AKI after abdominal aortic aneurysm surgery.

**A844 Amino Acid Infusion during Extracorporeal Circulation Decreases Incidence of Atrial Fibrillation Following Aortic Valve Replacement**

Yoshimi Inagaki, M.D., Ph.D., Kazumasa Yamasaki, M.D., Ph.D., Anesthesiology, Tottori University Hospital, Yonago, Japan. Administration of amino acid solution including arginine as a NO donor during extracorporeal circulation may reduce the incidence of postoperative atrial fibrillation in the patients undergoing aortic valve replacement.
A845 Preoperative Oral Rehydration Therapy During Gynecological Procedures Affects Metabolic and Hemodynamic Stability

Soshi Iwasaki, M.D., Ph.D., Tomohiro Chaki, M.D., Jing Zhou, M.D., Masanori Yamauchi, M.D., Ph.D., Michiaki Yamakage, M.D., Ph.D., Department of Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan. The preoperative oral rehydration solution, OS-1, stabilized intraoperative hemodynamics and prevented FFA elevation.

A846 Myocardial Oxygen Extraction and Perioperative Risk: A Useful Indicator of Morbidity?

Stephen F. Woodford, M.B., B.S., Australian School of Advanced Medicine, Woy Woy, Australia. Myocardial oxygen extraction is believed to be maximal, and mixed venous saturation should therefore be lower than distal SVC oxygen saturation. 65 patients had blood gas analysis of arterial, distal SVC and mixed venous blood prior to induction for cardiac (62) PCI or esophageal surgery. Mixed venous blood is usually better saturated than mixed systemic blood; where mixed venous blood was more desaturated, it appears to correlate with outflow tract obstruction/hypertrophy or LV failure. If mixed venous blood is more desaturated than central venous blood, it appears to predict high postoperative morbidity/mortality.

A847 Goal-Directed Fluid Optimization Based on Respiratory Variations in the Pulse Oximeter Plethysmographic Waveform During Moderate Risk Surgery

Dhilan A. Thuraisingham, M.D., Wendell Williams, M.D., Davinder Ramsingh, M.D., Khanh-Van Le, B.S., Christine K. Lee, B.S., Ceci Canales, M.P.H., Maxime Cannesson, M.D., Ph.D., Anesthesiology and Perioperative Care, UC Irvine Medical Center, Orange, CA. The abstract discusses a randomized control study involving the implementation of a protocol requiring the administration of colloid when a patient is hypovolemic according to PVI. This is an outcome study, assessing set parameters to ascertain post-operative complications and if patients who are euvoicmic as per PVI have less post-operative complications.

A848 Lung Isolation With Bronchial Blockers and Double-Lumen Endotracheal Tubes: The 6-year experience of an Academic Institution

Mary E. Arthur, M.D., Ellen Abellana, M.D., Nadine Odo, B.A., Manuel Castresana, M.D., Anesthesiology and Perioperative Medicine, Georgia Health Sciences University, Augusta, GA. The BB provides equivalent surgical exposure to left-sided DLTs during left-sided open or VATS procedures. With the improvement in technology and assistance with bronchoscopic guidance, lung isolation with BB should be a requirement during the thoracic anesthesia rotation for residents.

A849 The Relationship Between the Shape of a Peripherally Derived Pressure Volume Loop and Systemic Vascular Resistance

Douglas Colquhoun, M.B., Ch.B., Lauren K. Dunn, M.D., Ph.D., Robert H. Thiele, M.D., Department of Anesthesiology, University of Virginia, Charlottesville, VA. Support of cardiovascular system through fluid and vasoactive agents requires an understanding of current hemodynamic status. We extend previously work and show a correlation between the area contained within the peripheral pressure / volume loops generated by processing of plethysmography and radial artery pressure waveforms and systemic vascular resistance as measured by a continuous cardiac output Swan-Ganz catheter. If borne out in future studies this may allow the less invasive determination of SVR and thus the extension of targeted cardiovascular support to wider population.

A850 SVR is Inversely Proportional to Heart Rate: The Effect of Differentiating Elastance From Systemic Vascular Resistance in Pharmacotherapy and Circulatory Change

Stephen F. Woodford, M.B., B.S., Australian School of Advanced Medicine, Woy Woy, Australia. The study of human physiology using Ohm’s Law fails to account for the fact that the human circulation is pulsatile, whereas electron flow in a DC circuit is continuous. Deconstructing Ohm’s Law leads to the relationship SVR = Elastance/HR. In clinical medicine, four errors arise from failure to differentiate the systemic elastance from changes in heart rate, and this ensures the impossibility of closed loop resuscitation or making sense of shock and organ dysfunction. Clinical data was collected and graphed over 3 years to demonstrate the potential for clinical error arising from using the ratio SVR in anesthesia and critical illness.
A066 Radiographic Analysis of Femoral Nerve Block Catheter: What is the Ideal Location?

Eri (Huiling) Gi (We), M.D., Masanori Yamauchi, M.D., Ph.D., Chiharu Kikuchi, M.D., Takeshi Murouchi, M.D., Hiroshi Shimizu, M.D., Ph.D., Tomoyuki Yamakage, M.D., Ph.D., Department of Anesthesiology, Sapporo Medical University, Sapporo, Japan, Department of Anesthesiology, Obihiro Kyokai Hospital, Obihiro, Japan, Department of Orthopedic Surgery, Obihiro Kyokai Hospital, Obihiro, Japan. The catheter location for continuous femoral nerve block and the effects were clarified by fluoroscopy and CT imaging in patients undergoing lower limb surgery. We found three spread patterns of contrast medium. Better analgesia can be expected when the catheter tip is located over the inguinal ligament.

A067 Serum Free Ropivacaine Concentrations in Trauma Patients Receiving Long-Term Continuous Peripheral Nerve Catheters

Lisa Bleckner, M.D., Che Solla, M.D., Hisani Edwards, B.S.N., Bader Fileta, B.S., Robin Howard, M.A., Carlos Morales, B.S., Chester Buckenmaier, M.D., Anesthesia, Walter Reed National Military Medical Center, Chevy Chase, MD, Walter Reed National Military Medical Center, Bethesda, MD, Defense and Veterans Center for Integrative Pain Management, Rockville, MD. Free serum ropivacaine concentrations were measured during the duration of in situ peripheral nerve catheters in trauma patients. With a median duration of seven days and a median total ropivacaine dose of 519 mg per catheter day, no patient achieved serum free ropivacaine values that were near a previously identified toxic range.
A175 Two Methods for Teaching Ultrasound Upper Airway Assessment: A Randomized, Controlled Learning Assessment

Christina Boncyk, B.S., Richard E. Galgon, M.D., M.S., Brooke Anderson, M.S.N., Kristopher M. Schroeder, M.D., Anesthesia, University of Wisconsin School of Medicine and Public Health, Madison, WI. We accessed the ability of a single-session training video versus one-on-one training with a gel phantom model to improve anesthesia residents and staff members’ ability to correctly identify airway structures using ultrasound on a human volunteer. Results suggest that video and phantom training methods are equally effective learning methods for ultrasound-guided identification of airway structures, with both being superior to the control group with no additional training.

A176 Does the Position of the Esophageal Entrance Determine the Cricoid Force Necessary to Occlude the Esophageal Lumen?

M. Ramez Salem, M.D., Ahed Zeidan, M.D., Aida Saifan, M.D., Kamal Shamah, M.D., Munir Bamahdag, A.A.-C, George J. Crystal, Ph.D., Advocate Illinois Masonic Med Ctr., Chicago, IL, Procare Riaya Hospital, Al Khobar, Saudi Arabia. The position of the esophageal entrance relative to the glottis determined the cricoid force necessary to occlude the esophageal lumen in anesthetized and paralyzed normal patients. A force as small as 10 N was sufficient to occlude the lumen when the esophageal entrance was in a midline or in a right lateral position, but was inadequate when the esophageal entrance was in a left lateral position. A force of 30 N was effective in occluding the esophageal lumen in all patients regardless of position. This force should not be exceeded when cricoid pressure is used in normal patients.

A177 Implementation and Outcomes of a CPAP Initiation Program in a Large Academic Medical Center

Michael Pilla, M.D., Paul St Jacques, M.D., Audrey H. Kunze, Ed.D., Anna Ambrose, R.R.T., Roger Dmochowski, M.D., William R. Furman, M.D., Department of Anesthesiology, Center for Clinical Improvement, Quality and Patient Safety, Department of Respiratory Care, Department of Urologic Surgery, Vanderbilt University School of Medicine, Nashville, TN. A program was created and implemented to identify OSA patients who used home CPAP and who were admitted to the hospital. An automatic order set was generated that triggered an RT consult and provided these patients with their needed CPAP devices.

A178 Emergency Airway Management Educational Improvement Study

Michael Van Dusen, D.O., Antonio Hernandez, M.D., Ricardo Alvarado, M.D., Steve Venticinque, M.D., Ross Willis, Ph.D., Anesthesiology, Surgery, UTHSCSA, San Antonio, TX. Emergency airway video education for anesthesia residents participating overnight call at the STVHCS improved comfort level and knowledge in management of difficult airway situations.

A179 Can’t Intubate, Can’t Ventilate High-Fidelity Scenario: Evaluation of 27 Third Year Residents in Anesthesiology Before 3, 6 and 12 Months After a Training Session

Antoine Duwat, M.D., Vincent Hubert, M.D., Romain Deransy, M.D., Herve Dupont, M.D., Ph.D., Anesthesiology and Intensive Care, AMIENS University Hospital, Amiens, France. Twenty-seven anesthesiology residents of three French University Hospitals were assessed on a “can’t intubate, can’t ventilate” high-fidelity scenario before, three, six and 12 months after a difficult intubation alternative techniques training including lectures, workshops and high fidelity simulations. After the training, all the anesthesiology residents respected the oxygenation algorithm whereas they were 63% before the training. The CT duration and gestural quality were significantly improved after the training. No competency leakage was observed between the three, six and 12 month post-tests and the anesthesiology residents remained highly performant over at least one year after the training.

A180 A High-Resolution Manometry Study Measuring Pressures in the Upper Esophagus Generated by Cricoid Pressure

Richard Pellrud, M.D., Rebecca Ahlstrand, M.D., Ph.D., Dept. of Anesthesiology and Intensive Care, Örebro University Hospital, Örebro, Sweden. We have used high-resolution manometry to analyze pressure alterations at the level of the upper esophageal sphincter (UES) during cricoid pressure at conditions resembling a modified rapid sequence induction.

A181 Say Ah: Comparing Mallampati With and Without Phonation as a Predictor of Laryngoscopic View

Joseph Sanders, M.D., Philip Lebowitz, M.D., Louvonia Boone, M.D., Anesthesiology, Montefiore Medical Center, Bronx, NY. The the Mallampati exam is a component of the pre-operative airway assessment. It is best taken as it is used, in conjunction with thyromental distance, neck circumference and extension. In this pilot study, we have found a slightly greater correlation between Mallampati with phonation compare to the Mallampati without phonation and the Cormack-Lehane score. While this difference was not statistically significant, this trend warrants further investigation. A review of the literature and analysis of the results from the study indicate that a study of ~3000 patients would provide the statistical power needed for a definitive declaration of difference between the two techniques. (We look forward to the opportunity to conduct this study.)

A182 A Survey of Modified Rapid Sequence Induction and Intubation in Canadian Academic Centers

Jesse M. Ehrenfeld, M.D., M.P.H., Justin Chen, M.D., Eva Cassidy, B.S., Warren Sandberg, M.D., Ph.D., Vanderbilt University, Nashville, TN, Massachusetts General Hospital, Boston, MA. We report results of a national survey of Canadian training programs regarding the use and definition of a modified rapid sequence induction.
PD08-2 Equipment, Monitoring and Engineering Technology: Analgesia and Anesthetic Depth

A183 Influence of Neuromuscular Blockade and Reversal on BIS and Neurosense Indexes

Basile Christ, M.D., Cédric Baumann, Ph.D., Thomas Fuchs-Buder, M.D., Claude Meistelman, M.D., Denis Schmartz, M.D., Anesthésie-Réanimation, CHU de Nancy, Vandoeuvre-Les-Nancy, France, Service d'Epidémiologie et Evaluation Clinique, CHU de Nancy, Vandoeuvre-Les-Nancy, France. During stable propofol and remifentanil anesthesia, curarisation by rocuronium decreases both BIS and NeuroSense values. Reversal of curarisation by sugammadex does not influence neither BIS nor NeuroSense values.

A184 A New Anesthesia Multimodal Indicator Design: Reliability in Detection of Wakefulness and Burst Suppression Compared to BIS

Denis Jordan, Ph.D., Gerhard Schneider, M.D., Adem Omerovic, M.Sc., Matthias Kreuzer, M.Sc., Sebastian Berger, M.Sc., European Multicenter EEG/AEP Anesthesia Monitoring Study Group, Eberhard F. Kochs, M.D., Anesthesiology, Klinikum rechts der Isar, Technische Universität München, Munich, Germany, Anesthesiology, Witten/Herdecke University, Helios Clinic Wuppertal, Wuppertal, Germany. In contrast to BIS, a new multimodal anesthesia indicator integrating EEG and standard monitoring parameters reliably differentiates between awake and deep anesthesia (burst suppression).

A185 The Use of a Closed-loop Controller Improves Adequate Anesthesia During Elective Surgery: A Randomized Controlled Trial

Ngui Liu, Sr., M.D., Ph.D., Medhi Hafiani, M.D., Morgan Le Guen, M.D., Nathalie Boichut, M.D., Daniel Anglade, M.D., Ph.D., Flavien Kaboré, M.D., Marc Fischer, M.D., Hôpital Foch, Suresnes, France, Le Kremlin-Bicêtre, Bicêtre, France, CHU Besançon, Besançon, France, CHU Grenoble, Grenoble, France, CHU pediatric Charles de Gaulle, Ouagadougou, Burkina Faso. We reported the performance and the propofol and remifentanil consumptions of a closed-loop controller.

A186 Comparison of Fluo2 of Nasal Cannulas, Masks, and Mouth Bite Block Using in Sedation Patients During Esophagogastroduodenoscopy: A Bench Study

Chien-Kun Ting, M.D., Ph.D., Joseph A. Orr, Ph.D., Lu Yu, M.S., Dwayne R. Westenskow, Ph.D., Department of Anesthesiology and Biomechanics, University of Utah, Salt Lake City, UT, China Medical University, Shenyang, China. We performed a bench evaluation of various devices designed to deliver oxygen during sedation for GI procedures.

A187 Evaluation of Analgesia During General Anesthesia: Pupillometry Versus Heart Rate Rate Variability

David Charier, M.D., Daniel Zantour, Student, Vincent Pichot, Ph.D., Jean-Claude Barthelyamy, M.D., Ph.D., Serge Molliex, M.D., Ph.D., Anesthesiology, University Hospital, Saint-Etienne, France, Clinical Physiology and Exercise Department, University Hospital, Saint-Etienne, France. We conducted a randomized study in five groups of 16 patients to compare variations in pupil diameter and in parasympathetic component of heart rate variability (HFnu) at constant depth of hypnosis (Bispectral Index 50) and five different remifentanil brain concentrations (0, 1, 2, 3 or 4 ng/mL). The pupil diameter increases significantly during painful stimulation in patients with inadequate analgesia. In the opposite, HFnu does not vary significantly in response to a noxious stimulus. Pupillometry seems more relevant than HFnu to assess analgesia during general anesthesia.

A188 Non-linear Multi-parameter Approach for Evaluation of Nociception Level During General Anesthesia

Ruth Edry, M.D., Nir Ben-Israel, M.Sc., Galit Zuckerman, M.Sc., Mark Kliger, Ph.D., Yeshayahu Katz, M.D., Ph.D., Anesthesiology, Rambam Healthcare Campus, and Technion, Israel Institute of Technology, Haifa, Israel, Medasense Biometrics LTD, Ofakim, Israel. A non-linear multi-parameter approach for the evaluation of a novel indicator for nociception level (NoL) during general anesthesia is proposed. Validation shows that the NoL outperformed individual physiological parameters (commonly used as indirect measurement for nociception level) and their linear combinations in detecting response to a noxious stimulus.

A189 Can Pupillary Reflex Dilatation Predict the Response to Skin Incision?

Gaëlle Bourouche, M.D., Charles Honoré, M.D., Valérie Billard, M.D., Institut Gustave Roussy, Villejuif, France. In this study, the place of the PRD to predict the response to skin incision in patient under general anesthesia is evaluated. It seems to be relevant monitoring, better than Cet remi, to predict the movement, hemodynamic or laryngeal response.

A190 A New Anesthesia Multimodal Indicator Design: Detection of Loss and Return of Consciousness Compared to BIS

Eberhard F. Kochs, M.D., Denis Jordan, Ph.D., Matthias Kreuzer, M.Sc., Adem Omerovic, M.Sc., European Multicenter EEG/AEP Anesthesia Monitoring Study Group, Gerhard Schneider, M.D., Anesthesiology, Klinikum rechts der Isar, Technische Universität München, Munich, Germany, Anesthesiology, Witten/Herdecke University, Helios Clinic Wuppertal, Wuppertal, Germany. A new anesthesia multimodal indicator including EEG and standard monitoring parameters outperforms the BIS ability to indicate loss and return of consciousness.

PD07-1 Drug Disposition

A191 Anesthetic Depth Monitoring and Engineering Technology: Analgesia and Anesthetic Depth

A192 Comparison of Fluorescence of Intravenous Catheters, Nasal Cannulas, and Masks Using in Sedation Patients During Esophagogastroduodenoscopy: A Bench Study

Chien-Kun Ting, M.D., Ph.D., Joseph A. Orr, Ph.D., Lu Yu, M.S., Dwayne R. Westenskow, Ph.D., Department of Anesthesiology and Biomechanics, University of Utah, Salt Lake City, UT, China Medical University, Shenyang, China. We performed a bench evaluation of various devices designed to deliver oxygen during sedation for GI procedures.
**A191 In-Vivo Safety Studies of a 4.5% Isoflurane/Intralipid Nano-Emulsion in Rats**

Kyota Fukazawa, M.D., Antonello Pileggi, M.D., Ph.D., Christopher Fraker, Ph.D., Camillo Ricordi, M.D., Ernesto A. Presto, Jr, M.D., M.P.H., Anesthesiology, Diabetes Research Institute, Department of Biomedical Engineering, Department of Anesthesiology, University of Miami, Miami, FL. Our isoﬂurane/intralipid nano-emulsion has the capacity to induce safe and reversible sedation and general anesthesia in rats.

**A192 Vaporizer-Fresh Gas Flow Sequences for Sevoflurane in O2/air**

Jan F. Hendrickx, M.D., Ph.D., Pieter Mertens, M.D., Sofie De Cooman, M.D., Tom Van Zundert, M.D., Andre M. De Wolf, M.D., Anesthesiology, OLV Hospital, Aalst, Belgium, Anesthesiology, Sint-Jan Hospital, Brussels, Belgium, Anesthesiology, Northwestern University, Chicago, IL. Simple vaporizer-FGF sequences can be derived that ensure end-expired sevoflurane concentrations remain between clinically acceptable limits. The performance characteristics are excellent. The vaporizer settings can be adjusted proportionally according to the target F2, according to our limited data so far. The same methodology can be used to derive schedules for any model of anesthesia machine (and within the limits of the population from which it has been derived).

Preliminary testing (personal observation) indicates that the schedules may be more widely applicable with different machines.

**A193 Effects of Intraoperative Glucose and Amino Acid Administration on Energy Requirement of Patients During General Anesthesia**

Tomoko Takahashi, M.D., Daizoh Satoh, M.D., Ph.D., Eiko Ohnishi, M.D., Noriko Konodoh, M.D., Shin Kurosawa, M.D., Ph.D., Anesthesiology, Anesthesiology and Perioperative Medicine, Tohoku University Postgraduate Medical School, Tohoku University Hospital, Sendai, Japan. The appropriate doses of amino acids and glucose during general anesthesia are not known. Patients who underwent upper-abdominal surgery were randomly assigned to receive intravenous fluid with (GA) or without(C) glucose and amino acids. In the GA group, the total intravenously infused caloric content during anesthesia was the same as the energy expenditure. The intraoperative urinary nitrogen excretion of the GA group was the same level as that of the C group. In the GA group, the body temperature increased before surgery to after surgery; however, no increase was observed in the C group.

**A194 Early Reversal of Rocuronium-induced Profound Neuromuscular Block by Sugammadex in Pediatric Patients**

Kazumasa Tazawa, M.D., Chihiro Igarashi, M.D., Noriko Miyazawa, M.D., Ph.D., Shinichi Yamamoto, M.D., Ph.D., Takahiro Suzuki, M.D., Ph.D., Anesthesiology, Tokyo Metropolitan Children’s Medical Center, Anesthesiology, Nihon University School of Medicine, Japan. The aim of this study was to clarify the reversibility of sugammadex 5 minutes after an intubating dose of rocuronium in pediatric patients. All patients initially received rocuronium 0.6 mg kg-1 and tracheal intubation was performed after maximum neuromuscular block had been attained. Five minutes after rocuronium administration, a single bolus dose of sugammadex 4 or 8 mg kg-1 was randomly administered to facilitate the recovery to a TOF ratio of 0.9. In pediatric patients, sugammadex ensures to promptly antagonize profound neuromuscular block 5 minutes after an intubating dose of 0.6 mg/kg rocuronium. At which emergent conditions, sugammadex 8 mg kg-1 is recommended to rapidly restore neuromuscular function.

**A195 Remifentanil TCI Alone for Sedation in Spontaneously Breathing Patients: Required Targets and Safety Data**

Frederique S. Servin, M.D., Romain Roubineau, Student, Jean-Pol Depoix, M.D., Philippe Montravers, M.D., Valérie Billard, M.D., Anesthesiology and Critical Care, APHP, Paris, France, Institut Gustave Roussy, Villejuif, France. Remifentanil TCI was successfully used in 98 patients as sole sedative in a variety of procedures including GE. Signiﬁcant respiratory depression was observed in 13% of the GE patients, mainly following propofol 10 mg as rescue medication in agitated patients.

**A196 Pharmacokinetics of Propofol in Pigs – Development of a New Pharmacokinetic Model**


In this study, a three-compartment pharmacokinetic model was developed for propofol in pigs.

**A197 Using Fuzzy Logic for Interaction Analysis of Sevoflurane and Remifentanil**

Erik W. Jensen, Ph.D., Nadine Tupaiya, M.Sc., Michel M.rf. Struys, M.D., Ph.D., Hugo Vereecke, M.D., Ph.D., Aircraft Medical (Barcelona) SL, Barcelona, Spain, Department of Anesthesia, University Medical Center and University of Groningen, Groningen, Netherlands. The Anifs (Adaptive Neuro-Fuzzy Interference System) model was used to analyze the synergistic interactions of sevoflurane and remifentanil in forty patients. Surface plots and pk value calculations prove the ability of the model to predict successfully the interactions.

**A198 The Inhibition of Cerebral ABC-Type Efflux Transport by Cyclosporine Does Not Alter the Intracranial Signal of C11-Marked Morphine in a PET-Imaging Study in Human Volunteers**

Konrad Meissner, M.D., Jonathan McConathy, M.D., Ph.D., Jinda Fan, Ph.D., Will Tu, Ph.D., Christine E. Goepfert, M.D., Jane Blood, R.N., Karen A. Frey, M.S., Robert H. Mach, Ph.D., Evan D. Kharasch, M.D., Ph.D., Department of Anesthesiology, Universitätsmedizin Greifswald, Greifswald, Germany, Mallinckrodt Institute of Radiology, Department of Anesthesiology, Washington University, St. Louis, St. Louis, MO. ABC-type (ATP-binding cassette) efflux transporters may influence clinical opioid effects. PET imaging of cerebral [11C]–mediated transport inhibition did not show variations due to cyclosporine (CsA)-mediated transport inhibition in humans.
A199 Value of Examination Under Fluoroscopy for the Assessment of Sacroiliac Joint Dysfunction
Sanjay Sharma, M.D., Jeffrey T. Baker, M.D., Patrick J. Healy, M.D., Osman H. Gündüz, M.D., Liheng Shi, Ph.D., Jaimie A. Clodfelter, D.O., Jinan Liu, M.S., Anesthesiology, Southeast Louisiana Veterans Health Care System, PM&R, Southeast Louisiana Veterans Health Care System, Research (WOC), Southeast Louisiana Veterans Health Care System, Fellow, Pain Medicine, Southeast Louisiana Veterans Health Care System, New Orleans, LA. Clinical diagnosis of sacroiliac joint dysfunction involves provocative physical examinations which are limited in reliability. We have anecdotal evidence that examination under a fluoroscope is fairly accurate in addition to being non-provocative. We performed a preliminary observational study to assess the reliability of this examination.

A200 The Effect of Outpatient Ketamine Infusions on Patient Hemodynamics, Sedation and Level of Pain
Genaro Gutierrez, M.D., May L. Chin, M.D., Elvis Rema, M.D., Richard Amdur, Ph.D., Alexander Matz, B.S., Anesthesiology, The George Washington University, Washington, D.C. Consecutive multi-day outpatient ketamine infusions have been shown to reduce pain in patients with refractory neuropathic pain and complex regional pain syndromes. We examined the safety profile of outpatient ketamine infusions with respect to hemodynamic changes, respiratory rate, oxygenation and level of sedation over a wide range of ketamine doses. After review of 46 patients undergoing three-day outpatient ketamine infusion. We found significant improvement of pain scores and little deviation from hemodynamic and respiratory baseline in the majority of our patients. Generally patients were sedated but they were easily arousable and returned to pre-infusion baseline sedation level upon discharge.

A201 Determination of Optimal Volume for Cervical Interlaminar Epidural Injections According to Targeting Spinal Level
Sang Eun Lee, Sr., M.D., Kyung Ream Han, M.D., Chan Kim, M.D., Park Jae Hong, M.D., In Kyoung Yi, M.D., Yi Hwa Choi, M.D., Han Bum Cho, M.D., Anesthesiology and Pain Medicine, Haeundae Paik Hospital, Busan, Republic of Korea, Kichan Pain Clinic, Seoul, Republic of Korea, Ajou University Hospital, Suwon, Republic of Korea. The volume of injectate in CIEI significantly influences the longitudinal spread of cervical epidural space. A volume of 2.5 mL would not be enough to distribute the lower cervical spine. The volume of 5 mL and 10 mL could provide sufficient dispersion in the lower cervical spine as well as upper cervical spine. However, we consider that it is more appropriate to determine the minimum volume to reach to a target segment of vertebra. Over 5 mL of volume could produce sensory discomfort, such as injection pain in some patients. In conclusion, 5 mL of volume would be optimal to distribute the epidural medication in the degenerative cervical diseases or headache and facial pain.

A202 Correlation Between Concordant Pressure Paresthesia During Interlaminar Lumbar Epidural Steroid Injections and Pain Relief
Kenneth D. Candido, M.D., Nebojsa Nick Knezevic, M.D., Ph.D., Maunak V. Rana, M.D., Vinaya Puppala, M.D., Andrew Germanovich, D.O., Ruben Sauer, M.D., Anesthesiology, Advocate Illinois Masonic Medical Center, Chicago, IL. In this prospective randomized study, we tested the hypothesis that a pressure paresthesia occurring during the lumbar epidural steroid injections (LESI) in the same distribution of the radicular pain could be used as an indicator of proper achievement of medication target.

A203 Veterans Integrated Pain Evaluation Research (VIPER): Post-amputation Pain Phenotypes in Injured Military Service Personnel
Thomas Buchheit, M.D., Thomas VandeVen, M.D., Ph.D., Mary McAnuff, R.N., Hung-Lun John Hsia, M.D., Chester Buckenmaier, M.D., Andrew Shaw, M.D., F.R.C.A., Duke University, Durham, NC, Walter Reed National Military Medical Center, Bethesda, MD. We present an analysis of the amputation pain phenotypes in a cohort of injured military service members.

A204 Long Term Follow Up of Peripheral Nerve Stimulation (PNS) for Refractory Chronic Headache: A Retrospective Review of Efficacy and Safety of Peripheral Nerve Stimulation
Billy K. Huh, M.D., Ph.D., Pyung B. Lee, M.D., Ph.D., Nam-Kha Pham, M.D., Anesthesiology, Duke University Medical Center, Durham, NC, Anesthesiology, Seoul National University, Seoul, Republic of Korea. Peripheral nerve stimulation is a safe and effective modality in the management of otherwise treatment-refractory disabling headaches. Although the procedure is minimally invasive, the complication rate is relatively high; revisions may be commonly required. Safety and efficacy results from large prospective, randomized, sham-controlled studies are warranted.

A205 Change of the Affected Skin Temperature in the Sub-acute Stage Predicts the Pain Intensity and Disability in Patients With Post-herpetic Neuralgia
Akifumi Kanai, Sr., M.D., Ph.D., Taro Horie, M.D., Hirotsubu Okamoto, M.D., Ph.D., Anesthesiology, Kitasato University School of Medicine, Sagamihara, Japan. Our findings suggest that greater decrease of the affected skin temperature, but not greater increase of current perception threshold, compared with the contralateral intact skin in the sub-acute stage predicts the pain intensity and disability in patients with post-herpetic neuralgia.

A206 The Relationship Between Complementary and Alternative Medicine and Major Life in Adults With Chronic Pain
Michelle A. Fortier, Ph.D., Shu-Ming Wang, M.D., David Cheng, B.S., Danielle Perret, M.D., Justin Hata, M.D., Zeev Kain, M.D., M.B.A., University of California, Irvine, Orange, CA. Chronic pain is highly prevalent, with national estimates indicating that up to 15% of adults experience pain lasting more than three months. Due to the complexity of chronic pain treatment, the use of complementary and alternative medicine (CAM) has increased. Patient factors that impact health behaviors, including major life events, may influence the decision to use CAM therapies to treat chronic pain. Accordingly, the goal of this project was to examine the impact of major life events on the use of CAM among adult patients with chronic pain conditions.
A207 Effect of Heated Humidified Ventilator Circuit on the Bronchial Mucus Transport

Hyungseok Seo, M.D., Asan Medical Center, Seoul, Republic of Korea. Heated humidifier is effective for maintaining mucociliary clearance in general inhalational anesthesia, compared with the conventional ventilator circuit.

A208 Effects of Hyperglycemia With or Without Aerosolized Insulin Treatment on Inflammatory Responses in Experimental ARDS Induced by Lung Lavage

Wei Fan, M.D., Koichi Nakazawa, M.D., Ph.D., Shinya Abe, M.D., Ph.D., Miori Inoue, M.D., Masanobu Kitagawa, M.D., Ph.D., Noriyuki Nagashara, M.D., Ph.D., Koshi Makita, M.D., Ph.D., Department of Anesthesiology & Critical Care Medicine, Department of Pathology, Tokyo Medical & Dental University, Department of Environmental Medicine, Nippon Medical School, Tokyo, Japan. The present study suggests that the aerosolized insulin may alleviate that hyperglycemia induced pulmonary inflammatory responses in acute lung injury.

A209 Intrinsic PEEP in Comparison to Static PEEP Results in More CO2 Elimination in a Porcine Model of ARDS

Marcin Karcz, M.D., David Schwaiberger, M.D., Anake Pomprapa, M.Sc., Peter Papadakos, M.D., Steffen Leonhardt, M.D., Ph.D., Burkhard Lachmann, M.D., Ph.D., Department of Anesthesiology, Surgery and Neurosurgery, University of Rochester, Rochester, NY, Department of Anesthesiology and Intensive Care Medicine, Campus Virchow Klinikum, Charité Berlin, Berlin, Germany, Philips Chair for Medical Information Technology, Helmholtz-Institute for Biomedical Engineering, RWTH Aachen University, Aachen, Germany. Hypercapnia is common in patients with ARDS and often tolerated to enable lung protective ventilation. This may lead to significant respiratory acidosis requiring escalation in ventilation or the use of extracorporeal lung assist devices. We have shown, in a porcine model of ARDS, that a greater decrease in PaCO₂ was achieved using intrinsic instead of static PEEP while maintaining permissive hypercapnia.

A210 WNT1 Inducible Signaling Pathway Protein 1 Contributes Ventilator-induced Lung Injury in Mice

Hui H. Li, Ph.D., Quan Li, M.D., Ph.D., George D. Leikauf, Ph.D., Timothy R. Billiar, M.D., Bruce R. Pitt, Ph.D., Li-Ming Zhang, M.D., Anesthesiology, Environmental and Occupational Health, University of Pittsburgh School of Medicine and University of Pittsburgh Medical Center, Pittsburgh, PA, Anesthesiology, Shanghai 10th People’s Hospital, Tongji. WISP1 may act as an endogenous danger signaling molecule that contributes to VILI.

A211 Use of the RTX Hayek Respirator in the PICU

Omar Alibrahim, M.D., Christopher Heard, M.D., Anesthesia and Pediatrics, Women & Children Hospital of Buffalo, Buffalo, NY. A single-center experience using the RTX Hayek Respirator in patients with respiratory distress and/or respiratory failure since August 2011.
A216  Volatile Anesthetics Reduce Information Content of Amygdalo-Hippocampal Interactions, Thus Mediating Amnesia? Results From Pilot Experiments

Matthias Kreuzer, M.Sc., Stefan Kratzer, M.D., Stephanie Polta, M.Sc., Eberhard F. Kochs, M.D., Thomas Fenzl, Ph.D., Anesthesiology, Technische Universität München, Psychiatry, Max Planck Institute, Munich, Germany, Pharmacology, Universität Innsbruck, Innsbruck, Austria. Sevoflurane concentration dependently reduces shared information in amygdalo-hippocampal interactions. These findings may represent an effect that contributes to the amnestic effect of anesthesia.

A217  Effects of Propofol and Remifentanil on Cortical Integration of Sensory Stimuli

Gisela Untersehger, M.D., Denis Jordan, Ph.D., Eberhard F. Kochs, M.D., Gerhard Schneider, M.D., Department of Anesthesiology, Helios Clinic Wuppertal, Wuppertal, Germany, Department of Anesthesiology, Klinikum Rechts der Isar, Munich, Germany. Analysis of effective connectivity based on symbolic transfer entropy indicates different effects of propofol and remifentanil during auditory, painful visceral and somatosensory stimulation on cortical information transfer.

A218  Characterization of the Functional Topology of Cortical Activity During Nitrous Oxide Inhalation

David T. Liley, M.D., Ph.D., Levin Kuhlmann, Ph.D., Brett Foster, Ph.D., Brain and Psychological Sciences Research Centre, Swinburne University of Technology, Hawthorn, Australia, Department of Neurology & Neurological Sciences, Stanford University, Palo Alto, CA. Nitrous oxide is generally thought to induce a number of changes in the dynamical architecture of the resting electroencephalogram that are not seen with the action of many other inductive general anesthetic agents. Here we show, using recently developed graph theoretic methods, applied to a cohort of healthy male volunteers, that nitrous oxide, like propofol, attenuates activity in parietal level brain networks. Such results support recent speculations regarding unitary neurobiological mechanisms underpinning hypnosis and sedation.

A219  The Conventional Assumptions of Blood-oxygen-level-dependent (BOLD) Analysis of fMRI Images Are Not Altered by Propofol: Evidence From Three Human Subject Study Designs

Kane O. Pryor, M.D., Meghana Mehta, M.Eng., Anne S. Blackstock-Bernstein, B.A., Daniel Feiler, B.A., Robert A. Veselis, M.D., James C. Root, Ph.D., Weill Cornell Medical College, Memorial Sloan-Kettering Cancer Center, New York, NY. University of Rochester Medical College, Rochester, NY. fMRI analysis of propofol's effects on neural networks utilizes dynamics in the blood-oxygen-level-dependent (BOLD) signal, but it has not been demonstrated that propofol does not have effects on BOLD unrelated to neural activation. Here we present three analysis techniques in three independent human subject fMRI studies of propofol, with analysis focused on automated activation of primary sensory cortex. We found that sedative concentrations of propofol do not significantly alter the underlying assumptions used in conventional BOLD analysis, and suggest that future studies can proceed with conventional statistical parametric mapping methods.

A220  Correlation of EEG and fMRI Connectivity Demonstrates Impaired Cortical Top-Down Processing During Propofol-induced Unconsciousness

Denis Jordan, Ph.D., Rüdiger Ilg, M.D., Gerhard Schneider, M.D., Research Group on Brain Mechanisms of Consciousness and Anesthesia, Eberhard F. Kochs, M.D., Anesthesiology, Neurology, Klinikum rechts der Isar, Technische Universität München, Munich, Germany, Witten/Herdecke University, Helios Clinic Wuppertal, Wuppertal, Germany. For the first time, during propofol-induced unconsciousness a correlation between information flow in EEG and functional connectivity (FC) in fMRI was investigated in the same subjects. From unconsciousness to consciousness a decrease of frontal to posterior feedback in EEG correlated with a decreased FC in frontoparietal and an increased FC in sensory networks.

A221  Exploration of the Functional Connectivity Differences Between Pain and Resting States

James W. Ibinson, M.D., Ph.D., Shiv Dua, B.S., Fernando E. Boada, Ph.D., Gerald F. Gehart, Ph.D., Department of Anesthesiology, Department of Radiology, University of Pittsburgh, Pittsburgh, PA. Direct comparisons of functional connectivity during pain processing and at rest in normal volunteers have not been adequately explored, but may provide some insight in this controversy. This study suggests that the “connectivity” of two key pain areas, the ACC and the insula, increases as a result of painful stimulation in normal subjects, although this finding is still preliminary and requires further investigation into its repeatability and dependence on subject factors.

A222  Loss of Consciousness Induced by Anesthetics Is Accompanied by Loss of Dynamical Criticality in the Brain

Alexander Proekt, M.D., Ph.D., Guillermo Solovey, Ph.D., Kane Pryor, M.D., Guillermo Cecchi, Ph.D., Anesthesiology, Weill Cornell Medical College, Columbia University, The Rockefeller University, New York, NY. Using autoregressive models fit to electrocorticography signals collected from humans and non-human primates we show that dynamical criticality, which characterizes the activity of the awake brain, is reduced upon induction of anesthesia with ketamine and propofol in parallel with decrease in behavioral responsiveness.

PD04-2  CLINICAL CIRCULATION: BLOOD/COAGULATION

CA
3:45 p.m.
Room 103B

A223  MDCO-2010 Does Not Affect Thrombelastography (TEG): An In Vitro Study

Jeffrey Horswell, M.D., Tina Worley, R.N., Morley Herbert, Ph.D., Cardiopulmonary Research Science and Technology Institute, Medical City Dallas Hospital, Dallas, TX. MDCO-2010 is a novel serine protease inhibitor being developed as an antifibrinolytic for use during cardiac surgery to reduce blood loss. Contrary to most whole blood coagulation testing which is altered in the presence of MDCO-2010, TEG values are not affected by clinically relevant concentrations of MDCO-2010 mixed in vitro with blood from normal volunteers and those undergoing cardiac surgery.
A224 Changes to Coagulation Profile Induced by Salvaged Blood as Measured by Thromboelastography

Gerhardt Konig, M.D., Jonathan H. Waters, M.D., Anesthesiology, University of Pittsburgh Medical Center, Pittsburgh, PA, Anesthesiology, Magee-Womens Hospital of the University of Pittsburgh Medical Center, Pittsburgh, PA. The effect of washed versus unwashed salvaged blood on patient coagulation profiles was measured by thromboelastography (TEG). The addition of salvaged blood, in particular unwashed salvaged blood, resulted in significantly decreased clot strength as well as decreased time to initial clot formation. We hypothesize that this is due to the transfusion of a combination of procoagulopathic and anticoagulopathic elements known to be in salvaged blood. Tissue factor and activated coagulation products are likely responsible for the increased rate of clot formation, and fibrin degradation products which inhibit platelet aggregation are likely responsible for the decreased clot strength.

A225 Clinical Predictors of Postoperative Hemoglobin Drift

Michael C. Grant, M.D., James A. Rothschild, M.D., Steven M. Frank, M.D., The Johns Hopkins Medical Institutions, Baltimore, MD. In the postoperative period, hemoglobin concentration often decreases, a phenomenon which has been termed hemoglobin drift. Two of the clinical variables associated with this downward drift were determined to be increased body mass and positive fluid balance, suggesting that hemodilution plays a significant role.

A226 Decreased Erythrocyte Deformability After Massive Transfusion

Steven M. Frank, M.D., Bagra Abazyan, M.D., Masahiro Ono, M.D., Charles W. Hogue, M.D., Daniel E. Berkowitz, M.D., Paul M. Ness, M.D., Viachaslau M. Barodka, M.D., Department of Anesthesiology/Critical Care Medicine, Pathology (Transfusion Medicine), The Johns Hopkins Medical Institutions, Baltimore, MD. Red blood cell membrane deformability decreases during storage but it is unclear whether this detrimental change is reversed after transfusion. Our findings suggest that red cell storage duration <3 weeks is associated with a decrease in cell membrane deformability, and that these changes are irreversible, since deformability did not improve over a 3–day period following transfusion.

A227 Use of RiaSTAP® to Increase Fibrinogen Levels During Aortic Reconstruction Surgery

Brian Barrett, M.D., Frederick W. Lombard, M.B., Ch.B., G. Chad Hughes, M.D., Jeffrey Gaca, M.D., Ian J. Welsby, M.D., Anesthesiology, Duke University Medical Center, Durham, NC. Fibrinogen consumption is exaggerated in aortic surgery and is usually replaced with plasma and cryoprecipitate. This pilot study looked at using fibrinogen concentrate after deep hypothermic circulatory arrest (DHCA) for aortic reconstruction surgery. It has been shown that fibrinogen concentrate administration can predictably raise the fibrinogen level in the dynamic setting of aortic surgery with DHCA.

A228 Multivariable Regression Analysis to Predict Postoperative Chest Tube Drainage (CTD)

Mohsin Chowdhury, B.S., Galina Leyvi, M.D., Irene Ostrovsky, B.S., Linda J. Shore-Lesserson, M.D., Albert Einstein College of Medicine, Anesthesiology, Montefiore Medical Center, Bronx, NY. Clopidogrel is widely used to treat patients at risk for vascular ischemic events. Monitoring the effectiveness of platelet inhibition by clopidogrel is important for patients with coronary artery disease (CAD). Monitoring this effect is possible with the Thromboelastograph with Platelet Mapping (TEG-PM). We studied the impact of monitoring clopidogrel therapy in patients undergoing cardiac surgeries.

A229 Preoperative Anemia Screening for Cardiac Surgery: A Missed Opportunity?

Nicole R. Guinn, M.D., William White, Ph.D., Betsy Hale, B.S., Tj Gan, M.D., Steven Hill, M.D., Anesthesiology, Duke University, Durham, NC. Our study investigates the percentage of patients at our hospital undergoing CABG surgery that have had their hemoglobin tested 14–45 days prior to surgery, in accordance with the Joint Commission’s blood management performance measure, and the percentage of patients who are anemic prior to surgery.

A230 Hemostasis Registry of Patients in Cardiac Surgery (HEROES-CS): Perioperative Risk Factors for Red Blood Cell Transfusion Among Cardiac Surgery Patients

Gerhardus J. Kuiper, M.D., Leena S. Emam, B.Sc., Henricus M. Theunissen, M.Sc., Marcus D. Lancé, M.D., Marco A. Marcus, M.D., Ph.D., Department of Anesthesiology and Pain Treatment, Maastricht University Medical Center, Maastricht, Netherlands. Predictors for perioperative red blood cell transfusion were identified using the HEROES-CS database (a single center three-month follow-up study of cardiac patients undergoing surgery). Besides female gender, emergency surgery, combined surgery, on-pump procedure, and operations over three hours as patient and procedure related risk factors, treating preoperative anemia might reduce perioperative red blood transfusion.
A854 **Efficacy and Safety of Mixtures of Lidocaine and Ropivacaine for Scalp Block in Patients Undergoing Awake Craniotomy**

Tomohiro Chaki, M.D., Shigekazu Sugino, M.D., Yoshiya Ishioka, M.D., Miki Yamashita-Kaneuchi, Pharm.D, Michiaki Yamagake, M.D., Ph.D., Department of Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan, Department of Clinical Pharmaceutics, Hokkaido Pharmaceutical University School of Pharmacy, Otaru, Japan. We examined the efficacy and safety of mixtures of lidocaine and ropivacaine for scalp block. The results suggested that a scalp block using a mixture of lidocaine and ropivacaine provides safe and effective anesthetic management in patients who undergo awake craniotomy.

A855 **Is Numbness Around Surgical Wound Associated With Acute Pain After Total Knee Replacement (TKR)?**

Asokumar Buvanendran, M.D., Mario Moric, M.S., Lia Vilardo, R.N., Sandra C. Toleikis, M.S., Jeffrey S. Kroin, Ph.D., Kenneth J. Tuman, M.D., Anesthesiology, Rush Medical College, Chicago, IL, Rush University Medical Center, Chicago, IL. After total knee replacement, there was a positive correlation between increased area of numbness around the surgical wound and pain on postop day 1.

A856 **The Effect of Oxygen Administration on Regional Cerebral Oxygen Saturation (Rso2) in the Non-Block Side After Stellate Ganglion Block**

Eun Mi Kim, M.D., Ph.D., Kyung Bong Yoon, M.D., Department of Anesthesiology and Pain Medicine, Yonsei University College of Medicine, Seoul, Republic of Korea. Cerebral desaturation on the non-block side during SGB was recovered at five minutes after starting oxygen administration.

A857 **Involvement of HTR3C Gene Polymorphisms in Postoperative Pain in Lower Abdominal Surgery**

Hanako Hayashi, M.D., Shigekazu Sugino, M.D., Tomo Hayase, M.D., Yuko Nawa, M.D., Ph.D., Michiaki Yamagake, M.D., Ph.D., Department of Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan. We examined two SNPs of the HTR3C gene, which encodes a part of 5-HT, receptors. These two SNPs (rs6807362 and rs6766410) were associated with postsurgical pain and variations in the two SNPs increase the intensity of pain.

A858 **Intravenous Magnesium Sulfate Is Ineffective at Alleviating Propofol Injection Pain: A Randomized, Double-Blind, Placebo-Controlled Trial**

Richard E. Galgon, M.D., M.S., Jake Heier, B.S., Jeremy Groth, B.S., Peter Strube, C.R.N.A., Kristopher M. Schroeder, M.D., Department of Anesthesiology, University of Wisconsin School of Medicine and Public Health, Madison, WI. Patients frequently report pain with propofol injection. We hypothesized that I.V. lidocaine plus magnesium pretreatment would additively reduce this pain. After IRB approval and informed consent, we performed a four-arm, prospective, double-blind, randomized, placebo-controlled trial, involving 158 subjects. We found no benefit for I.V. magnesium pretreatment, alone or in combination with IV lidocaine, compared to I.V. lidocaine alone for the relief of propofol injection pain. I.V. magnesium pretreatment also resulted in more severe pain than I.V. lidocaine alone or I.V. lidocaine plus magnesium pretreatment.
A859 Fast-Tracking Total Knee Arthroplasty: The Impact of Femoral Nerve Block

Chunyuan Qiu, M.D., Vu Nguyen, M.D., Jessica Qiu, Student, Celine Jo, Student, Renato Errata, M.D., Diana LaPlace, M.D., Narendra Trivedi, M.D., David Rodriguez, Student, Kimberley Saldana, Student, John Morkos, Student, Anesthesiology, Kaiser Permanente Baldwin Park Medical Center, Huntington Beach, CA, Anesthesiology Technology, Kaiser Permanente School of Anesthesia Technology, Pasadena, CA. Individual variations in surgeon practice during the postoperative recovery period following TKA may have a greater impact on LHS than the presence of FNB or surgeon’s operating time.

A860 Epidural vs. General Anesthesia for Laparo-Endoscopic Single Site (LESS) Cholecystectomy

Enrico M. Camporesi, M.D., Rachel A. Karhouski, Ph.D., Sharona Ross, M.D., Alexander Rosemurgy, M.D., Devanand Mangar, M.D., Surgery, University of South Florida, Florida Gulf to Bay Anesthesiology, Tampa General Medical Group, Tampa General Hospital, Tampa, FL. Laparo Endoscopic Single Site (LESS) surgery is an advance in minimally invasive surgery as it offers improved cosmesis. Since LESS surgery involves only a single umbilical incision, it lends itself to epidural anesthesia, which avoids the adverse outcomes from general anesthesia. LESS Cholecystectomy with epidural anesthesia was completed with minimal adverse events, no operative or anesthetic conversions, and less postoperative pain at discharge, compared to general anesthesia, in a randomized group of patients. Epidural anesthesia appears to be a preferable alternative to the traditional general anesthesia for suitable patients undergoing LESS cholecystectomy.

A861 Combination of Bupivacaine 1 Mg With Fentanyl or Sufentanil in Elderly Patients for TURP: Adequate Anesthesia With Unimpaired Motor Strength

Nayoung Kim, M.D., Yun So, M.D., Hae Keum Kil, M.D., Yonsei University College of Medicine, Seoul, Republic of Korea. Considering the sensory innervations to the prostate, a sensory block up to L1 - T12 is adequate to the TURP. Low-dose intrathecal local anesthetics may meet these criteria, but occasional lack of sufficient sensory block could be troublesome. In this randomized study, we evaluated the spinal anesthetic characteristics following intrathecal administration of bupivacaine 1 mg with fentanyl or sufentanil in elderly patients undergoing TURP. Intrathecal bupivacaine 1 mg with fentanyl 20 mcg or sufentanil 5 mcg provided an adequate sensory block with unimpaired motor power in elderly patients for TURP. Sufentanil combination with bupivacaine showed longer duration of sensory block and better quality of postoperative analgesia than fentanyl combination.

A862 Incidence of Vasovagal Reactions in Surgical Population During Thoracic Epidural Catheter Placement: A Prospective Study

Tarig Malik, M.D., Tina Sharna, M.D., University of Chicago Hospitals, Chicago, IL, University of Chicago, Chicago, IL. Incidence of vasovagal reaction is about 11% for thoracic epidural catheterization which can potentially be reduced to by a factor of 3.6 by using mild sedation to about 2-3% and can be treated effectively without interruption if treated promptly.
A867 Impact of Postoperative Analgesia Techniques on Cutaneous Hyperalgesia and Pain Chronicisation After Nephrectomy: Continuous Wound Infusion vs. Epidural Analgesia Versus PCA Morphone

Sebastien Moulard, M.D., Christian Plasse, M.D., Sophie Bringuier, M.D., Christine Macq, M.D., Xavier Capdevila, M.D., Ph.D., Montpellier University Hospital, Montpellier, France. Regional anesthesia techniques decrease the cutaneous hyperalgesia but did not affect the incidence of pain chronicisation and mean term postoperative quality of life of patients undergoing nephrectomy by lombotomy.

A868 Noninvasive Quantification of Pain Observed via Increased Brain Temperature During Brain Temperature Tunnel Monitoring

Trevor M. Banack, M.D., Tyler J. Silverman, B.A., David G. Silverman, M.D., Anesthesiology, Yale University School of Medicine, New Haven, CT. Noninvasive monitoring of brain temperature (via the “brain temperature tunnel”) provides objective documentation of pain.

A869 Epidural Irrigation Therapy Drastically Reduced Persistent Chronic Low Back Pain Without Special Devices

Tomoko Mae, M.D., Ph.D., Takahiro Terada, M.D., Ph.D., Naoko Haruyama, M.D., Ph.D., Takashi Yamasaki, M.D., Ph.D., Makoto Onaki, M.D., Ph.D., Anesthesiology, Tokyo Metropolitan Police Hospital, Nakano, Tokyo, Japan, Anesthesiology, Tokyo Women's Medical University, Shinjuku, Tokyo, Japan. The epidural irrigation therapy is a very easy and safe method and expected to wash neurotransmitters, and induce adhesiolysis without special devices for patients with persistent pain from lumbar spinal stenosis.

A870 Initial Experience Using Qutenza (Capsaisin 8% Patch) to Treat Post-herpetic Neuralgia in a Major Cancer Center

Alyssa Kosturakis, B.A., Rodolfo Gebhardt, M.D., Pain Medicine, MD Anderson Cancer Center, Houston, TX. Efficacy of Qutenza® capsacin 8% patch in providing sustained pain relief and reducing administered pain medications in patients with PHN.

A871 Quality of Life and Everyday Functionality Improvement After Interlaminar Lumbar Epidural Steroid Injections

Kenneth D. Candido, M.D., N. Nick Knezevic, M.D., Ph.D., Maunak V. Rana, M.D., Jonathan Kamerlink, M.D., Antony Tharian, M.D., Lalida Chupatanakul, M.D., Anesthesiology, Advocate Illinois Masonic Medical Center, Chicago, IL. The purpose of this prospective, randomized study was to evaluate the effect of interlaminar lumbar epidural steroid injections (LESI) on quality of life and everyday functionality and to compare midline and parasagittal approach during LESI.

A872 Ketamine May Attenuate Persistent Pain Following Knee and Hip Arthroplasty

Adam Young, M.D., Asokumar Buvanendran, M.D., Mario Moric, M.S., Mahendra K. Shah, M.D., Anesthesiology, Rush University Medical Center, Chicago, IL. Patients undergoing total knee (TKA) and total hip arthroplasty (THA) receiving ketamine as part of anesthetic completed questionnaires 12 months postoperatively. Low-dose intraoperative ketamine was shown to have an effect, although not statistically significant, on reducing chronic pain following TKA and THA.

A873 A Randomized Study of 150% Oral Morphine Equivalent for Perioperative Pain Management in Spine Surgery Patients

John Mrachek, M.D., Amy Schrecengost, B.S., Matt Kresl, Pharm.D, Abbey Sidebottom, M.P.H., Lori Reiland, M.B.A, Nilanjana Banerji, Ph.D., Abbott Northwestern Hospital, Neuroscience and Spine Clinical Service Line, Allina Hospitals and Clinics, Pharmacy, Abbott Northwestern Hospital, Applied Research, Allina Hospitals and Clinics, Quality and Patient Safety, Abbott Northwestern Hospital, Minneapolis, MN. This randomized clinical trial is designed to study pain management in opioid-tolerant spine surgery patients using a perioperative dosing goal of 150% of patient’s baseline oral morphine equivalent, in comparison to standard perioperative dosing. Safety events during post-surgery hospital stay indicated fewer complications and readmissions to ICU for patients in the 150% OME group. Lower patient reported 24 hour and four to six weeks postoperative pain scores were also noted in this group.

A874 Spinal Cord Stimulator Benefiting Patients With Failed Back Surgery Syndrome: A Retrospective Study

Jyoti Dangle, M.D., Bakul Dave, M.D., Anesthesiology, Washington University of Saint Louis, St Louis, MO. Spinal cord stimulator has shown to be an effective modality in reducing chronic neuropathic pain of lower extremity. Our study aimed to evaluate the application of this modality as a definite treatment option for patients with diverse clinical conditions. Our study showed the treatment is effective in cases of failed back surgery syndrome (FBSS). The pain relief received in these patients was equivalent to those with spinal cord stimulator implanted for Chronic Regional Pain Syndrome(CRPS) or other neuropathic pain.

A875 Efficacy of Cervical Facet Rhizotomy for Patients With Cervicogenic Headache

Noritaka Yoshimura, M.D., Motoyasu Takenaka, Ph.D., Yuko Iida, M.D., Maki Miyamoto, M.D., Shinobu Yamaguchi, M.D., Shigemi Matsumoto, M.D., Kumiko Tanabe, Ph.D., Hiroki Iida, Ph.D., Department of Anesthesiology and Pain Medicine, Gifu University Graduate School of Medicine, Gifu, Japan. In 52 patients with chronic intractable cervicogenic headache, we identified cervical facet joints with tenderness and assessed the efficacy of cervical facet rhizotomy. Cervical facet rhizotomy could be a safe and useful treatment for the patients with cervicogenic headache.
**A876 Efficacy of Prolotherapy vs. Corticosteroid for Patients With Myofascial Pain Syndrome: A Retrospective Comparative Study**
Billy K. Huh, M.D., Ph.D., Hsiang H. Kung, M.D., Lance Roy, M.D., Department of Anesthesiology, Duke University Medical Center, Durham, NC. Both prolotherapy and steroid injections appear to be a safe and effective method for treating myofascial pain syndrome. Patients with contraindication for steroid injection may be treated with prolotherapy. The decrease in pain score was significant for both group (p <0.001).

**A877 Evaluations of Mucositis Pain and Opioid Consumption in Head and Neck Cancer Patients Receiving Chemoradiation Therapy**
Mizukami Naomi, M.D., Masanori Yamauchi, Ph.D., Aki Mizuguchi, M.D., Akihiko Watanabe, Ph.D., Michiaki Yamakage, Ph.D., Anesthesiology, Sapporo University of Medicine, Sapporo, Japan. This relationship between radiation dose and severity of mucositis and effective analgesia for mucositis were studied in head and neck cancer patients with chemoradiation therapy-induced mucositis. Although chemoradiation therapy led to high-grade oral mucositis, oral care treatment could control the severe pain more effective than could an opioid.

**A878 Ultrasound-Guided Paravertebral Blocks for Treatment of Thoracic Myofascial Pain Syndrome: A Case Series**
Faraj W. Abdallah, M.D., Anwar V. Morgan, M.D., Anesthesia, University of Toronto, Toronto, ON, Canada. Thoracic myofascial pain syndrome is a common complaint that lacks definitive treatment. This case series suggests that ultrasound-guided paravertebral blocks may constitute a safe and effective treatment for this pain.

**A879 Optimal Temperature for Continuous Thermal Radiofrequency Ablation (RFA) of the Lumbar Facets Medial Branches**
Shrif J. Costandi, M.D., Teresa Dew, M.D., Michael Kot, M.D., Maged Guirgis, M.D., Nagy Mekhail, M.D., Ph.D., Pain Management, Cleveland Clinic, Cleveland, OH. This is a retrospective electronic medical chart review of 200 records to correlate the best patient outcomes of thermal radio frequency ablation of the medial branches of the lumbar facets with the different temperatures (80°C - 90°C) being used to ablate the targeted nerves.

**A880 Veterans Integrated Pain Evaluation Research (VIPER) Pilot Cohort: Feasibility of Studying Combat Amputation Pain**
Andrew D. Shaw, M.D., ER.C.A, Thomas Buchheit, M.D., Thomas Van de ven, M.D., Ph.D., Hung-Lun Hsia, M.D., Mary McDuffie, R.N., Chester Buckenmaier, M.D., Duke University, Durham, NC, WRNMMC, Bethesda, MD. We report the initial 20 patient cohort of an ongoing study of the clinical and molecular determinants of persistent pain after combat amputation.

**A881 The Combination Therapy of Stellate Ganglion Block and Ultrasound-Guided Brachial Plexus Block for Cervical Radiculopathy Is Effective on Pain Control**
Noriko Yashima, M.D., Aiko Maeda, M.D., Anesthesiology, Kyushu Central Hospital, Fukuoka, Japan. This study revealed that the combination therapy of SBG and UG-BPB for cervical radiculopathy can be effective on pain control.

**A882 To Evaluate the 10-Point Clock Drawing Test as a Tool for Assessing Cognitive Dysfunction in Chronic Pain Patients**
Leon S. Perel, M.D., Valerie Pershad, B.S., May Chin, M.D., Anesthesiology and Critical Care Medicine, George Washington University, Washington, D.C. The incidence of cognitive dysfunction in the chronic pain population and the correlation with variables such as pain intensity is unclear. The 10-point Clock Drawing Test is a neuropsychological test established for screening of dementia that has gained acceptance in the screening of cognitive dysfunctions. It is a quick test, with high inter-rater reliabilities, sensitivity and specificity. We hypothesize that this test can be a useful screening tool for cognitive dysfunction in chronic pain patients.

**A883 Radio Frequency Ablation Lesion Size Varies Depending on the Solution Used**
Bryant Itriara, D.O., Sanjeev Kumar, M.D., Sunny Sandhu, M.D., Shushovan Chakrabortty, M.D., Detroit Medical Center, Royal Oak, MI, Detroit Medical Center, Detroit, MI. RFA-induced lesioning tests in chicken breast samples showed a clear trend for significantly different lesion sizes from different anesthetic solutions. This ongoing investigation may be clinically significant for chronic back pain treatment for identifying a solution that induces optimal lesioning with RFA for improved patient satisfaction in terms of adequacy and duration of pain relief.

**A884 Concordance of Sleep and Pain Outcomes of Diverse Interventions**
Anthony Doufas, M.D., Ph.D., Orestis A. Panagiotou, M.D., John P.A. Ioannidis, M.D., Ph.D., Department of Anesthesia, Department of Medicine, Stanford Prevention Research Center, Stanford University School of Medicine, Stanford, CA, Department of Hygiene and Epidemiology, University of Ioannina, Ioannina, Greece. Evidence suggests that pain influences sleep and vice versa. It is unknown whether diverse medical treatments for different conditions have similar or divergent effects on pain and sleep. We searched published systematic reviews where both pain and sleep outcomes had been examined in randomized trials. We found that medical interventions tend to have effects in the same direction for pain and sleep outcomes, but exceptions occur. Concordance is primarily seen for sleep and headache or musculoskeletal pain where many drugs may both disturb sleep and cause pain.

**A885 Survey of Problem-Based Learning for Medical Student Curricula**
Dalia H. Elmofty, M.D., Ashley Agerson, M.D., Magdelena Anitescu, M.D., Anesthesia, University of Chicago, Chicago, IL. Chronic pain is one of the most prevalent conditions encountered in clinical practice. For a majority of medical schools, pain education encompasses about 10 hr maximum during a four-year time period. Pain education must be an integral part of medical student education in order to improve chronic pain management. We introduced a Problem-Based Learning Discussion (PBLD) on the management of chronic low-back pain to promote pain education for our third year medical students. An online survey of a series of seven questions using a likert-type scale was then conducted regarding their experience during the Pain PBLD. Our survey results showed that the fundamental knowledge required to improve chronic pain management can be introduced in PBL format rather than the standard lecture format. PBLD allows students to work as a team and engage in group discussion.
A886 Chronic Postsurgical Pain After Laparoscopic Colectomy in Patients Included in an Enhanced Recovery Programme

Patricia M. Lavand’homme, M.D., Fernande Lois, M.D., Christophe Remue, M.D., Daniel Léonard, M.D., Alex Kartheuser, M.D., Anesthesiology, Colorectal Surgery, St Luc Hospital UCL Medical School, Brussels, Belgium. CPSP, mostly of visceral origin, up to 46 months after surgery, concerns 11% of patients after laparoscopic colectomy. Incidence is very similar to that previously reported at four years after abdominal open surgery, i.e. 18%. Risk factors include severity of acute postoperative pain, anxiety and no use of perioperative epidural analgesia.

A887 Efficacy of Transcutaneous Electrical Stimulation With Constant Direct Current at Trigger Points in Patients With Refractory Chronic Pain

Haruka Kaneko, M.D., Akifumi Kanai, M.D., Ph.D., Hirotugu Okamoto, M.D., Ph.D., Anesthesiology, Kitasato University School of Medicine, Sagamihara, Japan. The transcutaneous electrical stimulation with constant direct current at trigger points provided effective analgesia without side effects in patients with refractory chronic pain, especially for nociceptive pain.

A888 Inflammatory Disease and Risk for Acute and Chronic Pain After Laparoscopic Colectomy in Patients Included in an Enhanced Recovery Programme

Patricia M. Lavand’homme, M.D., Fernande Lois, M.D., Christophe Remue, M.D., Daniel Léonard, M.D., Alex Kartheuser, M.D., Anesthesiology, Colorectal Surgery, St Luc Hospital UCL Medical School, Brussels, Belgium. Although patients who undergo laparoscopic colectomy to cure inflammatory bowel disease present with more risk factors for CPSP, they do not report higher incidence of CPSP (11% at 28 months after surgery). Those patients, however, present with worse recall of postoperative pain and longer duration of abdominal incomfort after the procedure.

A889 Tianeptine Attenuates Neuropathic Pain Through Spinal Noradrenergic and Serotonergic But Not Adenosine Receptors in the Spinal Nerve-ligated Rats

Woong M. Kim, M.D., Ph.D., Cheol Won Jeong, M.D., Ph.D., Jin Ju, M.D., Soo Young Cho, M.D., Hye Jin Jeong, M.D., Seong Heon Lee, M.D., Jinook Hong, M.D., Okwhan Kim, M.D., Myung Ha Yoon, M.D., Ph.D., Anesthesiology & Pain Medicine, Chonnam National University, Gwang-Ju, Republic of Korea. In this study using spinal nerve-ligated rat model of neuropathic pain, very potent, although short lived, anti-allodynic effect of tianeptine and its analgesic mechanism was demonstrated.

A890 Efficacy and Safety of Atlanto Axial Joint Injection in Patients With Cervicogenic Headache: An Observational Study

Ramatiab Mahboobi, M.D., Xiaoying Zhu, M.D., Nagy Mekhail, M.D., Ph.D., Pain Management, Cleveland Clinic, Cleveland, OH. Cervicogenic headache is a relatively common and still controversial form of headache arising from structures in the neck. We examined the diagnostic and therapeutic value of lateral atlanto-axial intra-articular steroid injection in managing 24 out of total of 250 patients with intractable headache with cervicogenic headache who have a clinical picture suggestive of atlanto-axial joint pain and underwent a diagnostic / therapeutic intra-articular block with local anesthetic and steroid injection. All 24 patients obtained significant improvement (>50%) relief of their headache following diagnostic blocks, indicating that in carefully selected cervicogenic headaches, a lateral atlanto-axial block is an excellent diagnostic tool that might provide adequate pain relief for a reasonable period of time.

A891 Efficacy of Oblique vs. Anterior-Posterior Lumbar Radiofrequency Ablation Technique for Treatment of Lumbar Facet Arthropathy

Andrea L. Nicol, M.D., John Shin, M.D., Christine Lee, M.D., F. Michael Ferrante, M.D., Department of Anesthesiology, University of California Los Angeles, Los Angeles, CA. Lumbar facet joint arthropathy is a challenging pain condition that affects up to 15% of patients with chronic low back pain and can be diagnosed and treated with lumbar medial branch blocks and radiofrequency ablation (RFA). Two different approaches have been used to target the medial branch nerves using RFA, parallel (oblique) and perpendicular (anterior-posterior). A retrospective chart review was performed to attempt to clarify whether there is a difference in pain score and functioning outcome, depending on the technique of the electrode placement for RFA of medial branch nerves.

A892 Reports of Chronic Pain in Childhood and Adolescence Among Patients at a Tertiary Care Pain Clinic

Paul E. Hilliard, M.D., University of Michigan Back & Pain Center, Ann Arbor, MI. These findings indicate that adult pain patients who experienced chronic pain in childhood may have a different presentation and require a more comprehensive approach than those who did not experience chronic pain in childhood.

A893 Efficacy of Sphenopalatine Ganglion Block for Headache and Facial Pain

Chirag Sanghvi, M.D., M.P.H., Reda Tolba, M.D., Sumit Katyal, M.D., Nagy Mekhail, M.D., Ph.D., Pain Management, Cleveland Clinic, Cleveland, OH. Sphenopalatine ganglion block appears to be very effective for cluster headaches and it appears to be also effective in cases of trigeminal neuralgia involving V2 (maxillary distribution). It has some benefit for atypical facial pain.
A894 Thrombelastograph Platelet Mapping Shows Platelet Inhibition in Patients With Liver Disease

Cassandra B. Howell, Student, Evan G. Pivalizza, M.B., Ch.B., University of Texas Medical School at Houston, Anesthesiology, University of Texas Medical School at Houston, Houston, TX. TEG platelet mapping measures platelet response to specific agonists and may be useful in evaluating platelet function in liver disease. In this prospective observational study, we found >50% inhibition to both ADP and arachidonic acid agonists in patients with liver disease.

A895 Defining Over-Transfusion by Assessment of Intraoperative Target Hemoglobin Concentration and Postoperative Hemoglobin Drift

Steven M. Frank, M.D., James A. Rothschild, M.D., Sarah Wyhs, M.D., Lori Suffredini, D.O., Kara Bjur, M.D., Amy Abdallah, M.D., Eugenie Heitmiller, M.D., Department of Anesthesiology/Critical Care Medicine, The Johns Hopkins Medical Institutions, Baltimore, MD. We analyzed data from patients who received intraoperative blood transfusion to a hemoglobin concentration ≥13 g/dL to determine if this represents over-transfusion, after accounting for the postoperative downward hemoglobin drift. Patients with intraoperative hemoglobin targets of ≥13 g/dL were undergoing long surgeries with signs of intravascular volume depletion and high blood loss. After accounting for the postoperative hemoglobin drift of -3.3±1.7 g/dL, one-half of patients had a hemoglobin >10 g/dL, and two-thirds of patients had a hemoglobin >9 g/dL, suggesting that the majority of these patients were over-transfused during surgery.

A896 Baroreflex Sensitivity, but not Heart Rate Variability Indices, Correlates With Extent of Hypotension During Sevoflurane and Isoflurane Anesthesia

Makoto Tanaka, M.D., Syunsuke Ishitsuka, M.D., Natsuyo Kusuyama, M.D., Anesthesiology, University of Tsukuba, Tsukuba-city, Ibaraki-ken, Japan. Pressor test sensitivity using phenylephrine, but not the depressor test or HRV indices, predicts individuals prone to develop hypotension after sevoflurane or isoflurane anesthesia in humans.

A897 A Study of the New CNAP 500: A New Finger Change Algorithm for Improved Reliability in Haemodynamic Monitoring via the Lidocorapid

Heena Bidd, Jr., M.B.B.S., Anneliese Rigby, M.B.B.S., David Green, M.D., Eric Mills, M.S., Audrey Tan, M.D., Anesthetics, King’s College Hospital, London, United Kingdom. LiDCO Ltd, London, United Kingdom. Aim: This study examines a new CNAP 500 finger change algorithm to assess concordance with arterial BP monitoring using LiDCOrapid monitors. Methods: 18 vascular surgery patients with both invasive arterial BP (I) and a CNAP (N) were connected to 2 LiDCOrapid monitors. SV, MAP, SVV, PPV and HRV comparisons between I and N were made before and after finger switches. Fluid challenges were also examined for sensitivity, specificity and cutoff limits. Results: A total of 95 finger changes occurred. MAP and SV concordance was 91% and 86%. SVV via CNAP was similar to invasive with Sensitivity 89% Specificity 75% and cutoff limit of 10%. Conclusions: The new CNAP algorithm improves finger change reliability while maintaining SVV utility.

A898 Correlation of Preoperative and Postoperative Kidney Function and Outcomes in Cardiac Surgery Patients

Jian-Zhong Sun, M.D., Ph.D., Linong Yao, M.D., Ph.D., Longhui Cao, 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, UC Davis Medical Center, Sacramento, CA. This observational cohort study showed a close correlation among preoperative kidney function, postoperative AKI, adverse outcomes, including mortality; however, preoperative aspirin therapy is associated with a significantly reduction in postoperative AKI in the patients undergoing cardiac surgery.

A899 Genetic Variations of ß2-Adrenergic Signaling Influence Vasopressor Requirement During Thoracic Epidural Anesthesia

Jan Karl, M.D., Ulrich H. Frey, M.D., Frank Herbstreit, M.D., Jürgen Peters, M.D., Universitätsklinikum Essen, Essen, Germany. Significance of genetic variations for the phenotype “regulation under anesthesia” is widely unknown. We studied the hypothesis, that thoracic epidural anesthesia can unmask the influence of genetic variations on arterial pressure and vasopressor requirement. ß2-adrenergopolyphosphins are relevant independent predictors of hypotension and vasopressor requirements during circulatory challenges after deactivation of sympathetic drive through thoracic epidural anesthesia.

A900 Preoperative Angiotensin System Inhibitor Use Attenuates Heparin-Induced Hypotension

Richa Dhawan, M.D., Mark A. Chaney, M.D., Anesthesia and Critical Care, University of Chicago Hospitals, Chicago, IL. This prospective clinical study reveals that angiotensin system inhibitor therapy may have a protective effect against heparin-induced hypotension.

A901 Perioperative Outcome of Re-Do Procedures After Endovascular Abdominal Aortic Repair

Takako Ariti, M.D., Yasushi Mio, M.D., Keita Saito, M.D., Nobuyoshi Inoue, M.D., Shoichi Uezono, M.D., Anesthesiology, Jikei University School of Medicine, Tokyo, Japan. We investigated perioperative outcomes of re-procedures after endovascular aortic aneurysm repair (EVAR). The incidence of renal dysfunction was higher for re-do procedures in preoperative complications. This may be due to contrast induced renal dysfunction with the use of contrast medium during serial follow-up radiological examination before re-do procedure. The intra- and postoperative outcomes were not significantly different when comparing the original EVAR and the re-do procedures. However, perioperative management was more complicated in open repair after EVAR.

A902 Increasing Aortic Cross-Clamp and Cardiopulmonary Bypass Times Do not Change Outcomes After Mitral Valve Repair

Menachem Mendel Weiner, M.D., Ira Hofer, M.D., Cesar Rodriguez-Diaz, M.D., Hung-Mo Lin, Ph.D., Gregory Fischer, M.D., Anesthesiology, Mount Sinai School of Medicine, New York, NY. Increasing aortic cross-clamp and cardiopulmonary bypass times found to be not statistically significantly related to short or long term mortality or morbidity after mitral valve repair.
A903 The Expression of Surviving in Dichloroacetate Treatment of Pulmonary Hypertension
Zhengliang Ma, Ph.D., Fengling Wang, M.D., Xiaoping Gu, Ph.D., Bingbing Li, Ph.D., Yan Shen, M.D., Department of Anesthesiology, Affiliated Drum Tower Hospital of Medical School of Nanjing University, Nanjing, China. The present study indicated that survivin plays an important role in the development of pulmonary hypertension and the remodeling of pulmonary vascular, early DCA therapy alleviates the deterioration of pulmonary arterial hypertension, medial thickening of pulmonary arterioles protein expression, and mRNA of survivin in pneumonectomized rats injected with MCT.

A904 Cerebral Oxygen Saturation Immediately After Weaning From Cardiopulmonary Bypass is Associated With Early Postoperative Outcomes in Children Undergoing Congenital Heart Surgery
Won-Jung Shin, M.D., Ph.D., Jung-Won Kim, M.D., Mijeung Gwak, M.D., Ph.D., Gyu-Sam Hwang, M.D., Ph.D., Department of Anesthesiology and Pain Medicine, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Republic of Korea. Lower cerebral oxygen saturation immediately after weaning from cardiopulmonary bypass may be associated with greater requirement of vasoactive inotropic support, longer duration of mechanical ventilation and prolonged postoperative hospital stay.

A905 Monitoring and Reversal of Rivaroxaban
Mareike K. Keller, M.D., Elisabeth Langer, M.D., Christine Gericke, M.Phil., Christian von Heymann, M.D., Department of Anesthesiology and Intensive Care Medicine, Charité Universitätsmedizin, Labor Berlin – Charite Vivantes GmbH Berlin, Institute of Medical Biometrics and Clinical Epidemiology, Charité-Universitätsmedizin, Berlin, Germany. Rivaroxaban is a new oral anticoagulant approved for atrial fibrillation. To manage bleeding risk, especially in urgent surgery, a monitoring method and a potent reversal agent are needed. Our study investigated different plasmatoc coagulation tests and PCC, APCO and rFVIIa as reversal agents.

A906 Performance of Cardiac Output Measurement Derived From Arterial Pressure Waveform Analysis: Effects of Alterations in Pulse Pressure
A. Ram Lee, M.D., Sung Yong Park, M.D., Dae Hee Kim, M.D., Sook Young Lee, M.D., Yong Woo Hong, M.D., Ajou University, School of Medicine, Suwon, Republic of Korea. The change of PP affected the accuracy of APCO measurement. Agreement was observed for SCO and APCO in narrow PP data. In increased PP, APCO showed limited agreement with the SCO.

A907 Red Cell Loss During Salvaged Blood Processing
Gerhardt Konig, M.D., Jonathan H. Waters, M.D., Anesthesiology, University of Pittsburgh School of Medicine, Anesthesiology, Magee Women's Hospital of the University of Pittsburgh Medical Center, Pittsburgh, PA. Intraoperative blood salvage is typically only 40-60% efficient at returning blood lost back to the patient. This study showed that blood processing through a salvage device produces about a 10% loss of red cells, due mainly to blood volume retained within the system tubing. RBC hemolysis is only responsible for about 2% loss of red cells. Therefore, the majority of the lost efficiency in intraoperative blood salvage is due to losses that occur before the blood reaches the cell salvage device. In other words, the greatest gains in efficiency in blood salvage can be obtained by making sure all shed blood is diverted to the cell salvage device and not discarded.

A908 Comparison Between Pleth Variability Index and Arterial Pulse Pressure Variation in the Neurosurgical Intensive Care Unit (ICU)
Thakoor K. Bhismadev, M.D., Tarik Riahi, M.D., Olivier Bernard, M.D., Musa Sesay, M.D., Pierre Maurette, M.D., Karine Noutette-Gaulain, M.D., Ph.D., Anesthesiology & Critical Care, University of Bordeaux, Pellegrin University Hospital, Bordeaux, France. PVI can reliably predict fluid responsiveness in neurosurgical patients in the ICU.

A909 Correlation of Intraoperative Hemodynamic Variability With Apgar Assessments: Apples and Oranges, or Simply Fruit?
Saedea Qadri, M.D., Shiveta Cherwoo, M.B, B.S., Asim Kichloo, M.B., B.S., Li Qin, Ph.D., Feng Dai, Ph.D., David Silverman, M.D., Anesthesiology, Yale University School of Medicine, New Haven, CT. Histograms relating the variability of cardiovascular parameters enable integrated assessment of hemodynamic indices.

A910 Anesthetic Considerations for Thoracoscopic Sympathetic Ganglionectomy to Treat Ventricular Tachycardia Storm: Study of the Experience in a Single Center
Emily Methangkool, M.D., Jason Chu, M.D., Anupama Gopinath, M.D., Aman Mahajan, M.D., Ph.D., Department of Anesthesiology, University of California, Los Angeles, Los Angeles, CA. Thoracic sympathetic ganglionectomy is utilized as a means to decrease catecholamine stimulation of ventricular arrhythmias. We evaluated a database of 26 patients undergoing thoracic sympatheticctomy for electrical storm to determine optimal anesthetic management of these patients. We found no significant difference between pre- or postoperative hemodynamics, nor a difference in postoperative hemodynamics between unilateral and bilateral sympathectomy patients. Our perioperative mortality was 7.7%, much lower than the anticipated incidence given the degree of patient illness. We found that with proper anesthetic care, including expertise in invasive monitoring, TEE, and hemodynamic management, we can safely usher these critically ill patients through the perioperative period.
A912 Effect of Fluid Choice on Volume Reposition After Acute Bleeding: A Study in Propofol-Remifentanil Anaesthetized Pigs

Aura Silva, D.V.M., Ana Liza Ortiz, D.V.M., Almir P. Souza, Ph.D., Carlos Venâncio, D.V.M., Pedro Amorim, M.D., David A. Ferreira, Ph.D., Laboratório de Toxicologia, REQUIMTE - Faculdade de Farmácia, Vila Nova de Gaia, Portugal, Universidade de Léon, Léon, Spain, Universidade Federal da Campina Grande, Centro de Saúde e Tecnologia Rural, Unidade Académica de Medicina Veterinária, Patos, Brazil, CECAV - Universidade de Trás-os-Montes e Alto Douro, Vila Real, Portugal, Anesthesiology Department, Hospital Geral de Santo António, Porto, Portugal, Faculdade de Medicina Veterinária, Universidade Lusófona de Humanidades e Tecnologia, Lisboa, Portugal. Both lactated Ringer's and hydroxyethylstarch 130/0.4 (HES) restored the hemodynamics and cerebral oxygenation similarly in pigs after acute hemorrhage but HES 130/0.4 was able to ensure a better hemodynamic stability and cerebral oxygenation reflected by SVjO2 for a longer period after replacement.

A913 Involvement of PACAP Signaling in Right Cardiac Hypertrophy Induced With Monocrotaline in Rats

Motokazu Koga, M.D., Yusuke Mizuno, M.D., Ph.D., Hiromasa Kawakami, M.D., Itaru Watanabe, M.D., Ph.D., Takahisa Goto, M.D., Ph.D., Department of Anesthesiology, Graduate School of Medicine, Yokohama City University, Yokohama, Japan. We investigated involvement of PACAP signaling system in development of right ventricular hypertrophy induced with monocrotaline in rat. Increase in PACAP accompanied with PAC1 and VPAC2 receptor was associated in hypertrophic right ventricles.

A914 Polysialic Acid Is Involved in Endothelium-Dependent Vasodilation

Yasuyuki Tokinaga, M.D., Ph.D., Yukimasa Takada, M.D., Masayuki Akatsuka, M.D., Michiaki Yamakage, M.D., Ph.D., Anesthesiology, Sapporo Medical University, Sapporo, Japan. To investigate the effect of polysialic acid on endothelium-dependent vasodilation, changes in tension in response to phenylephrine followed by acetylcholine were recorded prior to and after application of sialidase. Endothelium-dependent vasodilation was significantly inhibited by sialidase treatment.

A915 Effects of Epinephrine on Williams-Beuren Syndrome-Related Gene Expression in Cultured Rat Cardiomyocytes

Yiru Tong, M.D., Jiao Liu, M.D., Nakeisha Pierre, M.D., Sabrina Bent, M.D., Ting Zhou, M.D., You Shang, Ph.D., Santiago Gomez, M.D., Francis A. Rosinia, M.D., Alan D. Kaye, Ph.D., Henry Liu, M.D., Anesthesiology, Hunan Children's Hospital, Changsha, China, Tulane University Medical Center, New Orleans, LA, Wuhan Union Hospital, Wuhan, China, LSU Health Science Center, New Orleans, LA. Epinephrine exposure for 48 hours down-regulated at least two Williams-Beuren Syndrome-related gene expressions in cultured rat cardiomyocytes: MLXIPL gene down by 2.008 times and KCNJ11 gene down by 3.743 times. The two affected genes encode proteins involved in carbohydrate and lipid metabolism. The relationship between these gene expression changes and the observed adverse clinical outcome related to epinephrine administration needs further investigation.

A916 Probing the Relevance of ICa,L Kinetics on Early Afterdepolarization Susceptibility in Cardiac Myocytes

Roshni V. Madhvani, M.S., Yuanfang Xie, Ph.D., Antonios Pantazis, Ph.D., Alan Garfinkel, Ph.D., Zhillian Qu, Ph.D., James N. Weiss, M.D., Riccardo Olcese, Ph.D., Anesthesiology, Medicine, Cardiology, UCLA, Los Angeles, CA, Pharmacology, UC Davis, Davis, CA. We used dynamic clamp to investigate how ICa,L biophysical properties modulate the susceptibility of cardiomyocytes to EADs under oxidative stress. While changes in ICa,L activation and inactivation kinetics had little effect on EAD susceptibility, reducing the amplitude of the non-inactivating ICa,L component potentely suppressed EAD occurrence. We propose that the ICa,L biophysical properties may be a prime target to prevent EAD occurrence and their arrhythmogenic consequences.

A917 The Effect of Desflurane on Angiotensin II-Induced Vasoconstriction

Masayuki Akatsuka, M.D., Yasuyuki Tokinaga, M.D., Ph.D., Yukimasa Takada, M.D., Michiaki Yamakage, M.D., Ph.D., Anesthesiology, Sapporo Medical University, Sapporo, Japan. To investigate the influence of desflurane on angiotensin II-induced vasoconstriction and its mechanism, changes in isometric tension induced by angiotensin II or Rho kinase activator, GTP gamma S, were measured in the presence or absence of desflurane. Desflurane significantly inhibited Angiotensin II- and GTP gamma S-induced vasoconstriction in a concentration dependent manner.

A918 Angiotensin II Type 1 Receptor Regulates BK Channels Independent of G-protein Activation in Rat Renal Arterial Smooth Muscle Cells

Zhu Zhang, Ph.D., Enrico Stefani, M.D., Ph.D., Ligia Toro, Ph.D., Anesthesiology, Division of Molecular Medicine, UCLA, Los Angeles, CA. In freshly isolated rat renal arterial smooth muscle cells, 1) angiotensin II type 1 receptor mediates Angiotensin II-induced inhibition of BK channel activity; 2) the inhibition is independent of G-protein activation.

A919 Dichloroacetate Prevents but Not Reverses the Formation of the Neointimal Lesions in a Rat Model of Severe Pulmonary Arterial Hypertension

Bingbing Li, M.D., Zhengliang Ma, M.D., Anesthesiology, The Affiliate Hospital of Nanjing University Medical School, Nanjing, China. Early intervention with DCA is effective to prevent the formation of intimal lesions in rats induced by monocrotaline following left pneumonectomy. However, the delayed treatment of DCA is incapable in reversal of the neointimal lesion formation and pulmonary arterial hypertension.

A920 Short-Term Blood Storage Is Associated With Better Early Resuscitation Outcome in Experimental Hemorrhagic Shock

A921 Changes of K-Opioid Receptor and Anti-Proliferative Effects During Hypoxia

Bracken J. De Witt, M.D., Ph.D., Alan D. Kaye, M.D., Ph.D., Aaron J. Kaye, Jianming Pei, M.D., Ph.D., Department of Anesthesiology, Louisiana State University, New Orleans, New Orleans, LA, Stanford University, Palo Alto, CA, Department of Physiology, Fourth Military Medical University, Xi’an, China. The expression of the Kappa opioid receptor (κ-OR) increases in the pulmonary artery during hypoxia, and this effect is enhanced by the selective κ-OR agonist U50, 488H. The demonstrated effects of anti-remodeling of the pulmonary artery (PA) and anti-proliferation of the PASMC with κ-OR stimulation warrants further study of a potential translatable therapeutic strategy of modulation of the κ-OR in the treatment of pulmonary hypertension.

A922 The Effects of Phenylephrine on Cardiac Output and Venous Return Depend on the Position of the Heart on the Frank Starling Relationship

Maxime Cannesson, M.D., Ph.D., Zhongping Jian, Ph.D., Guo Chen, M.D., Feras Hatib, Ph.D., University of California Irvine, Irvine, CA, Edwards Lifesciences, Irvine, CA. The impact of phenylephrine on cardiac output is related to the preload dependency of the heart. When the heart is preload independent, phenylephrine boluses induce a decrease in cardiac output. When the heart is preload dependent, phenylephrine boluses induce an increase in cardiac output.

A923 Pulse Pressure Variation and Systolic Volume Variations During Relative Hypovolemia Caused by Inhale Anesthetics and After Acute Hemorrhage

Alexandre H. Oshiro, D.V.M., Denise A. Otsuki, Ph.D., Denise T. Fantoni, Ph.D., Kaleizu T. Rosa, Ph.D., José O. Auler, Ph.D., Anesthesiology, Faculdade de Medicina Veterinaria e Zootecnia - Departamento de Cirurgia, Instituto do Coracao, University of Sao Paulo, Sao Paulo, Brazil. Pulse pressure variation and systolic volume variation are accurate predictors of preload fluid responsiveness in mechanically ventilated patients. Inhale anesthetic agents have dose dependent hemodynamic effects, but it is not known how different inhalant anesthetics affect PPV and SVV. Anesthetized and mechanically ventilated pigs were randomly assigned to three groups of eight animals each, using desflurane, sevoflurane and isoflurane. PPV/SVV behaved similarly with no difference between different inhalant agents.

A924 A Dual Effect of Isoflurane on Circulating Levels of Thrombin in a Rodent Model of Anesthesia

Paul S. Garcia, M.D., Ph.D., Jonathan Fidler, M.S., Jerrold H. Levy, M.D., Department of Anesthesiology, Emory University School of Medicine, Atlanta VA Medical Center, Atlanta, GA, Department of Anesthesiology, Emory University School of Medicine, Atlanta, GA. In addition to its central role in clot formation, thrombin is a promiscuous enzyme with multiple effects in systems besides coagulation, including the immune and nervous systems. Here we demonstrate an increase in levels of circulating thrombin three days after isoflurane exposure in an animal model of a canonical anesthetic.

A925 Negative Pressure Gradient Between LV and RV in an Animal Model of ALI: Influence of Blood Volume and Tidal Volume

Emmanuel Lorne, M.D., Yazine Mahjoub, M.D., Julien Maizel, M.D., Michel Slama, M.D., Hervé Dupont, M.D., Anesthesiology and Critical Care Medicine, University Hospital of Amiens, Amiens, France, Medical Intensive Care Unit, University Hospital of Amiens, Amiens, France. We have compared the effect of hypovolemia and changes in tidal volume on the negative pressure gradient between LV and RV before and after ALI. At baseline condition, hypovolemia induced an increase of the pressure/time integral of the negative gradient for high tidal volume. After ALI, low tidal volume induces a decrease in the pressure/time integral of the negative gradient. Hypovolemia and tidal volume appear to influence differently the trans-septal gradient between LVP and RVP depending on whether the lungs are healthy or in ALI. The influence of tidal volume seems higher in hypovolemia in healthy lungs, while on injured lungs, the influence of tidal volume seems higher in normovolemia.

A926 Decreased Expression of miR-133a but not of miR-1 Is Associated With Signs of Heart Failure in Patients Undergoing Coronary Bypass Surgery

Ulrich Frey, M.D., Nina Danowski, Student, Heinz Jakob, M.D., Winfried Siffer, M.D., Jürgen Peters, M.D., Anesthesiology, University Hospital Essen, Essen, Germany; University Hospital, Essen, Germany. Coronary artery disease (CAD)-associated ischaemic heart failure is characterized by dysregulated gene expression, which is partly mediated by microRNAs (miRs). We tested the hypothesis that cardiac miR-1 and miR-133 expression is associated with signs of heart failure in patients undergoing coronary artery bypass grafting (CABG). miR-133 expression decreased significantly with increased severity of heart failure and increased pulmonary artery occlusion pressure. Furthermore, patients with NT-proBNP concentrations >1800 pg/ml showed a 60% decrease in miR-133 expression compared to patients with concentrations <300 pg/ml. In contrast, no associations were detected for miR-1 expression.

A927 Pregnancy-induced Heart Hypertrophy Is Associated With Cardiac Structural and Hemodynamic Changes That Are Reversed Postpartum

Soban Umar, M.D., Ph.D., Rangarajan D. Nadadur, B.Sc., Mansour Eghbali, M.D., Marjan Amjedi, M.D., Mansoureh Eghbali, Ph.D., Anesthesiology, UCLA, Los Angeles, CA. Cardiac structural and functional changes associated with pregnancy are reversed postpartum.

A928 Acute Regional Hyperglycemia Protects Human Endothelium In-Vivo

Jutta Novalija, M.D., Ph.D., Thomas J. Ebert, M.D., Ph.D., Anesthesia, Medical College of Wisconsin, Zablocki VAMC, Milwaukee, WI. Hyperglycemia has generally been shown to impair endothelial function in diabetics, but its effect in healthy humans has been less clear. The presented findings show that acute hyperglycemia protects and arguably improves endothelial function. This study differs from prior work by limiting the acute hyperglycemia to one region of the body to more specifically evaluate its effect on endothelial function.
A929 Influence of Adenosine on Glutamate-Induced Neuronal Damage in Rat Hippocampal Slices

Eichi Narimatsu, M.D., Ph.D., Yukimasa Takada, M.D., Kazunobu Takahashi, M.D., Tomohisa Niiya, M.D., Ph.D., Masanori Yamauchi, M.D., Ph.D., Michiaki Yamakage, M.D., Ph.D., Critical Care Medicine and Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan. We investigated the influence of adenosine on glutamate-induced impairments of excitatory synaptic transmission and somatic excitability in hippocampal CA1-pyramidal cells in vitro. Excessive glutamate impaired the excitatory synaptic transmission, and the impairment was attenuated by adenosine A1 receptor block. The somatic excitability is not influenced by excessive glutamate alone but is impaired by excessive glutamate with adenosine A1 receptor stimulation. Adenosine agonists did not improve glutamate excitotoxicity even though adenosine receptors are representative presynaptic inhibitory receptors.

A930 Ketamine Enhances Neural Stem Cell Self-Renewal and Induces Neuron Apoptosis via Reactive Oxygen Species-Mediated Mitochondrial Pathway

Xiaowen Bai, Ph.D., Yasheng Yan, M.S., Scott Canfield, M.S., Maria Muravyeva, Ph.D., Chika Kikuchi, M.D., Ivan Zaja, M.D., Zeljko Bosnjak, Ph.D., Anesthesiology, Medical College of Wisconsin, Milwaukee, WI. If and how ketamine induces human neural cell toxicity is unknown. The present study assessed the influence of ketamine on the human embryonic stem cells-derived neural stem cells and developing neurons. The data for the first time demonstrate that ketamine enhances neural stem cell self-renewal and induces neuronal apoptosis via reactive oxygen species-mediated mitochondria pathway. In addition, stem cell-associated neurogenesis system may provide a simple and promising in vitro model for rapidly screening anesthetic neurotoxicity and studying the underlying mechanisms as well as prevention strategies.

A931 Inflammation-Induced Activation of Indoleamine 2,3-Dioxygenase Promotes Learning and Memory Impairment in Elderly Rats

Jing Yang, Ph.D., Xiao Wang, M.D., Li Chen, M.D., Huiwei Zhang, M.D., Department of Anesthesiology, West China Hospital, Sichuan University, Chengdu, China. We assumed that over-expression IDO induced by inflammation would generate more neurotoxic metabolites, which could be closely related to the pathogenesis of POCD in the elderly. The current study was carried out to verify this prediction in a rat model.

A932 Expression of the Receptor Tyrosine Kinase Tie1 on Inflammatory Cells Following Intracerebral Hemorrhage

Jordan Komisarow, B.S., Timothy J. McCord, B.S., Michael L. James, M.D., Christopher D. Kontos, M.D., Duke University, Durham, NC. Increasing evidence suggests that both inflammation and vascular permeability contribute to neurological dysfunction after intracerebral hemorrhage (ICH). The receptor tyrosine kinase Tie1 is known to play a critical role in vascular development, while recent evidence supports a pro-inflammatory function for Tie1. We have shown expression of Tie1 on myeloid cells infiltrating the injured area following ICH. We have also shown Tie1 to interact with the transcription factor PLZF. PLZF has been shown to prevent hematopoietic cell differentiation. Our results suggest that Tie1 may play a role in myeloid cell differentiation. Taken together, these results support a novel role for Tie1 in inflammation after ICH.

A933 The Effect of Blood Glutamate Scavengers Oxaloacetate and Pyruvate on Neurological Outcome in a Rat Model of Subarachnoid Hemorrhage

Benjamin F. Gruenbaum, B.S., Matthew Boyko, Ph.D., Shaun E. Gruenbaum, M.D., Akiva Leibowitz, M.D., Alexander Zlotnik, M.D., Ph.D., Department of Anesthesiology and Critical Care, Soroka Medical Center, Ben-Gurion University of the Negev, Beer-Sheva, Israel, Department of Anesthesiology, Yale University School of Medicine, New Haven, CT. This study demonstrates the efficacy of blood glutamate scavengers, oxaloacetate and pyruvate, as a therapeutic neuroprotective strategy in a rat model of subarachnoid hemorrhage.

A934 The Effect of Treatment With Glutamate-Oxaloacetate Transaminase Alone and in Combination With Oxaloacetate on Neurological Outcome in a Rat Model of Subarachnoid Hemorrhage

Matthew Boyko, Ph.D., Ruslan Kutz, M.D., Yoram Shapira, M.D., Ph.D., Israel Melamed, M.D., Alexander Zlotnik, M.D., Ph.D., Department of Anesthesiology and Critical Care, Department of Neurosurgery, Soroka Medical Center, Ben-Gurion University of the Negev, Beer-Sheva, Israel. This study demonstrates that the supplemental GOT enzyme did not enhance the effect of the blood glutamate scavenger oxaloacetate on neurological outcome after traumatic brain injury in rats. Furthermore, treatment with GOT alone was not associated with lower blood glutamate levels, and did not have a significant effect on brain water content or neurological severity. We suggest that GOT alone cannot be used as a sole treatment in the setting of TBI in rats.

A935 Changes in the Human Cerebral Plasma Metabolome Induced by 45 Minutes of Progressive Systemic Hypoxemia

Andrew D. Shaw, M.D., F.R.C.A, Phil N. Ainslie, Ph.D., Kurt J. Smith, Ph.D., Chris K. Willie, Ph.D., Joe Graham, B.Sc., Keita Ikeda, Ph.D., Joseph Lucas, Ph.D., David B. Macleod, M.D., F.R.C.A., Duke University, Durham, NC, University of British Columbia, Vancouver, BC, Canada, Trinity College, Dublin, Ireland. We present a study of the human cerebral metabolomic response to acute hypoxemia.
A936 Isoflurane Causes Postanesthesia Learning Disturbances in Adult Rats by Interfering With Trafficking of GluA1-Containing AMPA Receptors in the Hippocampus

Kazuhiro Uchimoto, M.D., Tomoyuki Miyazaki, M.D., Ph.D., Takahisa Goto, M.D., Ph.D., Department of Anesthesiology, Yokohama City University, Graduate School of Medicine, Yokohama, Japan.

We investigated whether isoflurane causes learning disturbances in young adult rats by affecting the trafficking of AMPA receptors in the hippocampus seven days after anesthesia. Animals that received 1.8% isoflurane for two hours showed significantly decreased latency to re-enter the dark box after inhibitory avoidance task. Hippocampal LTP induced by high frequency stimulation at 100 Hz was significantly suppressed. Western blotting showed that isoflurane increased GluA1 subunit of AMPA receptor in the hippocampus by approximately 30%, and reduced phosphorylation of GluA1 at Ser845 by 20%. These results demonstrate that isoflurane impairs learning and suppresses hippocampal LTP seven days after anesthesia by interfering with trafficking of the AMPA receptors containing GluA1 subunit.

A937 Effects of Exposure to Sevoflurane During Fetal Period on Neural Development in Mice

Tomomi Suehara, M.D., Jun Morishita, M.D., Ph.D., Masahiro Ushio, M.D., M.B., Ch.B., Anesthesia and Perioperative Care, University of California, San Francisco, San Francisco, CA, Department of Anesthesiology, Kobe University Graduate School of Medicine, Kobe, Japan.

Effects of sevoflurane exposure during fetal period on neural development are largely unknown. In this study, pregnant mice at gestational day 17 were exposed to 1.5% sevoflurane for six hours. After the delivery, the mice at the age of eight weeks were trained using an eight-arm radial maze to assess short-term memory. The protein expression of synaptophysin is largely unknown. In this paper, we examine how estrogen affects the brain development. For the evaluation of neurodegeneration, gene expression levels of caspase-3 and BDNF were examined at gestational day 17 and postnatal day seven, respectively. Eight-arm radial maze tests at the age of eight weeks were also performed to assess spatial memory/learning ability. The results demonstrated that midazolam exposure at the early fetal period did not affect synaptogenesis and memory/learning ability.

A938 Enhanced Postoperative Neuroinflammation and Cognitive Decline Is Associated With Dysregulation of a Humoral Inflammation-Resolution Mechanism in a Rat Model of Metabolic Syndrome

Xiaomei Feng, M.D., Ph.D., Xia Su, M.D., Ph.D., Michael Conte, M.D., Lauren Koch, Ph.D., Steven L. Britton, Ph.D., Mervyn Maze, M.B., Ch.B., Department of Anesthesiology, University of Michigan Medical School, Ann Arbor, MI. Department of Anesthesiology, University of California, San Francisco, CA, Department of Anesthesiology, University of Michigan Medical School, Ann Arbor, MI. Postoperative low-capacity runner (LCR) rats with metabolic syndrome respond qualitatively differently vs. high-capacity runner rats (control) regarding biotransformation of eicosanoids. This postoperative dysregulation results in less pro-resolving (lipoxin A4) and more pro-inflammatory (leukotriene B4) products in LCR rats and may contribute to the impairment in the resolution of systemic and neuroinflammation as well as cognitive decline following surgery.

A939 Exaggerated Postoperative Neuroinflammation and Cognitive Decline Is Associated With Dysregulation of the Neural Mechanism of Inflammation-Resolution in Rats With Metabolic Syndrome

Xiaomei Feng, M.D., Ph.D., Xiao Su, M.D., Ph.D., Niccolo Terrando, Ph.D., Lauren Koch, Ph.D., Steven L. Britton, Ph.D., Mervyn Maze, M.B., Ch.B., Department of Anesthesiology, University of California, San Francisco, San Francisco, CA, Department of Physiology and Pharmacology, Section for Anesthesiology and Intensive Care, Karolinska Institutet, Stockholm, Sweden, Department of Anesthesiology, University of Michigan Medical School, Ann Arbor, MI. The exaggerated postoperative neuroinflammation and cognitive decline in a rat model of metabolic syndrome (MetaS) is associated with impairment of neural inflammation-resolution mechanism; if causally related, this may prove to be a putative target for pre-empting postoperative cognitive dysfunction in susceptible MetaS patients.

A940 Effects of Fetal Exposure to Midazolam on Developing Brain in Mice

Masahiro Ushio, M.D., Jun Morishita, M.D., Ph.D., Tomomi Suehara, M.D., Kahiru Nishina, M.D., Ph.D., Masaaki Ueki, M.D., Ph.D., Nobuhiro Maekawa, M.D., Ph.D., Department of Anesthesiology, Kobe University Graduate School of Medicine, Kobe, Japan.

We investigated the effects of midazolam administered to pregnant mice on brain development. For the evaluation of neurodegeneration, gene expression levels of caspase-3 and BDNF were examined at gestational day 17 and postnatal day seven, respectively. Eight-arm radial maze tests at the age of eight weeks were also performed to assess spatial memory/learning ability. The results demonstrated that midazolam exposure at gestational day 17 did not alter the mRNA expression levels of caspase-3 and BDNF, and postnatal spatial memory/learning ability in mice.

A941 Estrogen-Mediated Microglial Activation and Its Effect on Functional Outcomes in a Murine Model of Traumatic Brain Injury

Odera Umeano, B.A., Haichen Wang, M.D., Ph.D., Hana Dawson, Ph.D., Bei Lei, M.D., Michael L. James, M.D., Duke University, Durham, NC. In this paper, we examine how estrogen affects the brain after traumatic brain injury, and how such changes mediate functional recovery in the murine model.

A942 The Effect of Hypercapnea and Oxygen Concentration on Neuroapoptosis in Neonatal Rat Brain

Yosuke Uchida, M.D., Toshikazu Hashimoto, M.D., Ph.D., Kaori Tachibana, M.D., Ph.D., Rui Kato, M.D., Ph.D., Kenkichi Tsuruga, M.D., Koichi Takita, M.D., Ph.D., Yuji Morimoto, M.D., Ph.D., Department of Anesthesiology, Hokkaido University, Sapporo, Hokkaido, Japan. We examined the effect of hypercapnea and oxygen concentration on the neonatal rat brain. High concentration CO2 exposure induced neuroapoptosis; however, the oxygen concentration does not affect histological changes in the rat brain.

A943 Epinephrine Does Not Worsen Spinal Lidocaine Neurotoxicity in Rats

Tamie Takenami, M.D., Yoshihiro Nara, D.V.M., Shigeihiro Matsumoto, M.D., Akiko Ito, M.D., Hirotatsu Okamoto, M.D., Anesthesiology, Kitasato University School of Medicine, Sagamihara, Japan. Epinephrine does not worsen lidocaine-induced histological and sensorimotor damage.
**A944** Electrophysiological Impairments Caused by Sevoflurane Exposure Depended on Developmental Period in Rat

Rui Kato, M.D., Ph.D., Kaori Tachibana, M.D., Ph.D., Toshikazu Hashimoto, M.D., Ph.D., Yosuke Uchida, M.D., Kenkichi Tsuruga, M.D., Kan Hasegawa, M.D., Tetsutaro Hase, M.D., Hitoshi Saito, M.D., Koichi Takita, M.D., Ph.D., Yuji Morimoto, M.D., Ph.D., Anesthesiology and Critical Care Medicine, Hokkaido University Graduate School of Medicine, Sapporo, Japan. Sevoflurane exposure cause lasting prolonged hippocampal electrophysiological alteration only in neonatal period, but not in P28. Our data suggested that sevoflurane neurotoxicity depended on developmental period.

**A945** Effects of Repeated Midazolam Administration to Newborn Mice on Their Neuronal Development

Jun Morisita, M.D., Ph.D., Tomomi Suehara, M.D., Masaehiro Uschio, M.D., Kahoru Nishina, M.D., Ph.D., Masaaki Ueki, M.D., Ph.D., Nobuhiro Maekawa, M.D., Ph.D., Department of Anesthesiology, Kobe University Graduate School of Medicine, Kobe, Japan. Midazolam is one of the most frequently used sedative drugs in pediatric anesthesia and the neonatal intensive care unit and may induce degenerative changes in the brain as exposed during early neonatal development. In the present study, we administered midazolam once a day for five consecutive days to newborn mice, and examined whether repeated administration would have any effects on synaptogenesis and memory/learning ability. As a result, it was revealed that midazolam exposure did not alter the expression levels of BDNF mRNA and synaptophysin protein in hippocampus and the ratio of error in radial maze test. These results suggest that multiple injection of midazolam during neonatal period may not affect the neuronal development in mice.

**A946** Lower Incidence of Emergence Agitation in Children After Propofol Anesthesia as Compared With Sevoflurane: A Meta-Analysis of Randomized Controlled Trials

Akihiro Kanaya, M.D., Norifumi Kuratani, M.D., Shin Kurosawa, M.D., Ph.D., Department of Anesthesiology and Intensive Care, Tohoku University Hospital, Sendai, Japan, Department of Anesthesiology, International University of Health and Welfare Hospital, Tochigi, Japan. Emergence agitation (EA) has been reported in children. Rapid awakening after sevoflurane has been proposed as one possible reason. However, our analysis did not reveal any significant differences in extubation time between sevoflurane and propofol. Our results suggest that rapid awakening per se does not seem to be a factor in the causation of EA.

**A947** Usefulness of Dexmedetomidine for Prevention of Emergent Agitation in Infants Undergoing Palatoplasty

Aiji Boku, Ph.D., Yoshinari Morimoto, Ph.D., Hiroshi Hanamoto, Ph.D., Mitsutaka Sugimura, Ph.D., Chihito Kudo, Ph.D., Hitoshi Niwa, Ph.D., Department of Dental Anesthesiology, Osaka University Graduate School of Dentistry, Suita, Japan. Dexmedetomidine (Dex) has sedative and analgesic properties without respiratory depression. The effectiveness of Dex in postoperative recovery in infants undergoing palatoplasty was explored as a randomized, double-blind, placebo-controlled trial. The administration of Dex has the advantage of a stable hemodynamics and a reduced emergence agitation without respiratory depression.

**A948** Comparison of Two Different Doses of Caudal Clonidine in Combination With a Single Large Dose of Rectal Paracetamol for the Relief of Postoperative Pain in Children: A Prospective, Randomized, Double Blind Study

Mahesh K. Arora, M.D., Varadharajan Nadarajan, M.D., Department of Anaesthesiology, All India Institute of Medical Sciences, New Delhi, India. The addition of clonidine to bupivacaine in caudal block along with a single large dose of rectal paracetamol enhances the postoperative analgesia without any increase inside effects and a dose of 2 ug/kg of clonidine may have any added advantage over 1 ug/kg.

**A949** Effect of Fascia Iliaca Compartment Block With Ropivacaine on Early Analgesia in Children With Development Dislocation of the Hip Received Salter Arthroplasty Treatment

Xiaolin Wang, M.D., Geng Wang, M.D., Jishuitan Hospital, Beijing, China. 80 cases of children with DDH were divided into four groups randomly: group I (FICB was used ropivacaine 0.33%, 1ml/kg, maximum 30ml) group II (FICB was used ropivacaine 0.25%,1ml/kg, maximum 30ml) group III (FICB was used ropivacaine 0.2%,1ml/kg, maximum 30ml) and group IV (FICB was used ropivacaine 0.15%,1ml/kg, maximum 30ml). The consumption of fentanyl during surgery, CRIES pain score at 1h, 4h and 24h postoperatively, the satisfaction score of parents, side effects were recorded. Compare with group IV The first three groups consumption of fentanyl during surgery were lower, Pain scores at 1h, 4h and 24h postoperatively were lower, the satisfaction score of parents was higher in groupI and groupII significantly. The method of ropivacaine (0.2% - 0.3%) used for FICB to early analgesia of children with DDH had the merits of safety, precise effect and convenient manipulation.

**A950** Comparison of Two Different Doses of Caudal Clonidine in Combination With a Single Large Dose of Rectal Paracetamol for the Relief of Postoperative Pain in Children: A Prospective, Randomized, Double Blind Study

Jeong-Rim Lee, M.D., Min-Soo Kim, M.D., Bo-Eun Moon, M.D., Anesthesiology and Pain Medicine, Yonsei University College of Medicine, Severance Hospital, Yonsei University College of Medicine, Seoul, Republic of Korea. The use of pharmacological agents at the end of anesthesia is thought to be the most convenient method in clinical situations since it does not rely on the nature of the anesthetic agents used during induction and maintenance or the duration of anesthesia. In this perspective, low-doses of propofol or fentanyl (1 mg/kg or 1 mcg/kg) at the end of anesthesia have been shown to reduce EA successfully. However, it remains largely unknown which drug has superior efficacy compared to other drugs. Therefore, we conducted this study to compare the efficacy of preventing EA and recovery profiles between propofol and fentanyl in the identical clinical condition.
A951 Multi-Channel Brain Electrical Activity in a 5 Year Old Preceding an Episode of Emergence Delirium
Jessica C. Martin, B.S.C., David T.J. Liley, M.B., B.Ch., Andrew J. Davidson, FANZCA, Robert D. Sanders, M.B., B.S., Jamie W. Sleigh, FANZCA. Faculty of Life and Social Sciences, Swinburne University of Technology, Hawthorn, Australia, Anaesthesia and Pain Management, Royal Children’s Hospital, Parkville, Australia, Imperial College, London, United Kingdom, Waikato Clinical School, University of Auckland, Auckland, New Zealand. While the electrophysiological characteristics of night terror are well described there remain no data on the electrophysiological characteristics of emergence delirium (ED). In this report, we describe the EEG in a child who developed ED and compare the EEG to children that emerged from anesthesia without delirium.

A952 Determining the Relationship Between Pain and Emergence Delirium in Young Children
Andrew J. Davidson, M.D., Alison Lam, Student, Stephanie Malardi, B.Sc., Suzette Sheppard, B.Sc., Royal Children’s Hospital, Parkville, Australia, Anaesthesia Research Group, Murdoch Children’s Research Institute, Parkville, Australia, Psychological Science, La Trobe University, Bundoora, Australia. It is unclear if pain increases the likelihood of emergence delirium (ED). This is partly due to the inability of established measures of ED to differentiate pain from delirium. For treatment purposes it is important to determine if pain contributes to the development of ED. To determine the role of pain in ED we compared the incidence of ED between groups of children who had painless procedures, and procedures that might be painful, using a measure of ED that is more likely to differentiate pain from delirium. We found that postsurgical pain may lead to ED. This finding reinforces the importance of providing effective and preemptive analgesia to children during surgery.

A953 A Proactive Risk Assessment by Utilizing Healthcare Failure Mode and Effect Analysis (HFMEA) for Safe Implementation of Peripheral Nerve Catheters in Pediatric Patients
Tarun Bhalla, M.D., Sharon Wrona, M.S., Joseph D. Tobias, M.D., Department of Anesthesiology and Pain Medicine, Nationwide Children’s Hospital, Columbus, OH. In 2011, Nationwide Children’s Hospital began using peripheral nerve catheters in order to provide localized anesthetic to patients undergoing select surgeries. While peripheral nerve catheters provide a significant improvement in the quality of care our patients receive, introducing this new technology and process within our hospital presents an inherent risk. In order to ensure that our patients received the safest care, we assembled a multidisciplinary team to complete a proactive risk assessment by utilizing Healthcare Failure Mode and Effect Analysis (HFMEA).

A954 Anesthetic Experience With Children Undergoing Hemispherectomy for Seizure Surgery
Hubert Benzon, M.D., Sulpicio Soriano, M.D., Mark Rockoff, M.D., Joseph Madsen, M.D., Victor Johnson, M.A., Craig McClain, M.D., Department of Anesthesiology, Perioperative and Pain Medicine, Department of Neurosurgery, Children’s Hospital Boston, Boston, MA. This retrospective review of 32 pediatric patients over 8 years compares anatomical to functional hemispherectomy. Our data demonstrate large differences in intraoperative blood loss, use of blood products, need for postoperative mechanical ventilation, and shunt-dependent hydrocephalus. Both procedures were helpful in controlling seizures, but functional hemispherectomy was associated with less perioperative and long-term complications.

A955 The Management of Postoperative Craniootomy Pain in Pediatric Patients: A Prospective Cohort Study
Myron Yaster, M.D., George M. Buckley, B.S., Brian G. Liu, B.S., Elizabeth D. White, R.N., Navil F. Sethna, M.D., Lynne G. Maxwell, M.D., Anesthesiology/Critical Care Medicine, Johns Hopkins University, Baltimore, MD, Anesthesiology, Children’s Hospital Boston, Boston, MA, Anesthesiology/Critical Care Medicine, Children’s Hospital of Philadelphia, Philadelphia, PA. Pain management following major intracranial surgery is often limited by a presumed lack of need and a concern that opioids will adversely affect postoperative outcome and interfere with the neurologic examination. In this single-institution study, pain was effectively managed with IV patient-controlled analgesia or parent/nurse-controlled analgesia with minimal serious side effects. A larger multi-institution study with other treatment modalities is under way.

A956 The Impact of Fentanyl on Emergence Agitation in Preschool Children After Sevoflurane Anesthesia for Inguinal Surgery
Naomitsu Murayama, M.D., Jun Yoshino, M.D., Ph.D., Kaoru Umehara, M.D., Kaoru Izumi, M.D., Nobuo Jimi, M.D., Rieko Sumiyoshi, M.D., Keiichiro Mizuno, M.D., Taiki Yamaji, M.D., Ph.D., Department of Anesthesia, Fukuoka Children’s Hospital and Medical Center for Infectious Diseases, Fukuoka, Japan, Research Center for Cancer Prevention and Screening, Epidemiology and Prevention Division, National Cancer Center, Tokyo, Japan. We examined whether intravenous administration of fentanyl is effective as prophylaxis against emergence agitation in preschool children undergoing inguinal surgery. Intravenous fentanyl 1 μg/kg administered prior to surgery did not confer a clinically significant benefit on emergence agitation over placebo. However, prophylactic intravenous administration of fentanyl at the end of surgery was more effective in preventing emergence agitation.

A957 Paediatric Post Tonsillectomy Pain Management: Improving Discharge Information for Parents
Andrew J. Davidson, M.D., Jennifer Coe, B.Sc., Fiona Wilde, M.B., B.S., George Chalkiadis, M.B., B.S., Gillian Ormond, M.Sc., David Sommerfield, M.B., B.S., University of Melbourne, Anesthesia, Royal Children’s Hospital, Anesthesia, Murdoch Children’s Research Institute, Parkville, Australia. Tonsillectomy is a common and painful procedure. Several studies have shown that home-based management of children’s pain post tonsillectomy is far from optimal and GP review in the recovery period is common. The aim of this study was to investigate the impact of new discharge information leaflets distributed to parents of children undergoing tonsillectomy.

A958 A Tailored Internet-Based Preparation Program for Pediatric Preoperative Anxiety and Postoperative Pain: WebTIPS
Elizabeth A. Bunzl, B.S., Eva L. Maurer, B.A., Edwin T. Tan, Ph.D., Michelle A. Fortier, Ph.D., Ellen F. Olshansky, R.N., Suzanne Strom, M.D., Avi Rosenbaum, M.D., Zeev N. Kain, M.D., Anesthesiology and Perioperative Care, Program in Nursing Science, University of California, Irvine, Irvine, CA. A Web-Based Tailored Intervention Preparation for Surgery (WebTIPS) was developed, evaluated, and tested for preliminary efficacy. Results indicated that the intervention is feasible and received well by parents and children. Data collection for preliminary efficacy is ongoing, and outcomes will be reported.
A959 Minimum and Optimum Ropivacaine Concentrations for Ultrasound-Guided Ilioinguinal/Iliohypogastric Nerve Block in Pediatric Patients Anesthetized With Sevoflurane

Kumiko Yamada, M.D., Shinichi Inomata, M.D., Anesthesiology, University of Tsukuba, Tsukuba City, Japan. The minimum and the 95% effective local anesthetic concentrations of ropivacaine for ultrasound-guided INB were 0.20% and 0.52%, respectively, in children anesthetized with 2% sevoflurane. A ropivacaine concentration of 0.5% seems to be optimal (identical) for INB in children.

A960 Effect of Dexmedetomidine in Reducing Sevoflurane Requirement for Anesthesia and Postoperative Emergence Agitation in Children Undergoing Ambulatory Surgery

Nayoung Kim, M.D., Yun So, M.D., Jae Keum Kil, M.D., Yonsei University College of Medicine, Seoul, Republic of Korea. This study was conducted to test the hypothesis that continuous infusion after bolus administration of dexmedetomidine reduces the emergence agitation with the decrease in sevoflurane concentration to achieve an appropriate depth of anesthesia in children. The continuous infusion after bolus administration of dexmedetomidine significantly reduced the Et-Sevo to maintain anesthesia and decreased the emergence agitation frequency without prolonged discharge time.

A961 Improving Signal Analysis Using a Novel Neural Blockade Monitor in Children: RMS Averaging Time

Jessica A. Lawrence-George, M.D., Wayne I. Sternberger, Ph.D., John Gearhart, M.D., Robert S. Greenberg, M.D., Division of Pediatric Anesthesiology, Applied Physics Laboratory, Pediatric Urology, Pediatric Anesthesiology/Critical Care Medicine, Johns Hopkins Medical Institutions, Baltimore, MD. Discrimination between caudal and penile block was found to be superior using a 0.5 second time frame for derivation of the EMG RMS at T10. Of those studied, this demonstrates the optimal time period for determination of this signal for block assessment. Application of this is critical in future analysis of this novel monitoring modality.

A962 Spread of Local Anesthetic Into Epidural Space in Children as Assessed by Ultrasonography

Masato Dammura, M.D., Shinichi Inomata, M.D., Department of Anesthesiology, Tsukuba University, Tsukuba, Japan. After epidural injection in children, the epidural space was extended and the dura mater was compressed for a few minutes. The degree of decrease in the diameter of the dura mater was not affected by age, body weight or height. Especially in small children, solutions should be injected into the epidural space as slowly as possible.

A963 Levobupivacaine Concentration Required for Ultrasound Guided Ilioinguinal/Iliohypogastric Nerve Block

Shunsuke Ishitsuka, M.D., Shinichi Inomata, M.D., Department of Anesthesiology, University of Tsukuba, Tsukuba City, Ibaraki, Japan. We investigated the concentration of levobupivacaine required for ultrasound-guided ilioinguinal/iliohypogastric nerve block (INB) in pediatric patients undergoing inguinal hernia repair or testes surgery. ED$_{25}$ was 0.22%, and ED$_{90}$ was 0.30%. In all subjects who received 0.3% levobupivacaine, INB was complete according to the up-and-down method. In pediatric inguinal hernia repair or undescended testes surgery, a concentration of 0.3% levobupivacaine was required to accomplish ultrasound-guided INB.

A964 When a Cuffless Tracheal Tube Bends in a Pediatric Patient, How Shallow Does the Tube Become?

Ryota Maeda, M.D., Shinichi Inomata, M.D., Anesthesiology, Mito Saiseikai General Hospital, Mito, Japan, Department of Anesthesiology, University of Tsukuba, Tsukuba City, Japan. In pediatric anesthesia, a cuffless tracheal tube is frequently used. Additionally, an L-shaped bedcradle is often placed directly on top of the child's face, and the tube is often bent. The tracheal tube can slip off and become shallow. We examined whether the position of the tracheal tube changed when the tube was bent and straightened. When a cuffless tracheal tube is bent, the tube became shallow. The tube should be fixed to extend straight from the patient's face.

A965 Effect-site Concentration of Propofol at Awakening in Children

Mariko Hara, M.D., Osamu Uchida, M.D., Anesthesiology, Chiba Children's Hospital, Chiba, Japan, Anesthesiology, Osaka University Graduate School of Medicine, Suita-city, Osaka, Japan. Effect-site concentration of propofol at awakening (CeAwake) was examined retrospectively in children with the use of pharmacokinetic simulation, based on two different models (Paedfusor and Kataria). CeAwake in patients of 7 to 9 years old was significantly higher than that in younger patients (Paedfusor) and that in older patients (Paedfusor and Kataria). CeAwake based on Paedfusor was higher than that on Kataria model in all age groups. The results in this study suggest that a larger propofol dose might be appropriate for patients of 7 to 9 years old than for those of other age groups.

A966 Clinical and Electroencephalographic Profiles During Pediatric Induction With Sevoflurane Alone vs. Sevoflurane Plus Propofol

Celeste Boccuti, M.D., Nicolas Gilliot, M.D., Nada Sabourdin, M.D., Nicolas Louvet, M.D., Marie Laurence Guye, M.D., Isabelle Constant, M.D., Ph.D., Anesthesiology, Hopital Trousseau, Paris, France, Hopital Trousseau, Paris, France. Prospective, randomized, double-blind study about clinical and electroencephalographic profiles of two standard techniques of pediatric induction: no clinical difference but EEG changes identified.

A967 A Retrospective Review of Femoral Nerve Blocks for Knee Surgery in Children

Brian Schloss, M.D., Joseph D. Tobias, M.D., Tarun Bhalla, M.D., Nationwide Children's Hospital, Columbus, OH. Retrospective review of outcomes of arthroscopic knee surgery with and without femoral nerve blocks in pediatric patients.

A968 Use and Beliefs Regarding Complementary and Alternative Medicine in Hispanic and White Mothers of Children Undergoing Surgery

Michelle A. Fortier, Ph.D., Shu-Ming Wang, M.D., Sulay Gomez, B.A., Zeev Kain, M.D., University of California, Irvine, Orange, CA. Little is known about differences in beliefs and use of complementary and alternative medicine (CAM) in different ethnic groups in the United States, particularly in surgical populations. This study aimed to examine differences in CAM beliefs and use in English- and Spanish-speaking Hispanic and White mothers of children undergoing outpatient surgery. Differences in CAM use based upon ethnic background and primary language spoken were observed, even after controlled for differences in socioeconomic status.
A969 Differences in Postoperative Behavioral Changes in Hispanic and White Children
Michelle A. Fortier, Ph.D., Eva L. Maurer, B.S., Aditi Wahi, B.A., Suzanne Strom, M.D., Avi Rosenbaum, M.D., Zeev N. Kain, M.D., University of California, Irvine, Orange, CA. Studies of postoperative recovery have relied on relatively homogenous populations and has not considered differences in behavioral recovery of children as a function of cultural factors, such as ethnicity and language. Accordingly, the purpose of this study was to investigate whether children’s postoperative negative behavioral changes may systematically vary among Spanish- and English-speaking White and Hispanic families.

A970 Comparison Predictive Value of Distance From the Skin to the Epidural Space With Measurements in Pediatric Thoracic Epidural Anesthesia
Aki Uemura, M.D., Ph.D., Masayuki Miyabe, M.D., Ph.D., Masahiro Yagihara, M.D., Yousuke Sakakura, M.D., Department of Clinical Anesthesiology, Mie University, Tsu-City, Japan. Before doing pediatric epidural anesthesia, we always predict the distance from the skin to the epidural space from the formula. The formula was calculated from lumbar epidurals. Since we do many thoracic epidurals in pediatric patients, we evaluate if the formula is also suitable in thoracic epidural anesthesia in pediatric patients. The difference between predictive value and measurements was -0.4±2.8 (mm). The difference is greater in older group. The formula is suitable in thoracic epidurals. In older patients, we have to keep in mind that the real distance from the skin to the epidural space is slightly shorter than formula.

A971 Randomized, Controlled Trial Comparing the Effects of Maintenance of Anesthesia With Propofol, Isoflurane, Desflurane and Sevoflurane on Pain After Laparoscopic Cholecystectomy: Does it Matter Which General Anesthetic Agent Is Used Within a Multimodal Regimen?
Jaime Ortiz, M.D., Lee C. Chang, M.D., Daniel A. Tolpin, M.D., Charles C. Minard, Ph.D., Bradford G. Scott, M.D., Jose M. Rivers, M.D., Anesthesiology, Baylor College of Medicine, Dan L. Duncan Institute for Clinical and Translational Research, Baylor College of Medicine, Surgery, Baylor College of Medicine, Houston, TX. Maintenance of general anesthesia with propofol did not lead to decreased postoperative pain scores after laparoscopic cholecystectomy when compared to isoflurane, desflurane or sevoflurane.

A972 The Effects of Restrictive Transfusion Strategy in Combination With Small Doses of Norepinephrine on Oxygen Metabolism and Postoperative Outcome in Elderly Colorectal Surgery Patients
Hui Ye, M.D., Xiaodong Qiu, M.D., Liang Jing, M.D., Ph.D., Department of Anesthesiology, Zhongda Hospital and College of Medicine, Southeast University, Nanjing, China. The aim of this study was to evaluate the effects of restrictive transfusion strategy in combination with small doses of norepinephrine on oxygen metabolism and postoperative outcome in elderly colorectal surgery patients. Through this research, we found that a restrictive transfusion strategy in combination with small doses of norepinephrine could prevent the occurrence of intraoperative hypotension and reduce the incidence of postoperative complications in elderly colorectal surgery patients. Continuous intravenous infusion of small doses of norepinephrine does not show detrimental effects on gastrointestinal microcirculation and systemic oxygen supply-demand.

A973 TSE Mask Improves Oxygenation and Prevents Severe Desaturation in Elderly Patients Under Deep Propofol Sedation During Colonoscopy
Sylviana Barsoum, M.D., Shaul Cohen, M.D., Kristen Dauphinee, M.D., Christian McDonough, M.D., Shrut Shah, M.D., Mordechai Bermann, M.D., Candy Anim, M.D., Laurie Spina, M.D., Adil Mohiuddin, M.D., James Tse, M.D., Ph.D., Anesthesiology, UMDNJ-RWJMS, New Brunswick, NJ. Patients undergoing colonoscopy receive nasal cannula (NC) O2 and I.V. sedation. Over-sedation/airway obstruction causes severe desaturation, especially in elderly patients. A simple plastic sheet was shown to improve oxygenation by transforming an NC to a face tent (TSE “Mask”) in sedated patients during EGD. Review of 94 elderly patients (≥65 y/o) who received deep propofol sedation during colonoscopy shows that TSE “Mask” improves oxygenation and prevents severe desaturation, by increasing FiO2 without raising NC O2 flow. It may improve patient safety, especially elderly patients with severe diseases. It is easy to prepare at no cost and should be used prior to sedation.

A974 Hypotension From Spinal Anesthesia in Patients Aged Greater Than 80 Years Is Due to a Decrease in Systemic Vascular Resistance
Masato Nakasui, M.D., Masataka Nomura, M.D., Norie Imanaka, M.D., Masuji Tanaka, M.D., Miwako Yoshioka, M.D., Taeko Miyata, M.D., Kae Nakasui, M.D., Anesthesiology, Kansai Dennyoku Hospital, Osaka, Japan. We measured cardiac output (CO) using the VigileoFloTrac system in 60 elderly patients (age >80 yrs) who underwent hip fracture repair during spinal anesthesia. Serial changes in systemic vascular resistance (SVR) and CO from baseline after puncture were compared between the hypotension group (n=18), which comprised patients who required ephedrine to maintain more than 100 mmHg of systolic blood pressure (BP) and non-hypotension group (n=42), which consisted of patients who maintained stable BP with crystalloid infusion only. The decrease in SVR was significantly greater in the hypotension group than non-hypotension group (P=0.047), while CO was stable in the two groups. In conclusion, a decrease in SVR, but not CO, is the main mechanism of hypotension seen during spinal anesthesia.
**PO02-2 Anesthetic Action and Biochemistry (e-posters)**

FA

1-2 p.m.

Hall C, E-Poster area

**A975 Surgical Apgar Score Can Predict Postoperative Complications in Nonagenarian Patients**

Rumiko Kakihana, M.D., Masanori Abe, M.D., Nobuhiro Noguchi, M.D., Masakatsu Oshiro, M.D., Kazuhiro Sugahara, M.D., Northern Okinawa Medical Center, Anesthesiology, University of the Ryukyus, Okinawa, Japan. The Surgical Apgar Score can predict postoperative complications and could be a good surveillance tool to improve the quality of perioperative care in geriatric surgical patients.

**A976 Examination of the Preoperative Assessment Score in a Cancer Special Hospital: New Possibility of POSSUM Score**

Masashi Yanaki, M.D., Yusuke Kasuya, Ph.D., Ayako Abe, M.D., Takako Fujita, M.D., Masatoshi Takeamura, M.D., Yosuke Kawaguchi, M.D., Tetsufumi Sato, Ph.D., Maho Kinoshita, Ph.D., Nobutada Morioka, Ph.D., Makoto Ozaki, Ph.D., Anesthesiology, Tokyo Women’s Medical University, Tokyo, Japan, Anesthesiology, National Cancer Center, Tokyo, Japan. Postoperative complications predictability is improved by using the NCC-POSSUM incorporating the effect of preoperative chemotherapy in cancer patients has been suggested.

**A977 Health Care Consumption and Chronic Postsurgical Pain One Year After Outpatient Surgery**

Daisy Hoofwijk, M.Sc., Audrey Fiddelers, Ph.D., Hans-Fritz Gramke, M.D., Marco Marcus, M.D., Ph.D., Anesthesiology and Pain Treatment, Maastricht University Medical Centre+, Maastricht, Netherlands. A study of 1,275 outpatients in a Dutch university hospital has demonstrated that patients who suffer from moderate to severe chronic postsurgical pain (CPSP) one year after the outpatient procedure use health care facilities significantly more often than patients without CPSP.

**A978 Use of Computerized Testing For Cognitive Function Studies in Older Surgical Patients**

Marc C. Torjman, Ph.D., Kimberly Dy, B.S., Ronak Desai, D.Phil., Robyn Tarpley, M.S., Ashley Shapiro, B.A., George Dy, B.S., Zyad Carr, M.D., Michael E. Goldberg, M.D., Department of Anesthesiology, Cooper University Hospital, Cooper Medical School of Rowan University, Camden, NJ. This study examined the components of postoperative cognitive dysfunction before and after general anesthesia utilizing the CogState computerized neurocognitive battery in older adults. Results were compared to two conventional tests. These data show lack of a clinically or statistically significant postoperative decline in cognitive function. Ease of administration and lower overall variability were observed with computerized testing. This method may therefore be advantageous for monitoring changes in POCD and for assessing a patient’s response to medications in a perioperative setting.

**A979 Relationships Between the Preoperative HbA1c Levels and the Changes of MAP, HR and Blood Glucose During the Induction With Tracheal Intubation in the Geriatrics**

Yanning Qian, Ph.D., Xiaoguang Guo, Student, Xiaoyan Zhou, M.D., M.S., Department of Anesthesiology, First Affiliated Hospital, Nanjing Medical University, Nanjing, China. HbA1c was an independent risk predictor for the outcome of CVDs and/or DM. So we investigated the relationship between the different preoperative HbA1c levels and changes of mean arterial pressure (MAP), heart rate (HR) and blood glucose (Glu) during intubation in geriatrics. 112 geriatrics scheduled for noncardiac surgery were divided into four groups, according to different preoperative HbA1c levels. The result showed that MAP and HR of geriatrics with higher preoperative HbA1c level dropped more obviously after tracheal intubation.

**A980 Different Response to Apoptotic Induction by Propofol in Three Cancer Cell Lines**

Jing Song, M.D., Wangning Shangguan, M.D., Yanjie Shen, M.D., Qingquan Lian, M.D., Anesthesiology, Montefiore Medical Center, Bronx, NY, The Second Affiliated Hospital of Wenzhou Medical College, Wenzhou, China. The anesthetic agent propofol may have antineoplastic properties through apoptosis induction and metastasis inhibition. In our study of three cancer cell lines, concentrations of apoptosis associated proteins Caspase-3 and BAX increased after the administration of propofol at times that align with the process of their expression for apoptosis. The activation via phosphorylation of kinases involved in cell growth, ERK-1/2, is reduced with the administration of propofol. We look forward to the exploration of these findings in other contexts.

**A981 Suppression of Migration of Murine Bone Marrow-Derived Dendritic Cells With Dexmedetomidine**

Hironobu Ueshima, M.D., Takefumi Inada, M.D., Koh Shingu, M.D., Kansai Medical University, Osaka, Japan. We investigated the effect of dexmedetomidine on migration of dendritic cells (DCs). Chemotaxis and matrigel trans-migration toward a chemokine, CCL-19, were assessed using a Transwell assay. For assessment of in vivo migration, the number of migrated CFSE-labeled DCs from footpad to popliteal lymph node was determined using flow cytometry. Dexmedetomidine treatment significantly reduced the number of matrigel trans-migrated DCs, while such reduction was not observed with the chemotaxis assay. Popliteal lymph node migrated DCs were significantly reduced in number by the dexmedetomidine treatment. We suggest that the suppression of migration may be related to the alteration of matrix metalloproteinase activity by dexmedetomidine.
**A982** Locally Injected Dexmedetomidine Inhibits Carrageenin-Induced TNF-Alpha Production in Injected Region

Takuya Miyawaki, D.D.S., Shintaro Sukeyawa, D.D.S., Miho Inoue, Ph.D., Hitoshi Higuchi, D.D.S., Yukimichi Tomoyasu, D.D.S., Minako Ishii, D.D.S., Shigeru Maeda, D.D.S., Dental Anesthesiology, Okayama University Hospital, Okayama University Graduate School, Okayama University Dental School, Okayama, Japan. We investigated the effect of locally injected dexmedetomidine (Dex) on carrageenin-induced TNF-alpha production in mouse paws, using Western blotting quantitative analysis. Dex inhibited carrageenin-induced TNF-alpha production in the injected region. Furthermore, yohimbine, a full antagonist of alpha-2 adrenergic receptors, antagonized the effect of Dex on TNF-alpha production. The finding suggests that locally administered Dex has an inhibitory effect on TNF-alpha production following local inflammation, mediated by alpha-2 adrenergic receptors.

**A983** Minimum Alveolar Concentration Needed to Block Adrenergic Response of Sevoflurane With Nitrous Oxide Varies Depending on the Stimulation Sites in Adult Surgical Patients

Tetsu Kimura, M.D., Toshiaki Nishikawa, M.D., Anesthesia and Intensive Care, Akita University Graduate School of Medicine, Akita, Japan. We examined whether minimum alveolar concentration needed to block adrenergic response (MAC-BAR) of sevoflurane with nitrous oxide is influenced by the body surface sites to which noxious stimuli are applied. MAC-BAR of the forehead was significantly greater than that of the thigh.

**A984** The Kappa Opioid Receptor is Involved in the Analgesic Effect of Nitrous Oxide in Mice

Hiroshi Fukagawa, M.D., Tomohiro Koyama, M.D., Ph.D., Kazuhiko Fukuda, M.D., Ph.D., Department of Anesthesia, Kyoto University Hospital, Kyoto, Japan. Nitrous oxide is known to exert its analgesic action through the activation of endogenous opioid system. We found that deletion of kappa opioid receptor almost completely abolished these actions in mice.

**A985** Isoflurane Suppresses the Induction of Plasma Erythropoietin Level and Erythropoietin mRNA Expression Elicited by Systemic Hypoxemia and Acute Anemia

Shinichi Kai, Esq., M.D., Tomoharu Tanaka, Ph.D., Kengo Suzuki, M.D., Tomonori Matsuyama, M.D., Hiroki Daido, Ph.D., Kiichi Hiroki, Ph.D., Kazuhiko Fukuda, Ph.D., Anesthesia, Kyoto University Hospital, Kyoto, Japan. We demonstrated that isoflurane suppresses plasma erythropoietin (EPO) expression in a hypoxemia- or anemia-dependent manner and in a tissue-dependent manner. Isoflurane inhibits EPO mRNA induction in the brain elicited by systemic hypoxemia. In contrast, isoflurane selectively inhibited mRNA induction elicited by acute anemia in the kidney. Our results indicate that isoflurane differentially regulate biological reactions in response to hypoxemia or acute anemia.

2-3 p.m.
Hall C, E-Poster area

**A986** The Volatile Anesthetics Isoflurane and Sevoflurane Affect Glucose-Stimulated Insulin Secretion in the Pancreatic β Cell Line MIN6

Kengo Suzuki, M.D., Hiroki Daido, Ph.D., Shinichi Kai, M.D., Tomonori Matsuyama, M.D., Shin Kurosawa, Ph.D., Kazuhiko Fukuda, Ph.D., Kiichi Hirota, Ph.D., Anesthesia, Kyoto University, Kyoto, Japan, Tohoku University Hospital, Miyagi, Japan. In this study, we demonstrated that glucose-stimulated insulin secretion (GSIS) elicited by 400 mg/dL glucose was inhibited by treatment with isoflurane and sevoflurane. Taken together experimental evidence that glibenclamide-stimulated insulin secretion was not affected by either isoflurane or sevoflurane and that treatment with isoflurane or sevoflurane significantly suppress glucose-induced intracellular ATP elevation, it is suggested that isoflurane and sevoflurane affect mitochondria ETC and suppresses GSIS. Our finding may delineate the molecular mechanism behind the glucose tolerance established by volatile anesthetics.

**A987** Determination of Quality Improvement in Generic Sevoflurane Product Using Gas Chromatography

Shun-suke Takehara, M.D., Toma Hayase, M.D., Shigekazu Sugino, M.D., Ph.D., Hajime Sonoda, M.D., Ph.D., Michiaki Yamakage, M.D., Ph.D., Department of Anesthesiology, Kushiro City General Hospital, Kushiro, Japan, Department of Anesthesiology, Sapporo Medical School of Medicine, Sapporo, Japan. The new type of generic sevoflurane has a significantly smaller amount of related substances than that in the old type of generic sevoflurane, but the original sevoflurane has the highest purity.

**A988** Perinatal Gi Coupled Receptor Signaling Restrictions Pancreatic Beta-Cell Proliferation, and Controls Adult Glucose Tolerance and Insulin Release

Miles Berger, M.D., Ph.D., David Scheel, M.A., Takeshi Miyatsuka, M.D., Ph.D., Hong Huang, B.A., Hail Kim, M.D., Hector Macias, Ph.D., Gerard Honig, Ph.D., Bruce Concilio, M.D., Laurence Tecott, M.D., Ph.D., Michael German, M.D., Anesthesiology, Duke University Medical Center, Durham, NC, University of California, San Francisco, Gladstone Institute, University of California, San Francisco, Medicine, Diabetes Center, University of California, San Francisco, San Francisco, CA. Mutations in Gi coupled receptors have been linked to diabetes, a common coexisting disease. We show that Gi coupled receptors including the alpha 2A receptor are critical regulators of the development of pancreatic insulin producing cells. These findings have implications for understanding the link between several human mutations and type II diabetes, for performing pancreatic islet transplants to treat diabetes, and for using alpha 2 agonists like dexmedetomidine during the perinatal period.
**A989 Characterization of the Potential Serotoninergic Effects of Urapidil on Different Arterial Beds in Various Species**

Claire E. Bopp, M.D., Girish Joshi, M.D., Ph.D., Valerie Schini-Kerth, M.D., Ph.D., Pierre Dienmunsch, M.D., Ph.D., Anesthesiology and Intensive Care, University Hospital of Strasbourg, UMR CNRS 7213 laboratoire de Biophotonique et Pharmacologie, University of Strasbourg, Strasbourg, France. Urapidil (U), antihypertensive drug, thought to act through at least two mechanisms: a peripheral postsynaptic alpha-1 adreno-receptor antagonism and a central 5-HT1A serotoninergic action with a sympathetic inhibition. The potential role of the peripheral 5-HT1A serotoninergic receptors in the mechanism of action of U remains unknown. The aim of this in vitro study was to characterize the potential serotoninergic effects of U on different arterial beds in various species. The results indicate that a peripheral 5-HT1A mechanism is not likely to be involved in the relaxing effect of U that depends mainly on the known alpha 1 adrenergic antagonism.

**A990 Valproate Increases the Rate of Protein-unbound Free Propofol in Human Serum**

Minako Ishii, D.D.S., Satoru Sakurai, D.D.S., Hitoshi Higuchi, D.D.S., Yumiko Tomoyasu, D.D.S., Shigena Maeda, D.D.S., Takuya Miyawaki, D.D.S., Dental Anesthesiology, Okayama University Hospital, Okayama, Japan, Dental Anesthesiology, Tokyo Dental College, Tokyo, Japan. We evaluated the effect of valproate on the binding of propofol to serum protein as a responsible pharmacokinetic factor for their synergistic action. Serum samples were collected from healthy male volunteers and incubated with valproate and propofol. The rates of protein-unbound free propofol in the serum samples combined with valproate were significantly increased compared with the control values. The results indicated that valproate increases the rate of protein-unbound free propofol in human serum.

**A991 Pharmacokinetic Analysis of (R)- and (S)-Ketamine and Norketamine in Rats on Ad Lib and Calorie Restricted Diets**

Michael E. Goldberg, M.D., Anuradha Ramamoorthy, Ph.D., Scott Van Wart, Ph.D., Rafael de Cabo, Ph.D., Marc Torjman, Ph.D., Donald E. Mager, Ph.D., Irving W. Wainer, Ph.D., Department of Anesthesiology, Cooper University Hospital, Cooper Medical School of Rowan University, Camden, NJ, National Institute on Aging Intramural Research Program, National Institute of Health, Baltimore, MD. (R,S)-Ketamine (Ket) is effective in the treatment of depression and chronic pain. Ket is extensively metabolized to norketamine (NK), dehydronorketamine (DHNK), hydroxynorketamines (HNK) and hydroxyketamines (HK). The majority of animal studies have not quantified DHNK and HNK metabolites. Hence, they did not consider their potential contribution to the observed pharmacological effects. In this study we demonstrate that significant concentrations of the downstream metabolites of Ket are present in plasma and brain tissue after a single dose of the parent drug.

**A992 Effects of Propofol on Voltage-gated Sodium Channels, Potassium Channels and Single Action Potention of S1 Neurons in Rats**

Jiong C. He, M.Sc., Xing Kui Liu, Ph.D., Tian Yu, Ph.D., Zun Yi Medical College, Zunyi, China, Zun Yi Medical College, Zunyi, China. We demonstrated for the first time that the S1 in the thalamocortical circuit is sensitive to propofol. Importantly, inhibition of voltage-gated sodium channels, potassium channels and AP in S1 neurons may play a role in the mechanisms of propofol induced general anesthesia.

**A993 Determination of Ketamine and Its Downstream Metabolites in Plasma and Brain of Wistar Rats**

Michael E. Goldberg, M.D., Mitsesh Sanghvi, Ph.D., Ruin Moaddel, Ph.D., K. O’Loughlin, Ph.D., C. Green, Ph.D., Marc C. Torjman, Ph.D., Irving W. Wainer, Ph.D., Department of Anesthesiology, Cooper University Hospital, Cooper Medical School of Rowan University, Camden, NJ, National Institute on Aging Intramural Research Program, National Institute of Health, Baltimore, MD. The (R,S)-Ketamine (Ket) is effective in the treatment of depression and chronic pain. Ket is extensively metabolized to norketamine (NK), dehydronorketamine (DHNK), hydroxynorketamines (HNK) and hydroxyketamines (HK). The majority of animal studies have not quantified DHNK and HNK metabolites. Hence, they did not consider their potential contribution to the observed pharmacological effects. In this study we demonstrate that significant concentrations of the downstream metabolites of Ket are present in plasma and brain tissue after a single dose of the parent drug.

**A994 Comparison of Stress Response, Remifentanil With Epidural Anesthesia on Excessively Invasive Abdominal Surgery – A Prospective Study**

Masahiro Iwabuchi, M.D., Shinya Oda, Ph.D., Masaki Nakane, Ph.D., Kaneyuki Kawamae, Ph.D., Anesthesiology, Yamagata university, Yamagata, Japan. We compared remifentanil with epidural anesthesia on excessively invasive abdominal surgery in stress response. Remifentanil is suggested to suppress the stress response at least compared to epidural anesthesia.

**A995 The Neurotoxicity of Dexametomidine is Lower Than Midazolam in Neonatal Mice**

Jinfeng Luo, M.S., Jin Guo, M.S., Dong Mei Han, M.S., Hua Feng Li, M.D., Department of Anesthesiology, West China School of Medicine Sichuan University, Chengdu, China, Department of Anesthesiology, West China Second Hospital of Sichuan University, Chengdu, China. Dexametomidine and midazolam have been widely used in clinical anesthesia and intensive care unit sedation. These two drugs differ in sedative mechanism. We hypothesized the neurotoxicity of repeated exposure to dexametomidine or midazolam in neonatal mice is different. By investigating TUNEL signal and apoptosis-related protein (Bcl2 and Bax) level, we suggest that dexametomidine has lower neurotoxicity than midazolam for neonatal mice.
**PO07-1 Drug Disposition**

**FA**

1-4 p.m.

Hall C-Area G

**A996 Effect of Intraoperative Amino acid with/without Glucose Infusion on Blood Glucose, Insulin and Body Temperature in Patients Undergoing Laparoscopic Colectomy**

Yasuki Fujita, M.D., Chiharu Tokunaga, M.D., Sayo Yamaguchi, M.D., Kayo Nakamura, M.D., Yuu Horiguchi, M.D., Azusa Iriyachi, M.D., Azusa Ushioda, M.D., Michiko Kaneko, M.D., Keiko Tomioka, M.D., Takeo Iwakura, M.D., Anesthesiology, Osaka University School of Medicine, Suita, Japan, Anesthesiology, Saiseikai Nakatsu Hospital, Osaka, Japan. We evaluated the effects of IV amino acid administration with/without glucose on temperature regulation during laparoscopic colectomy in three groups of patients: A, amino acid; AG, amino acid + glucose; C, ringer only. Body temperature in group A rose during surgery to levels significantly higher than that in groups AG and C. Serum insulin levels at 2h after anesthesia induction were similar in groups A and AG, but rose to significantly higher levels in group C. We conclude that intraoperative amino acid infusion without glucose is more effective for maintaining body temperature than combined glucose and amino acid infusion.

**A997 A Dye to Die For**

Raymond Glassenberg, M.D., Anesthesiology, Northwestern University Feinberg School of Medicine, Chicago, IL. Anaphylaxis to neuromuscular blocking drugs occurs 1/6500. In four reported cases sugammadex was used to reverse profound hypotension refractory to epinephrine. Quaternary ammonium containing compounds are particular triggering agents and cases of anaphylaxis to Patent blue V occur less than 1%. Isothermal titration calorimetry was used to determine the chelation potential of the macrocycle cucurbit[7]uril for Patent blue V.

**A998 Utility Functions as Measures of Opioid Safety: Analgesia vs. Respiratory Depression**

Albert Dahan, M.D., Ph.D., Erik Olofsen, M.Sc., Anesthesiology, Leiden University Medical Center, Leiden, Netherlands. Utility (or safety) functions are constructed to assess the net clinical effect of the exposure to an opioid by estimating the chance for analgesia minus the chance for respiratory depression.

**A999 Comparative Residual Concentrations of Isoflurane and Sevoflurane in Blood and Brain After Anesthesia in Rats**

Takashi Horiguchi, M.D., Yoko Masaki, Ph.D., Hajime Muto, Ph.D., Toshiaki Nishikawa, M.D., Yoshiyuki Tobe, B.S., Department of Anesthesia and Intensive Care, Akita University Graduate School of Medicine, Akita City, Japan, Anesthesiology, Nihon University School of Medicine, Tokyo, Japan. We evaluated the effects of levobupivacaine (LEV) and bupivacaine (BUP) on peripheral nerve fibers and synaptic transmission in rats. In the extracellular recording, administration of LEV and BUP suppressed the firing in response to noxious stimuli. But LEV more weakly suppressed the firing rate in response to non-noxious stimuli than BUP did. In the whole-cell voltage-clamp recordings, LEV and BUP led to a similar degree of suppression of evoked excitatory postsynaptic currents (eEPSCs) by electrical stimulation of Aβ and C fibers. But LEV more weakly suppressed eEPSCs by electrical stimulation of Aβ fibers than BUP did. LEV suppresses conduction in Aδ and C fibers greater extent than in Aβ fibers.

**A1000 Gas Phase Analysis of Bupivacaine and Ropivacaine by Solid Phase Micro Extraction (SPME) and Gas Chromatography-Mass Spectrometry (GS-MS) - A Feasibility Study**

Olive M. Elsner, M.D., Svetlana Stockmann, M.Eng., Ellen Spies, Leif Dibbelt, Ph.D., Hartmut Gehring, M.D., Ph.D., Anesthesiology, University Medical Center Schleswig-Holstein, Anesthesiology, University of Luebeck, Clinical Chemistry, University of Luebeck, Luebeck, Germany. With solid phase micro extraction as the analytical tool we investigated experimental conditions for detection of bupivacaine and ropivacaine in the gas phase over plasma near their toxic concentrations, subsequently measured with gas chromatography-mass spectrometry. With polycarbonate fibre and under sample agitation, we were able to increase the signals of bupivacaine and ropivacaine at incubation times of 30 min and longer and at 70°C incubation temperature. At 36°C, however, signals were poor.

**A1001 The Mechanisms of Differential Sensory Nerve Blockade Caused by Levobupivacaine**

Akiyuki Sakamoto, M.D., Satoshi Tanaka, M.D., Tomoyuki Kawamura, M.D., Mikito Kawamata, M.D., Anesthesiology and Resuscitology, Shinshu University School of Medicine, Matsumoto, Japan. We evaluated the effects of levobupivacaine (LEV) and bupivacaine (BUP) on peripheral nerve fibers and synaptic transmission in rats. In the extracellular recording, administration of LEV and BUP suppressed the firing in response to noxious stimuli. But LEV more weakly suppressed the firing rate in response to non-noxious stimuli than BUP did. In the whole-cell voltage-clamp recordings, LEV and BUP led to a similar degree of suppression of evoked excitatory postsynaptic currents (eEPSCs) by electrical stimulation of Aδ and C fibers. But LEV more weakly suppressed eEPSCs by electrical stimulation of Aβ fibers than BUP did. LEV suppresses conduction in Aδ and C fibers greater extent than in Aβ fibers.

**A1002 Sugammadex-Facilitated Recovery from the Twitch and Train-of-Four Ratio From Rocuronium-Induced Deep Neuromuscular Block in Pediatric Patients**

Shinya Yamada, M.D., Chihiro Igarashi, M.D., Noriko Miyazawa, M.D., Ph.D., Shinichi Yamamoto, M.D., Ph.D., Takahiro Suzuki, M.D., Ph.D., Anesthesiology, Tokyo Metropolitan Children’s Medical Center, Anesthesiology, Nihon University School of Medicine, Tokyo, Japan. The purpose of this study was to research the characteristics in sugammadex-facilitated recovery from deep rocuronium-induced neuromuscular block in pediatric patients. All patients initially received rocuronium 0.6 mg kg-1 and at reappearance of 1-2 PTC, a single bolus dose of sugammadex 1, 2 or 4 mg kg-1 was randomly administered to facilitate the recovery to a TOF ratio of 0.9 and 90% of control in T1. The recovery to a TOF ratio of 0.9 was markedly faster than that to T1 of 90% of control and did not ensure adequate recovery from neuromuscular block. It is recommended that the recovery of T1 may also be concurrently monitored with the TOF ratio in pediatric patients received sugammadex.
A1003 Haplotypes in Human TACR1 Gene Are Associated With Postoperative Nausea and Vomiting

Tomohayase, M.D., Shigekazu Sugino, M.D., Shun-su Tachibana, M.D., Yukihiro Kumeta, M.D., Michiaki Yamakage, M.D., Ph.D., Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan, Anesthesiology, Otaru Municipal Hospital, Otaru, Japan. We investigated TACR1 gene polymorphisms in surgical patients, and patients with particular gene polymorphisms showed significantly higher incidence and intensity of postoperative nausea and vomiting (PONV). Our results suggested that multiple genetic polymorphisms of the TACR1 gene were involved in the incidence and severity of PONV.

A1004 Can a Train-of-Four Ratio of 0.9 Represent Adequate Recovery From Rocuronium-Induced Neuromuscular Block After Sugammadex Administration?

Osamu Kitajima, M.D., Takahiro Suzuki, M.D., Ph.D., Miyako Baba, M.D., Mayu Aono, M.D., Yusuke Yamamoto, M.D., Miki Kasai, M.D., Setsuro Ogawa, M.D., Ph.D., Anesthesiology, Niho University Hospital, Tokyo, Japan. After reversal with sugammadex, the mean times from an administration of sugammadex to recovery to a TOF ratio of 0.9 and T1 of control were 123 s and 316 s, respectively (P<0.001) in most patients. A TOF ratio of 0.9 may not show an adequate neuromuscular recovery with sugammadex.

A1005 The Effect of Amino Acid and Glucose Infusion on Energy Metabolism and Thermoregulation During Anesthesia

Yusuke Kasuya, M.D., Ph.D., Shunichi Takagi, M.D., Ph.D., Maho Kinoshita, M.D., Hitoto Nakayama, M.D., Ph.D., Makoto Ozaki, M.D., Ph.D., Anesthesiology, Tokyo Women's Medical University, Anesthesiology, Tokyo Metropolitan Neurological Hospital, Tokyo, Japan. The aim of this study is to clarify the time course influence of amino acid infusion on the energy metabolism and thermoregulation response during general anesthesia. Amino acid infusion during general anesthesia quickly enhances the total body oxygen consumption and carbon dioxide production around 10-20%, whereas glucose infusion does not modulate oxygen consumption and carbon dioxide production. Body temperature was relatively preserved with amino acid infusion in comparison to the same caloric content of glucose infusion.

A1006 CHRM3 Gene Polymorphism is Associated With Postoperative Nausea and Vomiting in the Japanese Population

Haruko Hayashi, M.D., Shigekazu Sugino, M.D., Tomohayase, M.D., Yuko Nawa, M.D., Ph.D., Michiaki Yamakage, M.D., Ph.D., Department of Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan. We examined the associations of single nucleotide polymorphisms (SNPs) of the muscarinic acetylcholine receptor gene with postoperative nausea and vomiting. The results suggested that variation in rs2165870-SNP influenced the use of an antiemetic after gynecological surgery.

A1007 Alpha7 AChRs Play a Pivotal Role in the Immobilization-Induced Resistance to Atracurium in Mice

Sangseok Lee, M.D., Hong Seuk Yang, M.D., Ph.D., Tomoki Sasakawa, M.D., Jeevendra J.A. Martyn, M.D., Ph.D., Department of Anesthesia and Pain Medicine, Sanggye Paik Hospital, Inje University, Department of Anesthesia and Pain Medicine, Asan Medical Center, Ulsan University, Seoul, Republic of Korea, Department of Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital, School of Medicine, Harvard University, Boston, MA. Resistance to the neuromuscular effects of non-depolarizing neuromuscular-blocking agents has been reported following burns, immobilization, denervation. Up-regulated AChRs can potentially contribute to this resistance. The ED 50 and ED 95 on the immobilized side of WT mice were increased 2.3-fold and 3.4-fold, respectively, compared to unimmobilized side of WT mice. In contrast, the alpha-7 KO mice did not show a significant difference between the ipsilateral and contralateral sides.

A1008 Gas Phase Analysis of Lidocaine and Prilocaine by Solid Phase Micro Extraction (SPME) and Gas Chromatography - Mass Spectrometry (GS-MS): A Feasibility Study

Svetlana Stockmann, M.Eng., Oliver Elsner, M.D., Ellen Spies, Leif Dibbelt, Ph.D., Hartmut Gehring, M.D., Ph.D., Anesthesiology, University of Luebeck, Anesthesiology, University Medical Center Schleswig-Holstein, Clinical Chemistry, University of Luebeck, Luebeck, Germany. Using solid phase micro extraction as the analytical tool we investigated experimental conditions for detection of lidocaine and prilocaine in the gas phase over plasma near their toxic concentrations, analysing the analytes bound in the gas phase with gas chromatography-mass spectrometry. With polyacrylate fibre and agitation we detected strong signals of lidocaine and prilocaine at 70°C incubation temperature. At 36 ° Celsius there were relevant signals for lidocaine but low signals in the case of prilocaine.

A1009 Biological Evaluation of Sugammadex on Hemostasis and Bleeding


A1010 Gender Differences and Acute Tolerance in Laughing Gas Potency

Shinichi Inomata, M.D., Faculty of Medicine, Department of Anesthesiology, Tsukuba, Ibaraki, Japan. We assessed gender differences and acute tolerance in laughing gas potency in human. The potency of 67% N2O in the young is gender dependent, being greater in females than in males. After the long exposure (> 20 minutes) of N2O, the central nervous system develops tolerance to pain threshold in females.

A1011 The Protective Effect of PNU-282987, a Selective Alpha7 Nicotinic Acetylcholine Receptor Agonist, in the Hepatic Ischemia-Reperfusion Injury Through Inhibiting HMGB1 Release in Mice

Quan Li, M.D., Ph.D., Fujing Li, M.D., Zhixia Chen, M.D., Anesthesiology, Shanghai Tenth People's Hospital, Tongji University School of Medicine, Shanghai, China. PNU-282987 might prevent activation of the NF-kB and inhibit HMGB1 release, playing a protective role in hepatic I/R injury in mice.
**A1012** Withdrawal Responses Associated With Rocuronium: Comparison Between Morbidly Obese and Normal Weight Female Patients

Alessandro Laudani, M.D., Tomsma Setti, M.D., Fortunato Ronga, M.D., Yigal Leykin, M.D., Department of Anesthesia and Intensive Care, Santa Maria degli Angeli Hospital, Pordenone, Italy. Intravenous injection of rocuronium is often associated with withdrawal movements. In our experience, rocuronium dosed on ideal body weight resulted in lower incidence of these movements in morbidly female patients compared to normal weight.

**A1013** Effect of Low Dose Ketamine on the Onset of Rocuronium and Intubating Conditions

Youngmi Kang, M.A., Yongsub Shin, M.D., Misun Ann Youn, B.A., Wanyong Lee, B.A., Chungnam University Hospital, Daejeon, Korea, Republic of, Chungnam University Hospital, Daejeon, Republic of Korea. Effect of low-dose ketamine on the onset of rocuroonium and intubating conditions.

**A1014** Stereoselective and Regiospecific Hydroxylation of Ketamine and Norketamine

Michael E. Goldberg, M.D., Ruin Maaddel, Ph.D., Zeneesnay Desta, Ph.D., Evan T. Ogbum, Ph.D., Cong Yu, Ph.D., Anuradha Ramamoorthy, Ph.D., Mitesh Sanghvi, Ph.D., Svarajya Lakshmi, Ph.D., Irving W. Wainer, Ph.D., Department of Anesthesiology, Cooper University Hospital, Cooper Medical School of Rowan University, Camden, NJ, National Institute on Aging Intramural Research Program, National Institute of Health, Baltimore, MD. (R,S)-Ketamine (K) is effective in the treatment of depression and chronic pain. K is extensively metabolized to norketamine (NK), dehydronorketamine (DHNK), hydroxynorketamines (HNK) and hydroxyketamines (HK). Large variations in HNK concentrations were observed suggesting that pharmacogenetics and/or metabolic drug interactions may play a role in therapeutic response.

**A1015** Administration of Volatile Anesthetics: Comparative Testing of Eight Anesthesia Machines

Frederique S. Servin, M.D., Orlando Goncalves, M.D., Manuelle Pancer, Ph.D., Philippe Montravers, M.D., Anesthesiology and Critical Care, APHP, Paris, France. Eight anesthesia machines have been tested for their ability to administer volatile anesthetic agents. Six reached similar performances in manually controlled mode, whereas two were slower. Two machines included an enthalid target concentration mode which revealed superior titrability.

**A1016** Effective and Rapid Reversal of Deep Rocuronium-induced Neuromuscular Blockade With Sugammadex 4.0 mg/kg in Chinese Subjects

Buwei Yu, M.D., Xiangrui Wang, M.D., Wen-Qi Huang, M.D., Shitong Li, M.D., Zhengnian Ding, M.D., Esther Abels, M.Sc., Henk Rietberg, M.Sc., Tiffany Woo, M.Sc., Ruijin Hospital, Renji Hospital, Shanghai Jiao tong University Medical School, Shanghai, China, The First Affiliated Hospital of Sun Yat-Sen University, Guangdong, China, Shanghai First People’s Hospital, Shanghai, China, Jiangsu Province Hospital, Jiangsu, China, Former employee of MSD, Oss, Netherlands, MSD, Oss, Netherlands, Merck, Whitehouse Station, NJ. Sugammadex 4.0 mg/kg results in effective and rapid reversal of deep (1-2 post-tetanic counts) rocuronium-induced neuromuscular blockade in Chinese subjects and is generally well tolerated.

**A1017** Challenging the Assumption of Continuous Flow in Ohms Law: The Effect of Hemodynamic Analysis on the Classification of Drugs

Stephen F. Woodford, M.B., B.S., Australian School of Advanced Medicine, Woy Woy, Australia. Ohms Law assumes continuous flow, and is the basis for classifying vasocautive drugs. In a pulsatile system, the formula can be simplified to (MAP-CVP) = SV x Systemic Elastance, where SVR = SE/HR, and SE is the pressure-volume relationship in a pulsatile system. Correcting for pulsatility leads to classification of drugs in terms of effect on HR, SV and SE. This formula corrects many of the errors in understanding vasocautive drug action and clarifies the differences between vasocautive agents.

**A1018** A Meta-Analysis of CYP2D6 Metabolizer Phenotype and Metoprolol Pharmacokinetics

Charlene M. Blake, M.D., Ph.D., Peter Nagele, M.D., M.S., Anesthesiology, Washington University in St. Louis, St. Louis, MO. The study demonstrates a marked effect of CYP2D6 metabolizer phenotype on metoprolol pharmacokinetics. These results could have further implications in a pharmacogenetic-oriented personalized beta-blocker therapy.

**A1019** A Slow Releasing Molecular Barrel of Fentanyl

Raymond Glassenberg, M.D., Anesthesiology, Northwestern University Feinberg School of Medicine, Chicago, IL. Fentanyl can be sequestered in a barrel shaped macrocycle that is water soluble and unlike liposomal formulations may function as an intrathecal reservoir for slow release.

**A1020** The Recovery of Spontaneous Breathing at High Opioid Concentrations Following High-Dose Remifentanil Anesthesia Might Be Related to the Development of an Acute Tolerance

Shuya Nishizawa, D.D.S., Toshiya Koitabashi, M.D., Ph.D., Hideharu Agata, D.D.S., Kenji Miyachi, D.D.S., Takashi Ouchi, M.D., Ph.D., Ryohei Serita, M.D., Ph.D., Anesthesiology, Tokyo Dental College Ichikawa General Hospital, Chiba, Japan. Following high dose remifentanil anesthesia, spontaneous breathing recovered at higher effect site opioid concentrations, suggesting the development of an acute tolerance.

**PO08-1 Equipment, Monitoring and Engineering Technology: Airway Devices**

**FA**

1-4 p.m.

Hall C-Area H

**A1021** Exchanging a Single-Lumen ETT for a Doble-Lumen ETT Using Two Cook Catheters

Jeff L. Cerny, M.D., Timothy A. Jackson, M.D., Ronaldo V. Peruggan, M.D., Reza J. Mehran, M.D., Dilip R. Thakar, M.D., Department of Anesthesiology and Perioperative Medicine, Department of Thoracic and Cardiovascular Surgery, M.D. Anderson Cancer Center, Houston, TX. Due to the characteristics of a DLT, the exchange from a SLT to a DLT can be challenging. This abstract demonstrates the usefulness of employing two Cook catheters when trying to achieve that goal.
A1022 Usefulness of Capnograms for Confirming Successful Intratracheal Intubations by Gum Elastic Bougies: Comparison to Conventional Click and Hold-Up Signs

Daisuke Sugiyama, M.D., Shigeo Ikeno, M.D., Ph.D., Hiroaki Ina, M.D., Shigeru Yokota, M.D., Tetsuya Tsuchihashi, M.D., Eisuke Shibay, M.D., Mikito Kawamata, M.D., Ph.D., Department of Anesthesia, Japanese Red Cross Society Suwa Hospital, Suwa, Japan, Department of Anesthesiology and Resuscitology, Shinshu University School of Medicine, Matsumoto, Japan. We compared the usefulness of a new confirmation method using a capnograph with that of conventional methods, such as click or hold-up sign, in tracheal intubation with a gum elastic bougie (GEB). The capnograph showed the characteristic waveform when the GEB was inserted into the trachea. This capnograph sign showed high sensitivity and specificity in confirming tracheal intubation with the GEB. Our study indicated that the capnograph sign is as useful as conventional signs. The combination of the capnograph sign and conventional sign is more useful than the conventional sign alone, and it is visible to assistants to the tracheal intubation practitioner.

A1023 Using the Intubating Laryngeal Tube in a Manikin - User Evaluation of a New Airway Device

Thomas A. Nicholas, IV, M.D., Ben H. Boedeker, M.D., Mary A. Bernhagen, B.S., Thomas Magnuder, Student, Michael C. Wadman, M.D., Anesthesiology, Emergency Medicine, University of Nebraska Medical Center, Omaha, NE. A novel device - the intubating Laryngeal Tube Airway (iLTA) - was tested and its performance as an intubation tool and perceived user satisfaction were documented.

A1024 Pentax Airway Scope vs. Macintosh Laryngoscope for Tracheal Intubation in Adults: A Systematic Review and Meta-Analysis of Randomized Controlled Trials

Hiroshi Hoshijima, D.M.D., Norifumi Kuratani, M.D., Masato Kato, M.D., Yoshihiro Hirabayashi, M.D., Risa Takeuchi, D.M.D., Taishin Ito, M.D., Nobuyuki Matsumoto, M.D., Ph.D., Anesthesiology, Saitama Medical University Hospital, Saitama, Japan, International University of Health and Welfare, Tochigi, Japan, Saitama Medical University Hospital, Saitama, Japan. We performed a systematic review and meta-analysis of randomized control studies to compare the Pentax-AWS and the conventional laryngoscope in terms of tracheal intubation. Our analysis revealed that the Pentax-AWS provides little clinical advantage for experienced laryngoscopists, whereas the Pentax-AWS offers superior glottis visualization compared to the conventional laryngoscope.

A1025 The Efficacy of Brief Holding Ventilation and Deflating the Balloon of the Bronchial Blocker in Lung Collapse at the Initiation of One Lung Ventilation

Tatsuya Yoshimura, M.D., Kenichi Ueda, M.D., Jun Sawai, M.D., Yoshinori Nakata, M.D., M.B.A., Department of Anesthesia, Teikyo University Hospital, Tokyo, Japan, Department of Anesthesia, University of Iowa, Iowa City, IA, Graduate School of Public Health, Teikyo University, Tokyo, Japan. We hypothesized that deflating the balloon of bronchial blocker without ventilation at the time of pleural opening might expedite gas venting from the non-ventilated lung. 24 patients were randomized into two groups: Deflation (n = 11) and Non-deflation (n = 13). The surgeons evaluated the lung deflation using a verbal rating scale at 1 min after opening the pleura for assessment of initial phase of lung collapse, and also 5 min and 10 min for assessment of second phase of lung collapse. Lung collapse scales in the Deflation group were significantly improved compared with the Non-deflation group at 1 min and 5 min after opening the pleura.

A1026 Comparison of Airtraq, PENTAX-AWS, and Conventional Macintosh Laryngoscope to Facilitate Tracheal Intubation by Inexperienced Personnel

Shinji Kusunoki, M.D., Ph.D., Koichi Tanigawa, M.D., Ph.D., Takuma Sadamori, M.D., Kei Suzuki, M.D., Masashi Kawamoto, M.D., Ph.D., Department of Anesthesiology and Critical Care, Department of Emergency and Critical Care medicine, Hiroshima University Hospital, Hiroshima, Japan. We compared the Airtraq (ATQ), PENTAX-AWS (AWS), and Macintosh laryngoscope (ML) in regard to facilitation of tracheal intubation for inexperienced personnel in an operation theater setting. Twenty residents intubated 5 patients with each device in random order. The AWS had a higher success rate, with less time and fewer attempts required for successful intubation in comparison with the ATQ and ML. Furthermore, the difficulty score for the AWS was significantly lower than those for the ATQ and ML. These findings suggest that the AWS may be the most suitable device for inexperienced personnel.

A1027 Performance of Three Nasal Cannulas and Two Oral Bite Block Devices for End Tidal CO2 Monitoring During Sedation for Upper GI Endoscopy

Chien-Kun Ting, M.D., Ph.D., Joseph A. Orr, Ph.D., Lu Yu, M.S., Dwayne R. Westenskow, Ph.D., Department of Anesthesiology, Taipei Veterans General Hospital and National Yang-Ming University, Taipei, Taiwan, Department of Anesthesiology and Bioengineering, University of Utah, Salt Lake city, UT, Department of Biomedical Engineering, China Medical University, Shenyang, China. We performed a bench evaluation of CO2 monitoring using monitoring bite-blocks and cannulas for upper GI procedures. We found all performed well except when oxygen flow is high.

A1028 Efficacy of the Ambu aScope 2 in High Risk Elective and Emergency Awake Intubation

Kenneth P. Rothfield, M.D., Mary Ewing, M.D., Nyan Htu, M.D., Scott Langlois, C.R.N.A., Kevin Lopez, C.R.N.A., Joseph Staggenborg, M.D., Mark Winik, M.D., Anesthesiology, Saint Agnes Hospital, Baltimore, MD. The Ambu aScope 2 is a single-use video bronchoscope for intubation. This study focuses on its efficacy for awake intubation in a variety of high-risk patients. This device appears to simplify flexible intubation, and may offer advantages for less experienced operators.

A1029 The Air-Q® Self-Pressurizing Intubating Laryngeal Airway: A Report of the First 100 Uses in Adult Patients

Richard E. Galgon, M.D., M.S., Kristopher M. Schroeder, M.D., Aaron M. Joffe, D.O., Department of Anesthesiology, University of Wisconsin School of Medicine and Public Health, Madison, WI, Department of Anesthesiology and Pain Medicine, University of Washington-Harborview Medical Center, Seattle, WA. In a retrospective review of our first 100 uses, the air-Q® Self-Pressurizing (SP) Intubating Laryngeal Airway was simple to place, generated an average airway seal pressure (ASP) > 20 cmH2O, and provided acceptable airway maintenance in greater than 95% of cases. Viewed from the end of the air tube, a full or partial vocal cord view was present in 42 of 43 (98%) cases. Intubation through the device was successful in 28 of 29 (97%) cases.
A1030 Usefulness of Airway Scope TM for Insertion of a Nasogastric Tube in Anesthetized and Intubated Patients: A Prospective Randomized Clinical Study
Tomoya Koizumi, M.D., Misako Higuchi, M.D., Toshiya Kawagishi, M.D., Natsumi Kii, M.D., Motonobu Kimizuka, M.D., Naoyuki Hirata, M.D., Ph.D., Michiaki Yamakage, M.D., Ph.D., Anesthesiology, Sapporo Medical University, Sapporo, Japan, Anesthesiology, Hakodate Municipal Hospital, Hakodate, Japan. Airway Scope-guided nasogastric intubation may be the first choice for small children under 5 kg. Shorter insertions time and easy of insertion suggest that the I-gel may be the first choice for small children under 5 kg.

A1031 Effect of Endotracheal Tube Size and Cuff Shape on Air Leakage
Tomohiro Kiya, M.D., Kazuya Sasaki, M.Eng., Yuji Kozuka, M.D., Anesthesiology, Clinical Engineering, Hokkaido Saiseikai Otaru Hospital, Otaru-shi, Hokkaido, Japan, Anesthesiology, Kutchan-Kosei General Hospital, Kutchan-cho, Hokkaido, Japan. Taper shaped cuffs showed superior sealing characteristics in each situation, though the conventional endotracheal tube cuffs increased the air leakage as the tracheal size and endotracheal tube size became larger.

A1032 A Comparison of the I-Gel With The LMA Supreme in Non-Paralyzed Anaesthetized Children
Helga Francksen, M.D., Peter Duetschke, M.D., Jochen Renner, M.D., Markus Steinfahrt, M.D., Berthold Bein, M.D., Anesthesiology and Intensive Care Medicine, University Hospital Schleswig-Holstein, Anesthesiology and Intensive Care, UK-SH, Campus Kiel, Kiel, Germany. Both devices appeared to be simple and save alternatives to secure the tracheal tube. Use of the nasogastric tube should be recommended because aspiration is possible although the ALP is adequate. Significantly shorter insertions time and easy of insertion suggest that the I-gel may be the first choice for small children under 5 kg.

A1033 Comparative Usefulness of Two Spiral-Wound Endotracheal Tubes During Airway Scope®-Guided Tracheal Intubation in Clinical Study and a Simulated Mannequin Study
Yuri Uchiyama, M.D., Yukimasa Takada, M.D., Mitsutaka Edanaga, M.D., Ph.D., Michiaki Yamakage, M.D., Ph.D., Department of Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan. We assessed the usefulness of a TORAY Murphy spiral tube and a PHYCON wire reinforced endotracheal tube during Airway Scope-guided tracheal intubation in a clinical study and a simulated mannequin study. Airway Scope-guided tracheal intubation using a TORAY Murphy spiral tube is easy and safety to perform.

A1034 Comparison of the Usefulness of Airway Scope® and GlideScope® With a Conventional Macintosh Laryngoscope in Lateral Positions: A Mannequin Study
Yukimasa Takada, M.D., Mitsutaka Edanaga, M.D., Ph.D., Michiaki Yamakage, M.D., Ph.D., Department of Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan. We compared the usefulness of Airway Scope® and GlideScope® with a conventional Macintosh laryngoscope in lateral positions using a simulated mannequin. The time to tracheal intubation using Airway Scope® was the shortest among the three devices in lateral positions using a simulated mannequin.
A1039 Dynamic Optimization of Sniff Position During Laryngoscopy Using Pressure Infusion Bag

Abdullah M. Al-Jadidi, Jr., M.D., Maher Al-Bahrani, M.D., Rashid M. Khan, M.D., Naresh Kaul, M.D., Anesthesia and ICU, Khoula Hospital, Alharthy Complex, Oman, Anesthesia and ICU, Royal Hospital, Muscat, Oman. Placing the infusion pressure at 0-20 mmHg instead of zero alone did not help to raise the occiput to desired height with ease but also aided head extension (optimal “sniff” position). It is time to abandon conventional head rings of fixed height which often achieve sub-optimal “sniff” position in favor of dynamic, inflatable head rest.

A1040 A Comparison of Intubation Techniques for Double-Lumen Tubes: 90° vs. 180° Rotation During Advance Through the Glottis

Karam Nam, M.D., Jeong-Hwa Seo, M.D., Ph.D., Jae-Hyon Bak, M.D., Ph.D., Yuseok Jeon, M.D., Ph.D., Hyun Joo Kim, M.D., Jung-Man Lee, M.D., Department of Anesthesiology and Pain Medicine, Seoul National University Hospital, Seoul, Republic of Korea. Compared with the conventional intubation technique using left-sided double-lumen tubes, rotating the tubes 180° counterclockwise facilitated its advance through the glottis decreasing postoperative sore throat.

A1041 Comparison of Two Techniques in Determination of the Volume of the Bronchial Cuff of Left Double-Lumen Endobronchial Tube

Kenkichi Kiyosawa, M.D., Tomoyuki Kawamata, M.D., Haruka Nakazawa, M.D., Takashi Ichino, M.D., Mikito Kawamata, M.D., Shinshu University School of Medicine, Matsumoto, Japan. To achieve lung isolation, the bronchial cuff of DLT is inflated to seal the intubated bronchus. We compared the volume of cuff air and cuff pressure required to produce an appropriate cuff seal between the two techniques when left DLT was used. Our results showed that the usefulness of the air bubble method was comparable to that of the ETCO2 method in determination of the appropriate volume of bronchial cuff to seal the intubated bronchus.

A1042 Method for Filling Endotracheal Tube Cuff With Liquid Medium While Maintaining Safe Cuff Pressure

William C. Richards, M.D., Robert T. O’Bannon III, M.D., Department of Anesthesiology and Perioperative Medicine, Georgia Health Sciences University, Augusta, GA. Retrospective case analysis of patients who were intubated and ETT cuff filled with lidocaine using a “filling method.” The cuff pressures were measured using a pressure transducer and that pressure compared to normal capillary perfusion pressure in humans (22-32 mmHg).

A1043 Success Rates of Fiberoptic Intubation Stylets in Anesthetized Patients With a Simulated Difficult Airway

Lorenz G. Thelzer, M.D., Maren Kleine-Brueggeney, M.D., Natalie Urywler, M.D., Frederike Serman, M.Sc., Christine Riggenbach-Studer, R.N., Robert Greif, M.D., Department of Anesthesiology, Perioperative Medicine and Pain Management, University of Miami Miller School of Medicine, Miami, FL. The SensaScope and the Bonfils are both equally successful for managing the simulated difficult airway. Trends toward favoring the SensaScope were not statistically significant after 131 of 200 planned cases. Both devices did not reach the 95% success rate desirable for managing difficult airway cases. Success rates differed between anesthesiologists despite adequate training.

A1044 Mobile Application to Calculate Time Available for Safe Intubation Following Pre-Oxygenation

Lara Brewer, Ph.D., Ck Ting, M.D., Joseph Orr, Ph.D., University of Utah, Salt Lake City, UT. The time available for safe intubation after pre-oxygenation can vary significantly depending on a patient’s size, metabolic rate, and efficiency of pre-oxygenation method. We propose a mobile application which can calculate the number of minutes of oxygen supply available for a given patient’s status. Such an application could be useful for identifying the amount of time remaining for safe intubation.

A1045 Comparison of C-MAC and D-MAC Videolaryngoscopy for Endotracheal Intubation in Morbidly Obese Patients

Davide Cattano, M.D., Ph.D., Alfonso Altamirano, M.D., Merrick Meese, Student, Vladimir Melnikov, M.D., Sara Guzman-Reyes, M.D., Sam D. Gumbert, M.D., Carin A. Hagberg, M.D., Anesthesiology, University of Texas Health Science Center Houston, Houston, TX. Obesity often increases the difficulty and length of time of direct laryngoscopy, making intubation challenging. Videolaryngoscopy offers several advantages that justify the cost in both routine use and in anticipated difficult airways. The purpose of this study was to determine the efficacy of the C-MAC video intubation system with and without the D-BLADE (D-MAC) in a bariatric population.
A1048 Complement Factor B is Activated in Maternal Circulation of Preeclampsia Patients

Ming Zhang, M.D., Ph.D., Ivan Velickovic, M.D., Mudar Dalloul, M.D., Amit Alam, B.A., Giorgio Medranda, B.S., Chih Yuan Lai, M.S., Daniel Hanono, M.D., Jun Lin, M.D., Roulhac d’Arby Toledano, M.D., Ovadia Abulafia, M.D., Anesthesiology, SUNY Downstate Medical Center, Obstetrics & Gynecology, SUNY Downstate Medical Center, Anesthesiology, Long Island College Hospital, Anesthesiology, Lutheran Medical Center, Brooklyn, NY. In a cohort of mostly African American pregnant women with high risk of preeclampsia, complement factor B is activated in maternal circulation of preeclampsia patients. The activation profile of complement factors may be dependent on the race/ethnic backgrounds.

A1049 Combination Therapy of Methoxamine and Ephedrine to Treat Hypotension in Obstetric Spinal Anesthesia: A Randomized, Double-Blinded, Prospective Trial

Ben Niu, M.D., Yuke Tian, M.D., Ph.D., Department of Anesthesiology, Tongji Hospital, Wuhan, China. The combination of ephedrine and methoxamine is superior to ephedrine in preventing or treating hypotension in obstetric spinal anesthesia.

A1050 Effect of Preoperative Nifedipine on Maternal Hypotension During Epidural Anesthesia for Fetoscopic Surgery

Pornswan Ngamprasertwong, M.D., Anne Boat, M.D., Mounira Habli, M.D., Hope Esslinger, B.S., Lili Ding, Ph.D., Foong Yen Lim, M.D., Senthilkumar Sadhasivam, M.D., Anesthesiology, Obstetric and Gynecology, Biostatistics and Epidemiology, Surgery, Cincinnati Children’s Hospital, Cincinnati, OH. Selective fetoscopic laser photocoagulation (SFLP) is the standard treatment of twin-twin transfusion syndrome. Maternal medical therapy with nifedipine has been demonstrated to improve fetal survival after SFLP. Preoperative nifedipine does not increase incidence of intraoperative maternal hypotension during SFLP under epidural anesthesia.

A1051 Opioid Addicted Pregnant Patients and the Effect of Buprenorphine Therapy on the Need for Labor Epidural Supplementation

Anthony Silipo, D.O., Shrvan Dave, B.S., Jonathan Waters, M.D., Anesthesiology, University of Pittsburgh Medical Center-Mageez Womens Hospital, University of Pittsburgh Medical school, Pittsburgh, PA. Buprenorphine may increase analgesic requirements for opioid addicted patients. A 1-year retrospective cohort study demonstrated a significant difference among the groups. Further studies including a blinded, randomized controlled trial are needed to further investigate whether this increased requirement is mediated through pharmacologic or patient-related factors, or a combination, or both.

A1052 The Prediction for Oxygen Desaturation Following Cesarean Section From Intraoperative Desaturation

Toshiyuki Okutomi, M.D., Rie Kato, M.D., Shunsuke Hyuga, M.D., Yuki Hosokawa, M.D., Division of OB Anesthesia, Center for Perinatal Medicine, Kitasato University Hospital, Sagamihara, Japan, Department of Anesthesiology, Shinshu University, Matsumoto, Japan. Hypoxia following cesarean section (CS) should be warranted appropriate management. We hypothesized that SpO2 during cesarean section can predict postoperative hypoxia. All subjects were received intrathecal anesthesia with bupivacaine combined to fentanyl 10 mcg and morphine 150 mcg. The median minimum SpO2 after CS was less than the value during CS. However, there was no relationship between the minimum value during and that after CS. We should pay attention to desaturation after CS when we used morphine as a part of intrathecal anesthesia, no matter whether the desaturation was not occurred during CS.

A1053 Effect of Different Doses of Phenylephrine for Treatment of Hypotension During Spinal Anesthesia in Patients Undergoing Elective Cesarean Section

Medha Mohra, M.D., Priyanka Harisinghani, M.B., B.S., A. K. Sethi, M.D., Deepthi Agarwal, M.D., Anesthesiology and Critical Care, University College of Medical Sciences and Guru Teg Bahadur Hospital, Delhi, India. The study compared the effects of three different I.V. bolus doses i.e. 100 µg, 125 µg and 150 µg of phenylephrine for treatment of post spinal hypotension in patients undergoing elective cesarean section under spinal anesthesia. These three doses had similar efficacy to treat hypotension, neonatal outcome and incidence of complications. It was concluded that doses up to 150 µg were found to be safe for mother as well as fetus; however, increase in dose of phenylephrine did not demonstrate any additional benefits over the traditionally used dose of 100 µg.

A1054 Effects of Hypnosis Applied to Parturients During Labor

Veronique Waiblat, Sr., M.D., Franck Bernard, Sr, M.D., Bryan Langholz, Sr, Ph.D., Gilles Dhonneur, Sr., M.D., Ph.D., Anesthesiology, GH Le Raincy Montfermeil, Montfermeil, France, CHP Saint Grégoire, Saint Grégoire, France, University of Southern California, Los Angeles, CA, Anesthesiology, CHU Henri Mondor, Creteil, France. Hypnosis, in conjunction with upper body rocking motion, a nape touch and hypnotic words, is a very effective way to reduce labor pain and fear of epidural puncture.

A1055 Intrathecal Bupivacaine Dosing for Post Partum Tubal Ligation: A Retrospective Analysis of Inadequate and Failed Blocks

Shannon Tew, M.D., Ashraf S. Habib, M.D., Anesthesiology, Duke University Medical Center, Durham, NC. We performed a retrospective analysis and examined anesthetic records of 309 women who underwent postpartum tubal ligation (PPTL) using intrathecal bupivacaine as the primary anesthetic technique. The patients were categorized into 3 groups based on bupivacaine doses: group 1 (7.5-10 mg), group 2 (>10-12 mg), and group 3 (>12-13.5 mg). The rate of inadequate blocks was compared between the groups and occurred in 38%, 23%, and 13% in groups 1, 2, and 3, respectively (p=0.11) with a trend in the incidence of failed block between the groups (p=0.07). Our results demonstrated that low doses and cesarean section doses of bupivacaine are associated with a relatively higher rate of inadequate and failed blocks for PPTL.
A1056 Urapidil vs. Nicardipine for Hypertension Control in Preeclampsia: A Randomized Controlled Study

Vincent Garcia, M.D., Bruno Saumande, M.D., Brice Samyn, M.D., Girish Joshi, M.D., Ph.D., Pierre Diemunsch, M.D., Ph.D., Anesthesia and Critical Care, Hôpitaux Universitaires, Strasbourg, France. Current approved treatments for hypertension control in preeclampsia have drawbacks. This multicentric, randomized, controlled trial is intended to compare urapidil with nicardipine in their ability to reduce BP in severe PE and their safety in this indication. Thirty women with severe PE were randomized in two groups. Despite no difference in antihypertensive efficacy could be shown, general tolerance of severe PE with U was better than with N.

A1057 Can We Offer Spheno-Palatine Ganglion Block for Our Obstetric Patients Following Accidental Dural Puncture?

Ashraf Sakr, M.D., Shaul Cohen, M.D., Adil Mohiuddin, M.D., Shruti Shah, M.D., Scott Melender, M.D., Purvi Patel, M.D., Christine W. Hunter, M.D., Anesthesiology, Robert Wood Johnson University Hospital-UMDNJ, New Brunswick, NJ. Our data suggest that every obstetric patient with post dural puncture headache may receive this minimal invasive technique which has minimal side effects and in most cases can avoid the need for a blood patch along with its side effects and complications.

A1058 Comparison of Parturient Controlled Remifentanil With Epidural Bupivacain and Sufentanil for Labour Analgesia: Randomised, Controlled Trial

Petr Stourac, M.D., Hana Suchomelova, M.D., Marta Stodulkova, Martin Huser, M.D., Ivo Krikava, M.D., Roman Stoudek, M.D., Olga Haklova, M.D., Lubomir Hakl, M.D., Pavel Sevcik, M.D., Department of Anesthesiology and Intensive Care, Department of Obstetrics and Gynecology, Department of Pain Control, Medical Faculty of Masaryk University and Faculty Hospital Brno, Brno, Czech Republic. We aimed to compare the efficiency and safety of epidural analgesia and parturient controlled intravenous analgesia using remifentanil. Remifentanil use in obstetric analgesia represents a perspective alternative to EA, especially in case of EA contraindications including the parturient’s disapproval.

A1059 Meperidine and Tramadol for Controlling Shivering in Parturients Having Neuaxial Anaesthesia: A Meta-Analysis

Basem M. Mishriky, M.D., Ashraf S. Habib, M.B., B.Ch., Department of Anesthesiology, Duke University Medical Center, Durham, NC. In a meta-analysis of randomized controlled trials, I.V. meperidine and tramadol were effective for treating shivering in parturients having neuraxial anesthesia.

A1060 Effect of Fluid Warming and Active Warming on Maternal Shivering and Neonatal Outcomes in Parturients Undergoing Cesarean Delivery Under Neuaxial Anaesthesia: A Meta-Analysis

Basem M. Mishriky, M.D., Ashraf S. Habib, M.B., B.Ch., Department of Anesthesiology, Duke University Medical Center, Durham, NC. In a meta-analysis of randomized, controlled trials, fluid warming was effective for the prevention of shivering in parturients having cesarean delivery under neuraxial anesthesia. Forced-air warming did not reduce the incidence or severity of shivering.

A1061 Post-delivery Hematocrit Changes after Spontaneous Vaginal Delivery and Cesarean Section

Andrew Geller, M.D., Mark Zakowski, M.D., Sivam Ramanathan, M.D., Cedars-Sinai, Los Angeles, CA. Estimated blood loss is thought to be greater with cesarean section (CS) compared to vaginal delivery (VD). Postpartum hematocrit (Hct) measurements are done to rule out excessive blood loss. Data was collected from patients admitted to a tertiary care maternity hospital with emphasis on EBL and postpartum Hct measurements. We found no statistical difference between the two delivery methods and their respective postpartum Hct.

A1062 Should We Offer Epidural-PCA Analgesia With Ambulation for Multiparae for Labor Pain?

Shruti Shah, M.D., Shaul Cohen, M.D., Adil Mohiuddin, M.D., Howard Denenberg, M.D., Renu Chhokra, M.D., Sylviana Barsoum, M.D., Christine W. Hunter, M.D., Anesthesiology, RWJMS-UMDNJ, New Brunswick, NJ. Multiparae should be offered labor epidural with ambulation when required.

A1063 Analgesic and Clinical Outcomes of a New Multiport Versus Uniport B. Braun Flexible Springwound Catheter for Labor Epidural Analgesia

John Philip, M.D., Shiv Sharma, M.D., Tim Sparks, C.R.N.A., Anesthesiology, Baylor All Saints Medical Center, Fort Worth, TX. A feasibility pilot study of the analgesic and clinical outcomes of a relatively new multiport versus uniport flexible catheter (B. Braun Perfix FX springwound catheter) used to provide labor epidural analgesia, in which there were no significant differences in complete analgesia, maternal satisfaction with labor analgesia, or catheter breakage between the two catheter types.

A1064 Epidural Catheter Removal Checklist: A Simple Tool for Safe and Effective Clinical Decision in Obstetric Anesthesia

Guilherme Holck, M.D., William Camann, M.D., Department of Anesthesiology, Pediatric and Pain Medicine, Brigham and Women’s Hospital, Harvard Medical School, Boston, MA. Anesthesia is one of the leading medical disciplines that emphasize patient safety. Obstetric anesthesiologists participate in safety pauses prior to procedures. Nevertheless, little attention has been paid to epidural catheter removal following delivery. This is important because there are certain obstetric scenarios that require individualization of care. Furthermore, a stressful environment with fatigue and poor communication can generate catastrophic errors in the postpartum period. We propose a simple checklist tool to facilitate safe and effective clinical decision-making.

A1065 Accuracy of Blood Pressure Control With a Variable Rate Phenylephrine Infusion

Ashraf S. Habib, M.D., F.R.C.A, Ronald B. George, M.D., Dolores Mckeen, M.D., William D. White, M.P.H., Terrence K. Allen, M.D., F.R.C.A., Anesthesiology, Duke University Medical Center, Durham, NC, Anesthesiology, Dalhousie University, Halifax, NS, Canada. Measures of accuracy of blood pressure control with a variable rate phenylephrine infusion were assessed in 289 parturients undergoing cesarean delivery under spinal anesthesia. Those measures were comparable to those previously reported with a fixed rate infusion.
A1066 Outcomes Following General Anesthesia for Cesarean Section: A Retrospective Review From 2005-2011

Alice L. Oswald, M.D., Shobana Chandrasekhar, M.D., Maya Suresh, M.D., Brittany Serratos, M.D., Anesthesiology, Baylor College of Medicine, Houston, TX. Bayer College of Medicine, Houston, TX. The enhanced use of regional anesthesia in obstetrics has caused a dramatic decline in the incidence of general anesthesia (GA), resulting in the reduced exposure of trainees to such challenging cases. In contrast to national averages, our retrospective review reveals an increased proportion of GA cases due to the unique characteristics of the patient population and the large proportion of emergency deliveries. Additionally, our data demonstrated decreased rates of maternal morbidity and mortality, likely due to increased exposure of airway management techniques in early residency training and the obstetric anesthesia faculty's expertise in airway management.

A1067 A Randomized, Single-Blind Clinical Trial of the New Pencil-Point Gertie Marx Epidural Needle Versus Tuohy Epidural Needle

Reine Zbeidy, M.D., Donald H. Penning, M.D., Jayanthie Ranasinghe, M.D., JMH, Miami, FL. This prospective, randomized, single-blinded trial was designed to test the hypothesis that the incidence of PDPH would be decreased with the new pencil-point design 17G Gertie Marx compared to the traditional 17G Tuohy needle.

PO13-5 OUTCOMES AND DATABASE RESEARCH

FA
1-4 p.m.
Hall C-Area J

A1068 Pro- and Anti-Inflammatory Cytokine Balance During Liver Transplantation

Hyun Jung Koh, M.D., Ph.D., Jaemin Lee, M.D., Ph.D., Department of Department of Anesthesiology and Pain Medicine, Seoul St. Mary's Hospital, Seoul, Republic of Korea. This study was conducted to examine differences in cytokine secretion between healthy people and liver failure patients, and to determine which cytokines are responsible for maintaining pro- and anti-inflammatory cytokine balance during liver transplantation. Among the pro-inflammatory cytokines, IL-6 and TNF-α showed significant rise and in the anti-inflammatory cytokines, IL-10 increased during surgery. The preoperative concentrations of IL-6 and IL-10 in the recipient group were higher than those in the donor group respectively. In conclusion, IL-6 and IL-10 played a major role in cytokine balance before and during liver transplantation.

A1069 Nephrectomy for Renal Cancer With IVC Involvement - The Duke Experience

Darrell Wilcox, M.D., Aaron Sandler, M.D., William D. White, M.P.H., Department of Anesthesiology, Duke University Hospital, Durham, NC. This study, in which we reviewed our experience over the past 12 years with nephrectomy for renal tumors with IVC involvement shows that these patients have a very high level of acuity, with greater intraoperative blood loss and higher requirement for blood product transfusion, a longer ICU stay, and higher perioperative and postoperative mortality than their counterparts with renal tumors without IVC involvement. The lessons we have learned caring for these especially challenging patients will be discussed.

A1070 Changes in Causes of Cardiac Arrest in Operating Rooms at a University Teaching Hospital: A Three-Decade Survey of 124,165 Patients

Naonori Kawashima, M.D., Soshi Iwasaki, M.D., Ph.D., Masanori Yamauchi, M.D., Ph.D., Michiaki Yamakage, M.D., Ph.D., Department of Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan. We identified 113 cardiac arrests in 124,165 patients during three decades. The balance between increased patient risk and the development of perioperative care does not appear to have offset the incidence of cardiac arrest over the past three decades.

A1071 A Disaster in Denmark: The Mandoe Incident

Peter Martin Hansen, M.D., Dennis Kohler, M.D., Department of Anesthesiology and Intensive Care Medicine, Odense University Hospital, Odense, Denmark, Mobile Emergency Care Unit, Sygehus Lillebaek, Kolding Sygehus, Kolding, Denmark. The Mandoe Incident prompted a multinational multimodal operation. An overview of the pre- and inhospital resources and the strategic management is provided in this abstract, stressing the urgent need for reliable commication between civilian and military authorities and units.

A1072 Patient Injuries From Anesthesia Gas Delivery Equipment: A Closed Claims Update

Sonya P. Mehta, M.D., Karen L. Posner, Ph.D., Karen B. Domino, M.D., M.P.H., Department of Anesthesiology & Pain Medicine, University of Washington, Seattle, WA. While anesthesia gas delivery claims and the severity of injury decreased over time, death and permanent brain damage occurred in 38% of gas delivery claims from 1990-2010. These poor outcomes can be minimized if anesthesiologists adhere to strict checkout protocols and use of alarms.

A1073 Non-Neurologic Complications Following Surgery for Scoliosis

Hye Jeong Seo, M.D., Ha Jung Kim, M.D., Hong Seuk Yang, M.D., Ph.D., Anesthesia and Pain Medicine, Asan medical center, Seoul, Republic of Korea. There was no difference in prevalence of complication in scoliosis patients by age. The prevalence of complication was dependent on Cobb angle, prolonged anesthetic and surgical time and transfusion of PRBC. Deterioration of preoperative pulmonary function showed significantly increased risk of postoperative complications in adult patients.

A1074 Perioperative Outcomes of Noncardiac Surgery in Young Adults With Congenital or Early Acquired Heart Disease: A Retrospective Cohort Analysis of the American College of Surgeons National Surgical Quality Improvement Program (NSQIP) Database

Bryan Maxwell, M.D., Jim K. Wong, M.D., Robert L. Lobato, M.D., Department of Anesthesia, Stanford University, Stanford, CA. The NSQIP database was utilized to examine perioperative outcomes of noncardiac surgery among young adults with a history of congenital or early acquired heart disease. Outcomes of 1,191 noncardiac operations in young adults with prior cardiac surgery were less favorable compared to a matched control cohort. Mean length of stay was longer (5.8 vs. 3.6 days, p<0.01). Observed rates of death, perioperative cardiac arrest, MI, stroke, respiratory complications, renal failure, sepsis, venous thromboembolism, transfusion, and reoperation were significantly higher (p<0.01 for all). Within the limitations of this database, this study suggests that ACHD patients are at high risk for adverse outcomes in the period surrounding noncardiac surgery, and supports the need for further registry-based investigations.
A1075 Central Venous Catheter Complications: Closed Claims Update
Saint A. Adeogba, M.D., Karen L. Posner, Ph.D., Linda S. Stephens, Ph.D., Karen B. Domino, M.D., M.P.H., Anesthesiology and Pain Medicine, University of Washington, Seattle, WA. Central venous catheter placement still accounts for a high proportion of death/brain damage and greater than half were possibly preventable by ultrasound or pressure wave form analysis.

A1076 Evaluation of Changes in Visual Acuity After Cardiovascular Surgery With Cardiopulmonary Bypass
Hironobu Hayashi, M.D., Masahiko Kawaguchi, M.D., Masahiro Okamoto, M.D., Kyoko Hasuwa, M.D., Toyoko Matsaura, M.D., Hitoshi Furuya, M.D., Department of Anesthesiology, Department of Ophthalmology, Nara Medical University, Kashihara, Nara, Japan. We designed a prospective study to evaluate change in visual acuity (VA) after cardiovascular surgery with cardiopulmonary bypass (CPB). The VA values measured by using the Landolt ring were converted into a log scale. This was done to facilitate calculations of VA change (VA change = logarithm of the minimum angle of resolution [logMAR] acuity before surgery - logMAR acuity after surgery; a negative value denotes worse VA after surgery). Of all 72 patients who underwent cardiovascular surgery with CPB, 17 patients were used CPB with HCA and SCP for aortic arch surgery. Three (4%) of 72 patients had lost more than logMAR 0.1 of VA values postoperatively compared with preoperative values.

A1077 Occlusion of Coronary Drug-Eluting Stents in the Immediate Postoperative Period
Enrico M. Camporesi, M.D., Hesham Omar, M.D., Rachel A. Karlmoski, Ph.D., Collin Spreker, B.S., Devanand Mangar, M.D., Surgery, University of South Florida, Florida Gulf to Bay Anesthesiology, Tampa, FL. A retrospective chart review was completed for all patients who had acute symptoms of coronary ischemia in the immediate postoperative period: all had drug-eluting stents from 10 to 42 months and all stopped administration of aspirin, plavix, or other antithrombotic medication for 5.4 days (avg). Four of 5 could be resuscitated and were immediately revascularized. Physicians should be very cautious when deciding to discontinue antiplatelet therapy for these patient subgroups. We propose to resume one antiplatelet drug in the perioperative period in patients with DES unless the bleeding risk is extremely high.

A1078 Anesthesia-Related Deaths in Los Angeles County, 2009-2011
Selma Calmes, M.D., Laksmanah Sathyavagiswaran, M.D., Christopher Rogers, M.D., M.B.A., Department of Coronor/medical Examiner, Los Angeles County, Los Angeles, CA. Forty-three deaths related to anesthesia in 2009-2011 were analyzed in a coroner's office for possible causes. Airway problems, especially at the end of surgery, and emboli during orio or liposuction procedures were the most common causes of death. Data from a coroner's office gives useful information to improve mortality from anesthesia.

A1079 Burns from Warming Devices and Heated Materials: A Closed Claims Update
Sonya P. Mehta, M.D., Karen L. Posner, Ph.D., Karen B. Domino, M.D., M.P.H., Department of Anesthesiology & Pain Medicine, University of Washington, Seattle, WA. Patients continue to suffer burn injuries from the misuse of forced-air warming units and the misuse of heated material (I.V. bags and bottles). Warming devices and heated materials should be utilized for their intended purpose as deviation may result in severe burn injury to the patient.

A1080 Use of an Anesthesia Information Management System to Assist in Creating Resident Case Assignments
Ira Hofer, M.D., Adam I. Levine, M.D., Anesthesiology, Mount Sinai School of Medicine, New York, NY. An AIMS system was used to create an automated up-to-date table of current resident case counts. The individuals creating resident assignments use this table to provide a more even exposure across the residents.

A1081 Esophageal Injuries: A Closed Claims Analysis
Sophie Esmail, M.D., Karen L. Posner, Ph.D., Linda S. Stephens, Ph.D., Karen B. Domino, M.D., M.P.H., Anesthesiology and Pain Medicine, University of Washington, Seattle, WA. Esophageal perforation continues to be a complication during GA and mortality remains high. There may be a subset of patients at risk for esophageal perforation, such as patients with underlying esophageal disease or when esophageal instrumentation is used.

A1082 Women in Air Force Anesthesia: Does the Trend Match the Civilian Sector or Are We Lagging Behind?
Adrienne K. Cummings, M.D., Christopher J. Nagy, M.D., Cathie T. Jones, M.D., Anesthesiology, San Antonio Uniformed Services Health Education Consortium, San Antonio, TX. This study demonstrates that the growth trend of female, active duty, United States Air Force anesthesiologists is lagging behind the civilian sector. It also demonstrates that there is a steeper increase in the number of female medical students that graduate from the military-sponsored Health Professional Scholarship Program than the number of females that enter anesthesiology raising the question of why the growth trend of female anesthesiologists does not mirror this increase in female military medical students.

A1083 Regional Variation in Prescription Medication Abuse and Illicit Drug Abuse
Mario Moric, M.S., Asokumar Buvanendran, M.D., Kenneth Tuman, M.D., Anesthesiology, Rush University Medical Center, Chicago, IL. With the explosion of prescription drug abuse and fewer headlines referencing traditional illicit drugs, we examine prescription drug abuse profiles and traditional illicit drug abuse across the U.S. in an effort to identify possible relationships. Although the trend seen for both illicit drug abuse and prescription drug abuse was in the direction we expected, the average decrease of about 4% a year for illicit drug abuse was larger than expected and the percentage increase for prescription drug abuse was smaller (about 1% increase a year), we don’t want to negate the seriousness of prescription drug abuse.

A1084 Nationwide Safety of Robotic-Assisted vs. Laparoscopic Hysterectomy in the United States
Eric B. Rosero, M.D., Daniel Condie, B.S., James E. Theisen, M.D., N. Martin Giesecke, M.D., Anesthesiology & Pain Management, University of Texas Southwestern Medical Center, Dallas, TX. This study investigated the comparative safety of robotic-assisted hysterectomy in relation to standard laparoscopic hysterectomy in the United States. Patient Safety Indicators developed by the Agency for Healthcare Research and Quality and other clinical outcomes were assessed. The in-hospital safety profile of both procedures was found to be very similar.

A1085 System to Assist in Creating Resident Case Assignments
Eric B. Rosero, M.D., Daniel Condie, B.S., James E. Theisen, M.D., N. Martin Giesecke, M.D., Anesthesiology & Pain Management, University of Texas Southwestern Medical Center, Dallas, TX. This study investigated the comparative safety of robotic-assisted hysterectomy in relation to standard laparoscopic hysterectomy in the United States. Patient Safety Indicators developed by the Agency for Healthcare Research and Quality and other clinical outcomes were assessed. The in-hospital safety profile of both procedures was found to be very similar.

A1086 Use of an Anesthesia Information Management System to Assist in Creating Resident Case Assignments
Ira Hofer, M.D., Adam I. Levine, M.D., Anesthesiology, Mount Sinai School of Medicine, New York, NY. An AIMS system was used to create an automated up-to-date table of current resident case counts. The individuals creating resident assignments use this table to provide a more even exposure across the residents.

A1087 Women in Air Force Anesthesia: Does the Trend Match the Civilian Sector or Are We Lagging Behind?
Adrienne K. Cummings, M.D., Christopher J. Nagy, M.D., Cathie T. Jones, M.D., Anesthesiology, San Antonio Uniformed Services Health Education Consortium, San Antonio, TX. This study demonstrates that the growth trend of female, active duty, United States Air Force anesthesiologists is lagging behind the civilian sector. It also demonstrates that there is a steeper increase in the number of female medical students that graduate from the military-sponsored Health Professional Scholarship Program than the number of females that enter anesthesiology raising the question of why the growth trend of female anesthesiologists does not mirror this increase in female military medical students.

A1088 Regional Variation in Prescription Medication Abuse and Illicit Drug Abuse
Mario Moric, M.S., Asokumar Buvanendran, M.D., Kenneth Tuman, M.D., Anesthesiology, Rush University Medical Center, Chicago, IL. With the explosion of prescription drug abuse and fewer headlines referencing traditional illicit drugs, we examine prescription drug abuse profiles and traditional illicit drug abuse across the U.S. in an effort to identify possible relationships. Although the trend seen for both illicit drug abuse and prescription drug abuse was in the direction we expected, the average decrease of about 4% a year for illicit drug abuse was larger than expected and the percentage increase for prescription drug abuse was smaller (about 1% increase a year), we don’t want to negate the seriousness of prescription drug abuse.

A1089 Nationwide Safety of Robotic-Assisted vs. Laparoscopic Hysterectomy in the United States
Eric B. Rosero, M.D., Daniel Condie, B.S., James E. Theisen, M.D., N. Martin Giesecke, M.D., Anesthesiology & Pain Management, University of Texas Southwestern Medical Center, Dallas, TX. This study investigated the comparative safety of robotic-assisted hysterectomy in relation to standard laparoscopic hysterectomy in the United States. Patient Safety Indicators developed by the Agency for Healthcare Research and Quality and other clinical outcomes were assessed. The in-hospital safety profile of both procedures was found to be very similar.
A1085 Surgical Apgar Score in Japan

Maho Kinoshita, M.D., Keisuke Shimizu, M.D., Rie Kanamori, M.D., Yusuke Kasuya, Ph.D., Nobutada Morioka, Ph.D., Makoto Onaki, Ph.D., Anesthesiology, Tokyo Women’s Medical University, Tokyo, Japan. Surgical Apgar Score based on intraoperative heart rate, blood pressure and blood loss has been developed to predict postoperative risk and shown to be valid by some authors. However some kind of procedures (e.g., kidney transplantation) and patients (e.g., under age 16) have been excluded originally. We assessed the utility of this score, using over 20,000 cases that include kidney or liver transplantation and pediatric patients. Then we evaluated the possibility of other intraoperative variables to reinforce the prediction ability of this score. Surgical Apgar Score can predict postoperative mortality in wide range of surgical subspecialities including kidney transplantation. This scoring system has the potential to predict postoperative outcomes about patients under age 16.

A1086 ASA Physical Status 5, the Moribund Patient - A Counseling Quandary

Brian D. Hesler, M.D., Leif Saager, M.D., Luke F. Reynolds, M.Sc., Anupa Deogaonkar, M.D., Jarrod E. Dalton, M.A., Alparslan Turan, M.D., Andrea Kurz, M.D., Cleveland Clinic, Cleveland, OH, Dalhousie University, Halifax, NS, Canada. The prospect of surgery on an ASA PS V patient denotes optimistic prospects in a grave situation. Is surgery selling false hope? The analysis of 633,262 surgical patients reaffirmed the data of comparable studies that there is an increasing incidence of 30-day mortality with increasing ASA PS category. 2063 of these patients were of PS V status, 47.2% survived 30 days or more, purporting a fair chance of survival. The ASA PS classification is predictive of patient survival in the perioperative period and provides a useful tool for clinicians in the decision making of critically ill patients.

A1087 Chronic Post-Cesarean Pain in Turkish Women: Retrospective Study

Semra Karaman, M.D., Ilkben Gunusen, M.D., Ahmet Ozgur Yeniel, M.D., Ahmet Mete Ergenoglu, M.D., Azumun Sargun, M.D., Meltem Uyar, M.D., Niyazi Askar, M.D., Anesthesiology and Reanimation, Department of Obstetric and Gynecology, Algology, Ege University Faculty of Medicine, Izmir, Turkey. Chronic pain after cesarean section is reported by 6% of women, but it is unknown whether the pain is a result of surgery or can be attributable to other factors. Therefore, the aim of the present study was to determine the risk factors and incidence for chronic pain after cesarean section in Turkish women. Chronic pain after cesarean section seems to be a problem in at least 3.5% of female patients in Turkey.

A1088 The Value of NAFLD Activity Score (NAS) In Assessing the Severity of Nonalcoholic Fatty Liver Disease in Morbidly Obese Patients

Jiang Wu, M.D., Jiang You, M.S., Daniel Sessler, M.D., Ph.D., Brian M. Parker, M.D., Department of General Anesthesiology, Quantitative Health Sciences, Department of Outcome Research, Cleveland Clinic, Cleveland, OH. Higher NAS values were associated with higher serum levels of both AST and ALT. The proposed NAS scoring system appears useful for measuring the degree of liver impairment in morbidly obese patients with NAFLD.

A1089 Nationwide Outcomes of Patients With Myasthenia Gravis Undergoing Elective Surgery in the United States: A Propensity Analysis

Eric B. Rosero, M.D., M.S., Daniel Conditt, B.S., Girish P. Joshi, M.D., Anesthesiology & Pain Management, UT Southwestern Medical Center, Dallas, TX, UT Southwestern Medical Center, Dallas, TX. The purpose of the study was to investigate the rate of in-hospital postoperative complications in patients with a diagnosis of myasthenia gravis undergoing elective major surgical procedures in the United States, in relation to a matched cohort of non-myasthenic patients. Patients with myasthenia gravis had higher rates of postoperative respiratory failure and thrombo-embolic events after elective surgery. However, the rate of other complications was not significantly different to that of non-myasthenic patients.
A1092 Effect of Sugammadex on Rat Airway Smooth Muscle Contraction
Motoki Hanazaki, M.D., Ph.D., Naoki Yoshioka, M.D., Yoshisasa Fujita, M.D., Ph.D., Hideki Nakatsuka, M.D., Ph.D., Hiroshi Katayama, M.D., Ph.D., Yoshihiko Chiba, Ph.D., Department of Anesthesiology and Intensive Care Medicine, Kawasaki Medical School, Okayama, Japan, Department of Anesthesiology and Intensive Care Medicine, Kawasaki Medical School, Kurashiki, Japan, Department of Biology, School of Pharmacy, Hoshi University, Tokyo, Japan. Sugammadex showed no significant effects in rat airway smooth muscle contraction.

A1093 Physostigmine for Sedation Disordered Breathing
Suzanne B. Karan, M.D., Feng Qian, Ph.D., Denham S. Ward, M.D., Anesthesiology, University of Rochester School of Medicine and Dentistry, Rochester, NY. Ventilatory arrhythmias (VA) are common in patients receiving opioids and benzodiazepines. Physostigmine infusions have shown to decrease the apnea hypopnea index in patients with obstructive sleep apnea syndrome (OSAS). This study did not find that physostigmine caused an overall significant decrease in VA in normal volunteers treated with remifentanil and midazolam. It is possible that some subgroups may benefit from physostigmine.

A1094 The Dopamine D1 Receptor Is Expressed and Stimulates Cyclic AMP Production in Airway Epithelium
Ayumi Goto, D.D.S., Kentaro Mizuta, Ph.D., Jennifer Danielsson, M.D., Fumiko Mizuta, D.D.S., Eiji Masaki, M.D., Ph.D., Charles W. Emala, M.D., Division of Dento-Oral Anesthesiology, Tohoku University Graduate School of Dentistry, Sendai, Japan, Department of Anesthesiology, Columbia University College of Physicians and Surgeons, New York, NY. The dopamine D1 receptor is expressed in human airway epithelium and stimulates cAMP production. This signaling cascade could be a potential target for modulation of airway epithelial cell functions.

A1095 Taper-Shaped Cuff Reduces Postoperative Sore Throat Following Endotracheal Intubation
Yuki Yoshiyama, M.D., Tomoyuki Kawamata, M.D., Yoshiko Tsukahara, M.D., Sari Shimizu, M.D., Mikito Kawamata, M.D., Anesthesiology & Resuscitology, Tohoku University Graduate School of Dentistry, Sendai, Japan, Department of Anesthesiology, Columbia University College of Physicians and Surgeons, New York, NY. The taper-shaped cuff reduces postoperative sore throat following endotracheal intubation. This study investigated whether Taper Guard reduced the incidence of sore throat following endotracheal intubation. In this study, we investigated whether Taper Guard reduced the incidence of sore throat following endotracheal intubation. The results of this study showed that Taper Guard reduced the incidence of sore throat following endotracheal intubation compared to a tube with cylinder-shaped cuff during the early postoperative period.

A1096 Effect of Cigarette Smoke on Immature Human Airway Smooth Muscle
Elizabeth Vogel, M.D., Sarah K. VanOosten, B.S., Michelle A. Holman, B.S., Michael A. Thompson, B.S., Y. S. Prakash, M.D., Ph.D., Christina M. Pabelick, M.D., Anesthesiology, Mayo Medical School, Mayo Clinic, Rochester, MN. Environmental tobacco smoke exposure may contribute to increased airway hyper-reactivity in premature children through alteration of intracellular calcium signaling as well as alteration of proliferation and apoptosis of airway smooth muscle cells.
A1101 Differential Activation of Lung Lipoxygenases (LOX) During Cytokine-induced Acute Lung Injury

Ana Fernandez-Bustamante, M.D., Ph.D., Jelena Klawitter, Ph.D., Uwe Christians, M.D., Ph.D., John Repine, M.D., Anesthesiology, University of Colorado Denver, Aurora, CO, Webb-Waring Center, University of Colorado Denver, Aurora, CO. Lipoxygenase (LOX) metabolites appear to play a key role as contributors to ALI. We performed targeted metabolomics analyses to characterize LOX activation pathways in a rat model of cytokine-induced ALI. This ALI model showed a differential activation of LOX isoforms, with increased lung 12-LOX-derived metabolites and decreased 5-LOX-derived metabolites.

A1102 Ventilatory Drive Predicts Opioid-Induced Respiratory Depression

Jennifer Fraser, M.D., Richard E. Moon, M.D., Anesthesiology, University of Utah, Salt Lake City, UT, Anesthesiology, Duke University Medical Center, Durham, NC. Opioid-induced respiratory depression in the postoperative period is a serious patient safety risk. Ventilatory drive consists of the ventilatory response to chemical and neural inputs such as PCO2. In the general population hypercapnic ventilatory response (HCVR) varies several-fold. While it is generally accepted that ventilatory drive is a major determinant of PCO2, no studies have yet examined HCVR as a measure of susceptibility to opioid-induced ventilatory depression. After a review of published literature, we have reanalyzed data from a study in which individual values for HCVR were reported, and show that pre-administration HCVR is a predictor of opioid-related ventilatory depression.

A1103 Cell-To-Cell Communication via Gap Junctions Is Critical in Force Generation and Maintenance in Airway Smooth Muscle

Peter D. Yim, M.D., George Gallos, M.D., Yi Zhang, M.D., Charles Emala, Sr., M.D., Anesthesiology, Columbia University, NY, NY. Acetylcholine, substance P, KCl and TEA induced contractions were inhibited by carbenoxolone, a gap junction inhibitor. Cell-to-cell communications may be an integral part in airway smooth muscle contractions.

A1104 Respiratory Control and Induction Doses of General Anesthetics in Alcoholic Patients

Zhuang T. Fang, M.D., Wendy Ren, M.D., Dena Yessin, B.S., Victoria Vo, M.D., Jake Ing, M.D., Max Shao, M.D., Anesthesiology, Neurobiology, David Geffen School of Medicine at UCLA, Los Angeles, CA. Respiratory depression during anesthesia is a serious concern. In this study, we examined if alcohol dependent patients exhibit cross-tolerance to general anesthetics and whether they show different tolerance levels to propofol and etomidate. Our data suggest that alcohol dependence produces cross-tolerance to propofol without affecting spontaneous respiration. Alcohol dependence sensitizes anesthetic response to etomidate and may exhibit resistance to respiratory depressant effects of etomidate.

A1105 Overnight Epidural vs. Two Day Continuous Femoral Nerve Catheter for Postoperative Analgesia Following Total Knee Arthroplasty

Kristopher M. Schroeder, M.D., Brooke M. Anderson, R.N., Molly Groose, M.D., M.S., Michael P. Ford, M.D., Melanie J. Donnelly, M.D., Anesthesiology, University of Wisconsin School of Medicine and Public Health, Madison, WI. This study evaluated an overnight epidural versus a two day femoral nerve catheter for pain management following total knee arthroplasty. Postoperative femoral nerve catheter use was associated with decreased PACU immediate, peak and average pain scores, PACU nausea, POD 0 nausea on floor, POD 1 peak pain and POD 1 and 2 ambulation distance with physical therapy. While this study tends to favor the use of a two day FNC infusion, further prospective study is required to determine if the increased labor and cost associated with its use are justified.

A1106 Transversus Abdominis Plane (TAP) Block for Open Retroperpubic Radical Prostatectomy

Adam Buhalog, M.D., Kristopher Schroeder, M.D., University of Wisconsin School of Medicine and Public Health, Madison, WI. Access during open radical prostatectomy is gained through a midline incision in the lower abdominal wall. Recently, the transversus abdominis plane (TAP) block has been shown to be an effective method for providing post-operative analgesia in several lower abdominal surgeries. Because the TAP block has been used effectively for surgeries requiring similar incisions, we hypothesized that it may be an effective means of providing postoperative regional analgesia to patients who undergo open radical retropubic prostatectomy as well. This is the first study to assess the effectiveness of TAP blocks used in this manner. Based on our results, the use of TAP blocks in open radical retropubic prostatectomy confers no additional benefit compared to general anesthesia alone.

A1107 Is the Use of Ropivacaine for Interpleural Bilateral Analgesia Safe?

Guilherme A. Barros, Ph.D., Patrícia Gomes Silva, Ph.D., Fernanda B. Fukushima, Ph.D., Daniele C. Cataneo, Ph.D., Anesthesiology, Surgery and Orthopedics, Unesp - Univ. Estadual Paulista, Botucatu - SP, Brazil. This is double-blind, randomized and prospective study aiming to determine the safety profile of the ropivacaine interpleural block for video-assisted sympathectomy. The 51 patients were allocated in three different groups: G1 (0.9% saline solution), G2 (0.35% ropivacaine) and G3 (0.5% ropivacaine). Pain score at the end of the surgery was smaller in G3. Tramadol consumption in the following week was higher in G1. The highest ropivacaine plasma concentrations were measured 10 minutes after the injection and were below 3 μg.mL, although five patients presented higher concentrations. Better analgesia was obtained, but it cannot be considered safe due its risks of local anesthetic intoxication.
**A1108 Effect of Continuous Patient-Controlled Epidural Analgesia by Radiographic Monitoring on Postoperative Urinary Retention**

Tomohiro Chaki, M.D., Mitsutaka Edanaga, M.D., Ph.D., Michiko Osuda, M.D., Miyuki Tanabe, M.D., Michiaki Yamakage, M.D., Ph.D., Department of Anesthesiology, Sapporo Medical University School of Medicine, Division of Anesthesia, NTT EC Sapporo Medical Center, Sapporo, Japan. We investigated the effect of continuous PCEA by radiographic monitoring on POUR in lower gastrointestinal tract surgery. The results suggested that epidural fentanyl might be a risk factor of POUR and that 0.2% ropivacaine might be the best regimen of epidural analgesia for early ambulation.

**A1109 Curare-Sparing Effect: Another Interest of TAP Block in Coelioscopic Cholecystectomy?**

Elodie Schaeffer, Student, Laurent Raynaud, M.D., Ariane Gentile, M.D., Pascal Boulland, M.D., Sophie Cotterie, M.D., Nicolas Gagnon, M.D., Helène Fetissof, Raphaël Paris, David Plancade, M.D., Department of Anesthesiology and Critical Care, Legueut Military Teaching Hospital, Metz, France. Curare-sparing effect. Preoperative bilateral TAP block seems to provide sufficient abdominal wall relaxation to allow laparoscopic cholecystectomy without curarization.

**A1110 Advantage of Basal Infusion of Local Anesthetics for Patient-Controlled Continuous Femoral Nerve Block After Total Knee Arthroplasty: Combination With Single-Shot Sciatic Nerve Block**

Hideki Taninishi, M.D., Ph.D., Hiroyuki Nishie, M.D., Kenji Sato, M.D., Ph.D., Kiyoishi Morita, M.D., Ph.D., Anesthesiology and Resuscitology, Okayama University Medical School, Okayama City, Japan. The analgesic effects during patient-controlled femoral nerve block combined with single-shot sciatic nerve block with and without basal infusion of 0.2% ropivacaine were compared in 47 patients after total knee arthroplasty. Numerical rating scale was significantly lower in the patients receiving basal infusion (n=27) on postoperative days 1 and 2. In the patients receiving no baseline infusion (n=20), total dose of ropivacaine was lower but number of bolus administrations was higher than those in the patients receiving basal infusion. These results suggest that basal infusion of local anesthetics is necessary for postoperative pain management by patient-controlled femoral nerve block after total knee arthroplasty.

**A1111 Minimum Ropivacaine Concentration for Transversus Abdominis Plane Block to Treat Pain After Inguinal Hernia Surgery**

Motonobu Kimizuka, M.D., Tomoya Koizumi, M.D., Reona Sugimoto, M.D., Natsumi Kii, M.D., Toshiya Kawagishi, M.D., Naoki Tsuiguchi, M.D., Ph.D., Masanori Yamauchi, M.D., Ph.D., Michiaki Yamakage, M.D., Ph.D., Hakodate Municipal Hospital, Hakodate, Japan, Sapporo Medical University School of Medicine, Sapporo, Japan. This study revealed the adequate concentration of ultrasound-guided transversus abdominis plane (TAP) block for treatment of pain after inguinal hernia surgery using the up-and-down method. It was clarified that the minimum effective concentration of 20 ml ropivacaine was 0.15%. This study suggests that a minimum amount of local anesthetics can decrease adverse effects caused by TAP block.

**A1112 New Method to Confirm Whether Thigh Adductor Muscle Contraction Will Occur Before Transurethral Resection of Tumor: Guarantee the Patients Safety and Avoid Unnecessary Obturator Nerve Block**

Takahiro Mihara, M.D., Hideki Itoh, M.D., Ph.D., Kozo Hashimoto, M.D., Takahisa Goto, M.D., Anesthesiology, Yokohama City University, School of Medicine, Yokohama, Japan, International University of Health and Welfare Atami Hospital, Shizuoka Prefecture, Japan, Sagamihara kyodo Hospital, Kanagawa Prefecture, Japan, Anesthesiology and Critical Care Medicine, Yokohama City University Graduate School of Medicine, Yokohama, Japan. An obturator nerve block (ONB) is performed in patients who undergo TUR of interolateral bladder tumor to prevent thigh adductor muscle contraction. There are two important problems: 1) We cannot determine before resection whether ONB is successful. 2) Not a few patients receive unnecessary ONB as a preventive treatment. To resolve these problems, we devise a new method. We confirmed this method is beneficial 1) to prevent thigh adductor muscle contraction during tumor resection and 2) to avoid unnecessary ONB.

**A1113 A Comparative Study of SuprACLavicular Brachial Plexus Block With Centbucridine and Lignocaine for Patients Undergoing Upper Limb Surgeries**

Rajnish K. Jain, M.D., Anurag Yadava, Sr., M.D., Anesthesiology & Critical Care, BMHRC, Bhopal, India. This study was undertaken to compare efficacy of Centbucridine 0.5 % and Lignocaine 2.0% in suprACLavicular brachial plexus block in terms of onset, quality and duration of sensory and motor block for patients undergoing surgery of the upper limb. Although the total duration of sensory loss and motor paralysis was slightly more with Lignocaine as compared to Centbucridine, the later drug produced good quality block which is comparable to Lignocaine and is sufficient for short surgical procedures lasting up to one hour. Centbucridine is well tolerated and is associated with fewer cardiovascular side effects.

**A1114 The Impact of Ischemic Preconditioning on Postoperative Pain After Total Knee Arthroplasty**

Daniel Yoo, M.B., Ottokar Stundner, M.D., Kathy M. Jules-Elysee, M.D., Alejandro Gonzalez Della Valle, M.D., Thomas P. Sculco, M.D., Friedrich Boettner, M.D., Stavros G. Mntoussides, M.D., Ph.D., Department of Anesthesiology, Department of Orthopedic Surgery, Hospital for Special Surgery, Weill Medical College of Cornell University, New York, NY. Ischemic preconditioning before application of tumour has been used in a number of surgical settings to reduce the subsequent inflammatory response. In this ongoing study, we randomized 50 patients to either receive a brief period of preoperative ischemic preconditioning or to serve as controls. Postoperative pain scores at rest and exercise were significantly lower in those patients who received ischemic preconditioning compared to controls.

**A1115 Effect of Dexmedetomidine Added to Lidocaine for Infra-Clavicular Brachial Plexus Block**

Samuel Galoyan, Ph.D., Levon M. Capan, M.D., Thor Lidason, M.D., Zahan Vartanian, M.D., Sheel Sharma, M.D., Howard S. Ching, M.D., Thomas J. Blanck, M.D., Ph.D., Bellevue Hospital Center, New York University, New York, NY. The addition of dexmedetomidine to lidocaine for infra-clavicular block for upper-extremity surgery shortens the onset time of anesthesia, prolongs the duration of analgesia, and thus potentially reduces the analgesic requirement postoperatively. Dexametomidine at these doses reduced blood pressure, but did not cause bradycardia or hypotension.
A1116 Transversus Abdominis Plane Block With 0.2% Ropivacaine for Reducing Post-op Pain After Hysterectomy

Golnaz Alemzadeh, M.D., Gennady Voronov, M.D., Carlo D. Franco, M.D., Reza Mohammad, M.D., Keith Schmidt, M.D., Zilvinas Zakarevicius, M.D., Anesthesiology, JHS Hospital of Cook County, Chicago, IL. Transversus Abdominis Plane Block is an approach for abdominal wall analgesia but is not routinely performed. We conducted a prospective randomized, clinical trial of preemptive TAP block in patients undergoing abdominal hysterectomy. The purpose of our study was to find a way to decrease the health care costs by decreasing the length of stay in PACU and hospital after abdominal surgeries while providing superior patient care. Total of 47 subjects were randomized to 2 groups of intervention and control. Our data supports that TAP block reduces pain and opioid consumption after surgery while demonstrating significantly lower hospital stay.

A1117 Axillary Brachial Plexus Block: Is it Necessary to Inject Each Nerve Individually?

Michael Bradstock, M.D., Jeff Swenson, M.D., Anesthesiology, University of Utah, Salt Lake City, UT. Ultrasound-guided, single-injection technique for blockade of the axillary brachial plexus in unembalmed cadavers results in adequate spread to the ulnar, median and musculocutaneous nerves. This suggests that this technique can be used successfully and may result in a lower incidence of untoward complications associated with multiple-injection techniques.

A1118 Pump’s Feedbacks and E-Settings for Postoperative Continuous Peripheral Nerve Blocks (CPNB) In 59 Orthopaedic Surgery Patients: The New Paradigm of Telemedicine for Postoperative Pain Management

Philippe B. Macaire, M.D., Mansour Y. Nadhari, M.D., Hany F. Greiss, M.D., Anesthesia, Rashid Hospital Trauma Centre, Rashid Hospital Trauma Centre, Dubai, United Arab Emirates, Anesthesiology, Montpellier University Hospital, Montpellier, France. CPNB are recognized for post operative pain management after orthopaedic surgery and adjustments are essentials to optimize the patient outcome management and the concept of functional analgesia without side effects. The study showed that pump’s feedbacks and e-settings permitted a real adaptation to patients’ thoughts, complaints and pain VAS values after orthopedic surgery without nurse and physician physical intervention.

A1119 Effect of the Association of Magnesium and Ketamine on Morphine Consumption in Adolescent Scoliosis Surgery: Prospective Randomized Double Blind Study

Hicham J. Jabbour, M.D., Rita El Jawish, M.D., Nicole M. Naccache, M.D., Hicham Abou Zeid, M.D., Khalil B. Jabbour, M.D., Particia Yazbeck, M.D., Anesthesia and Critical Care, Hotel Dieu de France, Beirut, Lebanon. Pain control after scoliosis surgery involve a multimodal analgesia.NMDA receptor antagonist have been used as morphine sparing agents. The purpose of this study was to evaluate the morphine sparing effect of magnesium and ketamine given simultaneously during and after scoliosis surgery.

A1120 A Continuous Wound Infusion of Ropivacaine Provides Optimal Pain Relief and Rehabilitation After Nephrectomy: A Comparative Study With PCA Morphine and Epidural Analgesia

Sebastien Moulard, M.D., Christain Plasse, M.D., Sophie Bringuier, M.D., Christine Macq, M.D., Xavier Capdevila, M.D., Ph.D., Montpellier University Hospital, Montpellier, France. The quality of EA and IF are equivalent and superior to PCA morphine for morphine consumption, quality of pain relief at rest and early postoperative rehabilitation after nephrectomy. IF has the best ratio postoperative analgesia quality/ adverse effects.

A1121 Effective Bolus Volume of Ropivacaine 0.75% Through a Catheter Required for a Timely Onset of Interscalene Brachial Plexus Blockade

Emine A. Salvié, M.D., Catherine F. Vandepitte, M.D., Philippe Gautier, M.D., Daquan Xu, M.D., Admir Hadzic, M.D., Ph.D., Anesthesiology, Columbia University College of Physicians & Surgeons St. Luke’s Roosevelt Hospital, New York, NY, Anesthesiology, Catholic University of Leuven, Belgium, Anesthesiology, Clinique Ste Anne-St Remi, Brussels, Belgium. Ultrasound guidance during peripheral nerve blocks has allowed for significant reduction in dose and volume of local anesthetic required to accomplish successful blockade using multiple injections through a needle. We undertook this study to determine the minimal effective volume required to accomplish successful interscalene brachial plexus block (ISB) through the catheter.

A1122 Comparison of Immediate Postoperative Pain After Transvaginal Versus Traditional Laparoscopic Cholecystectomy

Nalini Vadivelu, M.D., Hosni Mikhail, M.D., Alice Kai, Gourg Arteya, M.D., Stephanie Wood, M.D., Feng Dai, Ph.D., Kurt Roberts, M.D., Susan Dabu-Bondoc, M.D., Anesthesiology, Yale Center for Analytical Sciences, Surgery, Yale University School of Medicine, New Haven, CT. In this retrospective study evaluating immediate postoperative pain after transvaginal versus traditional laparoscopic cholecystectomy, patients who underwent transvaginal cholecystectomy, despite having significantly greater operative time, used lesser opioids in the PACU than those who underwent 4-port laparoscopic cholecystectomy.

A1123 Adductor Canal Block Versus Femoral Nerve Block for Total Knee Arthroplasty

David H. Kim, M.D., Yi Lin, M.D., Ph.D., Jacques Yadeau, M.D., Ph.D., Enrique Goytizolo, M.D., Richard Kahn, M.D., Aasha Manohar, M.D., Minda Patt, M.D., Dorothy Marcello, B.S., Hospital for Special Surgery, New York, NY, Johns Hopkins Hospital, Baltimore, MD. This study is a Double Blinded Randomized Control Trial comparing the Adductor Canal Block with the Femoral Nerve Block for Total Knee Arthroplasty. It demonstrated that the Adductor Canal Block provides adequate analgesia while sparing quadriceps weakness.
A1124 A Simplified Risk Score to Predict Severe Pain After Ambulatory Surgery

Christian C. Apfel, M.D., Ph.D., Alparslan Turan, M.D., Beverly K. Philip, M.D., Joseph Ruiz, M.D., Anthony Kovac, M.D., Jan Odom-Forren, Ph.D., Rachel Whelan, B.S., Christine Miaskowski, Ph.D., University of California, San Francisco, San Francisco, CA; The Cleveland Clinic Foundation, Cleveland, OH; Brigham and Women’s Hospital, Boston, MA; The University of Texas MD Anderson Cancer Center, Houston, TX; University of Kansas Medical Center, Kansas City, KS; College of Nursing, University of Kentucky, Lexington, KY; Anesthesia and Perioperative Care, University of California, San Francisco, CA; UCSF School of Nursing, San Francisco, CA.

We developed a simplified risk score to predict post-discharge pain in ambulatory patients with 4 key risk factors: patient’s smoking status, preoperative concern about postop. pain, duration of surgery, and severe pain in the PACU. When using one center as a validation dataset, incidences were 15%, 26%, 48%, 70% and 100% when 0, 1, 2, 3, or 4 risk factors were present.

A1125 Platelet Concentrate & Thrombin Injection per Lumbar Plexus Catheter to Prevent Bleeding in Bleeding Diathesis

Krishna Boddu, FANZCA, Tushar Sharma, M.D., Mahammad N. Hussain, M.D., Anesthesiology, University of Texas Health Sciences at Houston, Houston, TX. Coronary stent placed in a patient who had intraop MI with lumbar plexus catheter in situ working bilaterally (epidural) and treated with effective dose of clopidogrel & aspirin. Platelet counts were declining. To remove lumbar plexus epidural catheter in this bleeding diathesis condition, a 3 cc of concentrated aliquot of donor platelets (1208 x 10³ = 13.57 fold) followed by 8000 units of recombinant thrombin were injected per lumbar plexus catheter followed by catheter removal. As we only need local effect of platelets & coagulation factors to prevent hematoma this technique merits further study with all types of bleeding diathesis.
**OR13-2 OUTCOMES AND DATABASE RESEARCH: PERIOPERATIVE MANAGEMENT**

**AO71 Effect of Perioperative Intravenous Lidocone Administration on Postoperative Outcomes in Complex Spine Surgery**
Michael Ghobrial, M.D., Ehab S. Farag, M.D., Andrea M. Kurz, M.D., Jarrod Dalton, M.A., Daniel I. Sessler, M.D., Outcomes Research, Cleveland Clinic, Cleveland, OH. A Double Blinded Randomized Controlled Trial testing the hypothesis that the use of I.V. lidocaine decreases postoperative pain medication requirements and pain scores through POD 2 after spine surgery in patients using it compared to patients using opioid IVPCA only.

**AO72 Change in Intraoperative β-Blocker Use and Mortality Following Coronary Artery Bypass Surgery: A Single Institution Experience**
Stephen A. Esper, M.D., M.B.A., William D. White, M.P.H., Katherine Grichnik, M.D., Mark Stafford-Smith, M.D., Joseph P. Mathew, M.D., Mark F. Newman, M.D., Miklos D. Kertai, M.D., Ph.D., Anesthesiology, Cardiothoracic Division, Duke University Medical Center, Durham, NC. The change in intraoperative β-blocker use is not associated with reduction in mortality following coronary artery bypass surgery.

**AO73 Duration of Red Blood Cells Storage Does Not Affect Mortality in Non-Cardiac Surgery: A Retrospective Analysis of 6994 Patients**
Maria I. Gazmuri, M.D., Leif Saager, M.D., Alparsan Turan, M.D., Jarrod Dalton, M.A., Andrea Kurz, M.D., Outcomes Research, Cleveland Clinic Foundation, Cleveland, OH. The storage duration of allogeneic red blood cells has been linked to increased postoperative morbidity and mortality, especially in cardiac and trauma surgery. We evaluated the association between mean storage duration and postoperative all-cause mortality rate in general surgery patients. We found no increased risk of postoperative mortality due to increased mean storage duration of red-cells.

**AO74 Risk-Based Decision Support Thresholds for Hypotension in Adult Patients Undergoing Non-Cardiac Surgery**
Wolf H. Stapelfeldt, M.D., Jarrod Dalton, Ph.D., Pamela Bromley, M.B.A., George Takla, Ph.D., Jacek Cywinski, M.D., Marc Reynolds, M.S., Bhaswati Ghosh, M.S., General Anesthesiology, Quantitative Health Sciences, Cleveland Clinic, Cleveland, OH. Outcome beyond the immediate perioperative period may be affected by seemingly insignificant and inconsequential periods of intraoperative hypotension. Unlike traditional device thresholds which alert to blood pressure dropping below a certain set threshold value the present data suggest that similar risk is incurred by spending varying amounts of time below a range of blood pressure thresholds. Modern DSS systems should principally be able to alert to a certain preset level of risk attributable to hypotension across the entire blood pressure range rather than a single, more or less arbitrary threshold value and should account for significant patient factors such as a preoperative diagnosis of hypertension.

**OR09-2 EXPERIMENTAL CIRCULATION: CARDIOVASCULAR BIOLOGY**

**AO75 Effects of Stellate Ganglion Blocks on Arginase Inhibition and Nitric Oxide Bioavailability in Rats: A Novel Approach for the Treatment of the Pulmonary Hypertension**
Young Jun Oh, M.D., Ok Soo Kim, M.S., Sungwon Na, M.D., Yong Seon Choi, M.D., Anesthesiology and Pain Medicine, Anesthesia and Pain Research Institute, Yonsei University College of Medicine, Seoul, Republic of Korea. Arginase upregulation is a key mediator of the vascular dysfunction including pulmonary hypertension (PHT) by reciprocal downregulation of endothelial nitric oxide synthetase (eNOS) with decreased nitric oxide (NO) bioavailability. PHT is related with the activation of sympathetic nerve system which induce the decrease of NO bioavailability. SGB suppressed the progress of PHT by the inactivation of arginase with the increase of NO bioavailability.

**AO76 Hypoxia Enhances BDNF Secretion and Signaling in Pulmonary Artery Endothelial Cells**
Martin Helan, M.D., Lucas W. Meuchel, Ph.D., Michael A. Thompson, B.S., Christina M. Pabelick, M.D., Bruce D. Johnson, Ph.D., Y.S. Prakash, M.D., Ph.D., William R. Hartman, M.D., Ph.D., Department of Anesthesiology, Department of Physiology and Biomedical Engineering, Cardiovascular Diseases, Mayo Clinic, Rochester, MN. In this study we explored the role of the neurotrophin brain-derived neurotrophic factor (BDNF) in hypoxia effects on human PAECs. We demonstrate that hypoxia increases circulating serum BDNF concentration, which may be derived from pulmonary endothelial secretion. Hypoxia further facilitates BDNF signaling by increasing TrkB expression (likely through a HIF1-alpha pathway) such that the BDNF has a pro-proliferative effect on the pulmonary artery. Such interactions between hypoxia and BDNF may contribute to structural and functional changes in the pulmonary artery, leading to pulmonary hypertension.
**A077 Echocardiography During Immersion: Implications for the Pathophysiology of Immersion Pulmonary Edema**

Richard E. Moon, M.D., Joseph A. Kinoski, M.D., John J. Freiberger, M.D., Martin J. Lynch, M.D., Richard A. Roller, M.D., Stefanie Martina, B.S., Michael J. Natoli, B.S., Eric A. Schimazi, Niels Rismum, M.D., Anesthesiology, Medicine, Duke University Medical Center, Durham, NC. Swimming-induced pulmonary edema (SIPE), also known as immersion pulmonary edema, occurs paradoxically in young and physically fit individuals. The pathophysiology of SIPE is unknown, but may be due to higher than usual pulmonary artery and PA wedge pressures during immersed exercise, particularly in cold water. Transthoracic echocardiography in normal volunteers during immersed exercise demonstrated an increase in RV systolic pressure and evidence for impaired diastolic filling.

**A078 Ischemic Glomerular Endothelium: Protection by Hyperglycemic Preconditioning**

Katie J. Schenning, M.D., M.P.H., Sharon Anderson, M.D., Nabil J. Alkayed, M.D., Ph.D., Michael P. Hutchens, M.D., M.S., Anesthesiology & Perioperative Medicine, Department of Medicine, Oregon Health & Science University, Portland, OR. Acute kidney injury is a common perioperative complication that carries a high morbidity and mortality rate and for which there are no effective therapies. Our investigations are performed on a glomerular endothelial cell culture model of renal ischemia-reperfusion injury. We hypothesize that hyperglycemic preconditioning (HGPC) protects the function of glomerular endothelial cells (gENC) from a model of IRI via activation of a protective cellular signaling pathway, the sphingosine kinase-1/sphingosine-1-phosphate (SK1/S1P) pathway.

**A079 In Vivo and In Vitro Reversal of Pulmonary Vascular Remodeling Associated With Severe Hypertension by Intralipid**

Soban Umar, M.D., Ph.D., Rangarajan D. Nadadur, B.Sc., Salil Sharma, Ph.D., Michelle Afkhami, M.D., Mansoureh Eghbali, Ph.D., Anesthesiology, Pathology, USC, Los Angeles, CA. Intralipid reverses pulmonary vascular remodelling associated with severe pulmonary hypertension.

**A080 Estrogen Plays a Protective Role in Advanced Heart Failure by Regulating Multiple MicroRNAs Associated With Fibrosis**

Salil Sharma, Ph.D., Andrea Iorga, B.S., Rangarajan D. Nadadur, B.S., Mansoureh Eghbali, Ph.D., Anesthesiology, University of California, Los Angeles, Los Angeles, CA. Estrogen therapy can rescue heart failure by regulating fibrosis-associated microRNA as a novel mechanism.

**A081 Migration of Bone Marrow-Derived Microglia Into the Central Nucleus of the Amygdala in a Neuropathic Pain Model Following Peripheral Nerve Injury**

Atsushi Sawada, M.D., Yukitoshi Niiyama, M.D., Michiaki Yamakage, M.D., Ph.D., Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan. We investigated the migration of bone marrow-derived microglia (BMDM) to the brain in a mouse model of neuropathic pain induced partial sciatic nerve ligation. Significant migration of BMDM was found into the central nucleus of the amygdala in the neuropathic pain model mice compared to naive or sham mice at 4 weeks after the operation. The amygdala is strongly associated with emotional states such as anxiety and depression. The findings of this study may lead to the establishment of novel strategies for treatment of anxiety and depression induced by neuropathic pain.

**A082 Calpain Inhibitor Reduces Cancer-Induced Bone Pain Through Inhibition of Osteoclastogenesis Both in Vitro and In Vivo**

Jia-Ying Xu, M.D., Wei Liu, M.D., Yu-Guang Huang, M.D., Dept. Anesthesiology, Peking Union Medical College Hospital, Beijing, China. Cancer-induced bone pain (CIBP) is a major clinical problem mainly caused by increased osteoclastogenesis activity within cancer bone microenvironment. The present study shows that Calpain inhibitor can effectively reduce bilateral hyperalgesia in a rat CIBP model, and further proves that it is through inhibition of RANKL-induced osteoclastogenesis and maturity of bone resorbing function both in vitro and in vivo.

**A083 The Therapeutic Effect of Repeated Intrathecal Injection of Ifenprodil on Bone Cancer Pain in Mice**

Xiaoping Gu, Ph.D., Zhengliang Ma, Ph.D., Zhong Jiang, M.D., Fengling Wang, M.D., Xuli Yang, M.D., Department of Anesthesiology, Affiliated Drum Tower Hospital of Medical School of Nanjing University, Nanjing, China. NR2B-containing NMDA receptors play an important role in spinal dorsal horn nociceptive processing. Repeated intrathecal injection of ifenprodil, the most promising NR2B subunit-specific antagonists, improved pain related behaviors and reduced the expression of lumbar intumescence NR2B protein in the mouse model of bone cancer pain.

**A084 Time Course and Potency of the Novel KCC2 Inhibitor D4**

Thomas M. Austin, M.D., Eric Delpire, Ph.D., Vanderbilt University Medical Center, Nashville, TN. In this study, we injected a newly identified, highly potent and selective inhibitor of KCC2 (D4) intrathecally into a cohort of mice to measure its effect on heat-evoked nociceptive responses. There was a statistically significant decrease (P < 0.05) in withdrawal latency after D4 injection at the 50, 80, and 110 minute time points. D4 significantly decreased withdrawal latency (P < 0.01) at concentrations ranging from 2.5 μM to 20 μM.
**AO85** NOVA1 Variants Regulate RNA Splicing at the Inhibitory Synapse and Persistent Pain Susceptibility

Roy C. Levitt, M.D., Yaping Zhang, Ph.D., Eugene S. Fu, M.D., Zhiye Zhuang, Ph.D., David Mari, B.S., William Maixner, Ph.D., Luda Diatchenko, M.D., Ph.D., Shad Smith, Ph.D., Eden Martin, Ph.D., Jian-Guo Cui, M.D., Ph.D., Anesthesiology; Hussman Inst of Human Genomics; Miami VAHCS, Anesthesiology, UM Miller School of Medicine, Miami, FL, Center for Neurosensory Disorders, UNC/Algyonkins, Chapel Hill, NC. NOva1 was identified as a variable gene candidate underlyin susceptibility to persistent post-op pain using unbiased genome-wide association methods in a model of post-op nerve injury. Independently, NOVA1 was associated with persistent pain and disability in a large OA population. NOVA1 may explain a maladaptive response to nerve injury due to altered synaptic functioning affecting pain processing, perception and higher-level functioning associated with susceptibility to persistent pain and disability.

**AO88** Varenicline for Perioperative Smoking Cessation - A Double-blind, Randomized, Placebo-controlled Trial

Amir Abrishami, M.D., Jean Wong, M.D., Yiliang Yang, M.D., Amna Zaki, M.D., Zeew Friedman, M.D., Peter Selby, M.D., Kenneth Chapman, M.D., Frances Chung, M.D., Anesthesia, Toronto Western Hospital, Anesthesia, Mount Sinai Hospital, Family & Community Medicine and Psychiatry, Dalla Lana School of Public Health, Medicine, Division of Respirology, Toronto Western Hospital, University of Toronto, Toronto, ON, Canada. This study is a double-blind, placebo-controlled, randomized controlled trial which evaluates the effectiveness of a perioperative smoking-cessation program using varenicline for long-term (12 month) abstinence. The results showed significant improvement in the quit rates in the treatment group.

**AO89** Computerized Surveillance of Postoperative Opioid Induced Respiratory Depression

Ashraf S. Habib, M.D., FR.C.A., Julie A. Eckstrand, Pharm.D, Nancy Kota, R.N., Yi-Ju Li, Ph.D., Basem M. Mishriki, M.D., Jeffrey Ferranti, M.D., Richard E. Moon, M.D., Anesthesiology, Duke University Medical Center, Durham, NC. We prospectively investigated risk factors for postoperative opioid induced respiratory depression and included 112 patients. Known risk factors such as COPD and sleep apnea existed in a high percentage of patients. Other factors such as renal insufficiency and preoperative use of opioids, anxiolytics and antidepressants were also identified as possible risk factors.

**OR17-1** Respiration: Improving Postoperative Pulmonary Outcomes

**Featured Speaker:** David O. Warner, M.D.

Mayo Clinic, Rochester, Minnesota

**Topic:** Emerging Improving Postoperative Pulmonary Outcomes

**A086** Exploring Alternative Scoring Models to Improve the Specificity of STOP-Bang to Detect Undiagnosed OSA

Frances Chung, M.B.,B.S., Yiliang Yang, M.D., Ph.D., Pu Liao, M.D., Toronto Western Hospital, University Health Network, Toronto, ON, Canada. The STOP-Bang questionnaire has been widely used as a screening tool in preoperative clinics due to its high sensitivity and ease to use. However, a low specificity may be a disadvantage of the screening tool. This study is to explore alternative scoring models of STOP-Bang questionnaire to improve its specificity to detect patients with obstructive sleep apnea. Based on 516 patients undergoing overnight portable polysomnography, our result indicates when combining STOP ≥2 in patients with BMI>35kg/m2, neck circumference >40cm, or male gender, the specificity would reach 76.8%-85.0%. This is helpful to further identify moderate and severe OSA in patients with specific characteristics.

**A087** Diabetes Mellitus May Increase Risk of Postoperative Respiratory Depression in Patients at Risk of Obstructive Sleep Apnea

Satya Krishna Ramachandran, M.D., F.R.C.A., Department of Anesthesiology, University of Michigan, Ann Arbor, MI. The study findings raise the possibility of diabetes mediated chemoeceptor dysfunction or airway obstruction related to truncal/neck fat deposition seen with insulin resistance. Higher risk of RD could also be mediated by OSA-related ventilatory instability, predisposing some patients to increased risk of obstructive and central apneas. Finally, current protocols for postoperative monitoring and opioid therapy in high-risk patients may significantly underestimate ongoing RD during concurrent oxygen therapy.

**PD06-1** Critical Care - Sepsis and Organ Failure

**A231** Hydrogen Sulfide Protects Hepatocytes Against Acute Liver Failure

Kentaro Tokuda, M.D., Fumito Ichinose, M.D., Ph.D., Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital, Boston, MA. Hydrogen sulfide (H\(_2\)S), which is an endogeneously-produced gaseous signaling molecule, has been reported to have anti-apoptotic as well as anti-inflammatory properties. Here, we show that H\(_2\)S breathing at 80 ppm for 6h after challenge with galactosamine protects against lethal hepatic failure. This protective effect of H\(_2\)S breathing is associated with inhibition of caspase activation and with augmentation of IL-10/STAT3 signaling pathway in the liver. In addition, in vitro experiments using primary hepatocytes reveal that H\(_2\)S appears to affect hepatocytes directly to protect against lethal hepatic failure.
A232 Variable Effects of Human Atrial Natriuretic Peptide on Urine Output and Glomerular Filtration Rates
Makiko Tani, M.D., Hiroshi Morimatsu, M.D., Ph.D., Takashi Matsuak, M.D., Ph.D., Kiyoshi Morita, M.D., Ph.D., Anesthesiology and Resuscitation, Perioperative Management Center, Okayama University Hospital, Okayama, Japan. The classification system for acute kidney injury (AKI) includes separate criteria for serum creatinine (sCr) and urine output. And human atrial natriuretic peptide (hANP) has been reported to have favorable effects on AKI. In this retrospective study, urine output increased after administration of hANP irrespective of its dose. However, hANP showed different effects on sCr by its dose; high dose hANP increased sCr, and low dose hANP decreased sCr. These results suggested that the effects of hANP on urine output and glomerular filtration rates were different according to the dose and that the dose of hANP is important to maximize its beneficial effect on AKI.

A233 Enhanced Protein O-GlcNAc Modification by Glutamine Improves the Vascular Reactivity via Inhibition of Nitric Oxide Synthesis in Septic Shock Rats
Kang Zheng, M.S., Liang Jing, M.D., M.P.H., Department of Anesthesiology, Zhongda Hospital and School of Clinical Medicine, Southeast University, Nanjing, China. This research demonstrated that the protective effects of glutamine on vascular reactivity in septic shock rats are mainly through elevating the level of protein O-GlcNAc modification. The mechanism of protein O-GlcNAc modification improve vascular reactivity involving not only increasing HSP70 expression and also inhibition of nitric oxide synthesis.

A234 Influence of Circulating Mitochondrial DNA on Gene Expression and Mortality in Critical Ill Patients
Simon T. Schaefer, M.D., Stilla Frede, Ph.D., Sandra Winning, Ph.D., Katharina Flack, D.V.M., Jennifer Walden, Student, Niels Schönborn, Student, Andreas Limmer, Ph.D., Joachim Fandrey, Ph.D., Jürgen Peters, M.D., Michael Adamzik, M.D., Klinik für Anästhesiologie und Intensivmedizin, Universität Duisburg-Essen and Universitätsschlinikum Essen, Essen, Germany, Klinik für Anästhesiologie, Universitätsschlinikum Bonn, Bonn, Germany, Institut für Physiologie, Tierärztliche Hochschule Hannover and Universität Duisburg-Essen, Hannover, Germany, Institute of Molecular Medicine and Experimental Immunology, Universitätsschlinikum Bonn, Bonn, Germany. Circulating mitochondrial DNA is an independent risk factor for 30-day mortality in intensive care units and is increased in patients with sepsis. Furthermore, circulating mitochondrial DNA is associated with decreased mRNA expression of the hypoxia inducible factor-1α in leukocytes both in vivo and in vitro.

A235 Effects of Growth Hormone Treatment on Renal Impairment of Severely Burned Children
Noe A. Rodriguez, M.D., Eva C. Diaz, M.D., David N. Herndon, M.D., Rene Prkora, M.D., Ph.D., Shriners Hospital for Children, Anesthesiology, University of Texas Medical Branch, Galveston, TX. Severe burns are a disastrous injury and recombinant human growth hormone has been beneficial by improving catabolism, however, effects on renal function are unclear. We demonstrate that the administration of growth hormone to severely burned children did not increase the risk of renal injury when compared to controls.

A236 PGC-1α Regulation of Sepsis-Induced Mitochondrial Oxidative Stress
Anne D. Cherry, M.D., Raquel R. Bartz, M.D., Ping Fu, M.D., Claude A. Piantadosi, M.D., Hagir B. Suliman, D.V.M., Ph.D., Department of Anesthesiology, Department of Medicine, Duke University, Durham, NC. The PGC-1α transcriptional co-activator is known to regulate mitochondrial biogenesis in response to sepsis. Using a model of S. aureus peritonitis in mice, we found that decreased levels of PGC-1α are also associated with impaired up-regulation of the hepatic antioxidant response. This results in more oxidative stress, and sufficient additional cellular damage to produce significantly higher levels of hepatocyte apoptosis.

A237 Sevoflurane and Its Primary Metabolite Improve Survival in Murine Septic Peritonitis
Inge K. Herrmann, Ph.D., Maricela Castellon, M.S., David E. Schwartz, M.D., Melanie Hasler, Martin Umer, M.D., Guochang Hu, M.D., Ph.D., Richard D. Minshall, Ph.D., Beatrice Beck-Schimmer, M.D., University Hospital Zurich, Zurich, Switzerland, University of Illinois at Chicago, Chicago, IL. Sevoflurane and intravenous administration of its primary metabolite reduced CLP-induced mortality in a murine model of septic peritonitis.

A238 Effects of a Selective Inhibitor of C-Fos/activator Protein-1 on Downstream Mediators Induced by TNF-α
Hiroyuki Miyazaki, M.D., Jun Morishita, M.D., Ph.D., Kahoru Nishina, M.D., Ph.D., Masaaki Ueki, M.D., Ph.D., Nobuhiro Maekawa, M.D., Ph.D., Department of Anesthesiology, Kobe University Graduate School of Medicine, Kobe, Japan. Previously, we reported that T-5224, a selective inhibitor of c-Fos/activator protein-1, inhibited the production of TNF-α and improved kidney injury. In this study, we hypothesized that T-5224 may inhibit downstream effectors induced by TNF-α. In septic acute kidney injury, T-5224 inhibited the production of IL-1β and IL-6. On the other hand, T-5224 did not alter the increased level of IL-10, anti-inflammatory cytokine. These data support our suggestion that T-5224 is promising as a new therapeutic agent for septic kidney injury.

A239 Ultrasound-Guided Direct Thoracic Epidural Analgesia for Hepatobiliary Surgery in Infants
Nicholas Riegels, M.D., Department of Anesthesia, Kaiser Oakland, Oakland, CA. The author describes a series of six infants undergoing hepatobiliary surgery. Thoracic epidural catheters were placed directly, using ultrasound guidance, and maintained in the postoperative period with analgesic intent.
A240 Bilateral Suprazygomatic Maxillary Nerve Block for Cleft Palate Repair in Children: Prospective Randomized Double Blinded Study vs. Placebo

Julien Chiono, M.D., Christophe Dadure, M.D., Olivier Raux, M.D., Sophie Bringuer-Branchereau, Pharm.D, Xavier Capdevila, M.D., Ph.D., Department of Anesthesiology and Critical Care Medicine, Lapeyronie University Hospital and Montpellier University 1, Montpellier, France. The SMB is an efficient and safe regional anesthesia technique for postoperative analgesia in CP surgery in children. It allows a significant decrease in morphine consumption and a less use of continuous infusion. This should simplify the management and supervision of children scheduled for this surgery, and probably reduce postoperative respiratory complications.

A241 Neonatal Pain and Neuro-Psychiatric Disorders: Honokiol for Prevention and Treatment

Anna Woodbury, M.D., Ko Eun Choi, M.D., Paul Garcia, M.D., Ph.D., Shan-Ping Yu, M.D., Ph.D., Ling Wei, M.D., Anesthesiology, Emory University, Veterans Affairs Medical Center, Atlanta, GA. Our formalin-induced inflammatory pain model in rat pups causes neuronal damage in the brain and results in significant behavioral changes. Honokiol treatment one hour before the induction of inflammatory pain attenuates the stress response in adolescent rats and provides analgesia in neonatal rats. Honokiol also protects from pain-induced neuronal cell death in the hippocampus and thalamus of rats that experienced neonatal inflammatory pain, and further attenuates chronic responses to thermal hyperalgesia resulting from early pain experiences. Our results indicate that honokiol could, with further testing, be a potential neuroprotective, analgesic agent for use in neonates, particularly in the NICU setting.

A242 Overdose of Intravenous Acetaminophen in an Ex-Premature Infant

Shane Campbell, M.B.B.Ch., Thomas Engelhardt, M.D., James McLay, Ph.D., Anaesthetics Department, Royal Aberdeen Children’s Hospital, Anesthetics Department, Medicine & Therapeutics, Royal Aberdeen Children’s Hospital & University of Aberdeen, Aberdeen, United Kingdom. The management and subsequent clinical course of an iatrogenic 10-fold overdose of intravenous acetaminophen in an ex-premature infant weighing 2.3kg is presented. The planned O.R. procedure was elective laser therapy for retinopathy of prematurity. We report the management and subsequent clinical course of an iatrogenic 10-fold overdose of intravenous acetaminophen in an ex-premature infant weighing 2.3kg. The overdose was treated conservatively with supportive care, monitoring, and early referral. The patient was discharged home without sequelae.

A243 Minimum Effective Volume of Local Anesthetics Required for Ultrasound Guided Axillary Block in Children

Bin Du, M.D., Anesthesia, West China Hospital, Chengdu, China. The minimum effective volume of local anesthetic required for axillary block in children is much less than that we previously applied and than that of the adult according to the previously published paper.

A244 Population PK Modelling of Ketorolac in Children

Thomas Engelhardt, M.D., Ph.D., Mindy N. Cohen, M.D., James S. McLay, M.D., Ph.D., Jeffrey L. Galinkin, M.D., Department of Anaesthesia, Royal Aberdeen Children’s Hospital, Aberdeen, United Kingdom, Department of Anaesthesiology, The Children’s Hospital, Denver, CO, Division of Applied Medicine, Aberdeen University, Aberdeen, United Kingdom. The combined analysis of the 2 most recent available datasets for intravenous ketorolac PK analysis in children demonstrates a 2-compartment model with weight and age as significant covariates. This combined dataset can be used to guide dosing of intravenous ketorolac in children aged 2 months to 16 years.

A245 Comparison Between Epidural Morphine Through Lumber and Caudal Route for Thoraco Abdominal Surgery in Children

Dilip Pawar, M.D., Anesthesia, All India Institute of Medical Sciences, New Delhi, India. Sixty children aged 2-6 years presenting for thoracic or upper abdominal surgery received epidural Morphine for post operative pain relief either through caudal or lumbar route. Post operative pain relief in both the groups were comparable.

A246 Unexpected Opioid Sparing Effects of Subcutaneous Local Anesthetic Elastomeric Pain Pumps Found While Studying the Effect of Dexmedetomidine Infusion After Posterior Spinal Fusion for Adolescent Idiopathic Scoliosis

Emily J. Parke, D.O., Richard E. Cotugno, M.B.A., Sean J. Nabar, B.S., Zhanna J. Semenova, M.S.N., Neha Soares, M.D., Michael W. Shrader, M.D., Jones S. Jones, M.D., Pain Management, Valley Anesthesia Consultants, Pain Management, Phoenix Children’s Hospital, Orthopaedic Surgery, Phoenix Children’s Hospital, Phoenix, AZ. Dexmedetomidine infusion did not decrease opioid use after PSF for patients with AIS. However, further analysis showed that elastomeric pain pumps decreased opioid use within those groups.
A248  Isoflurane Induces Neuroinflammation Through NF-kB Signaling Pathway

Lei Zhang, Ph.D., Zhipeng Xu, Ph.D., Longqiu Yang, Ph.D., Zhongcong Xie, Ph.D., Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital, Cambridge, MA, Massachusetts General Hospital and Harvard Medical School, Boston, MA. Isoflurane may induce neuroinflammation through activation of the NF-kB signaling pathway.

A249  Effects of the Sevoflurane Primary Metabolite on Inflammatory and Hemodynamic Responses in a Rat Model of Endotoxic Shock

Martin Urner, M.D., Inge K. Herrmann, Ph.D., Melanie Hasler, Christa Booy, Birgit Roth Z’graggen, Ph.D., Beatrice Beck-Schimmer, M.D., Institute of Physiology, Institute of Anesthesiology, University Hospital Zurich, Zurich, Switzerland. We investigated whether hexafluoro-2-propanol, the sevoflurane primary metabolite, attenuates plasma and tissue inflammatory mediator expression in a rat model of endotoxic shock.

A250  a7 Nicotinic Acetylcholine Receptor Agonist PNU282987 Inhibit HMGB1 Production and Migration of LPS-stimulated Macrophages

Quan Li, M.D., Ph.D., Zhixia CHEN, Fujing LI, M.D., Anesthesiology, Shanghai Tenth People’s Hospital, Tongji University School of Medicine, Shanghai, China. This results suggest that increased cholinergic activity by PNU282987 can inhibit NF-kB activation and HMGB1 production in LPS-stimulated macrophage.PNU282987 also can decrease migration effect of LPS-stimulated macrophage. This system may form the basis for the development of novel agents for inflammation diseases.

A251  Pinacidil Postconditioning May Change Expression Levels of Myocardial Mitochondrial Proteome

Ke Li, M.Sc., Yi Yong Wei, M.Sc., Xing Kui Liu, Ph.D., Tian Yu, Ph.D., Zun Yi Medical College, Zunyi, China. The results show that intervention of Pina may regulate some mitochondrial proteins expression, including NADH dehydrogenase, ATP synthase, ACAD1, ALDH2, ETFA and Cytochrome b-c1 complex subunit, most of which are associated with the mitochondrial respiratory chain and the energy metabolism. Pina could withhold the expression level by increasing NADH dehydrogenase. Moreover, NDUFA10 and NDUFS2 may play an important role in the process of Pina, and ATPase subunit d may be phosphorylated following Pina, all of which are related to the opening of mitochondria ATP-sensitive Kchannels.

A252  A Cytochrome P450 2B4 Mutant, F429H, Structure Provides Insight Into the Function of Prostacyclin and Thromboxane Synthases

Lucy A. Waskell, M.D., Ph.D., Yuting Yang, Ph.D., Haoming Zhang, Ph.D., Michael Tarasev, Ph.D., Sangchoul Im, Ph.D., Anesthesiology, University of Michigan Medical School, Ann Arbor, MI. In summary, the crystal structure of the Phe 429 His mutant of cytochrome P450 2B4 shows that the cytochrome P450 reductase binding site on cytochrome P450 is perturbed accounting for the decreased interprotein interaction. Prostacyclin and thromboxane synthase lack the analogous phenylalanine which likely explains why these proteins do not interact with the reductase.

A253  MicroRNA Expression Profiling of In Vivo and In Vitro Cardiac Models After Isoflurane Exposure

Jessica Olson, M.S., Yanan Liu, M.D., Yasheng Yan, B.S., Xiaowen Bai, M.D., Ph.D., Alison Kriegel, Ph.D., Mingyu Liang, Ph.D., Zeljko Bosnjak, Ph.D., Anesthesiology, Medical College of Wisconsin, Milwaukee, WI. In vivo and in vitro rat models exposed to isoflurane show similar microRNA expression profiles. These microRNAs may contribute to the cardioprotective effects documented after exposure to anesthetics.

PD04-3  CLINICAL CIRCULATION: CLINICAL OUTCOME

CA

10-11:30 a.m.
Room 103B

A254  White Matter Disease Detected by Preoperative Brain MRI Predicts Postoperative Delirium After Off-Pump Coronary Artery Bypass Grafting

Hiroki Omiya, M.D., Kenji Yoshitani, M.D., Yoshihiko Ohnishi, M.D., Kiyoshi Morita, M.D., Anesthesiology, Okayama University Hospital, Okayama, Japan, Anesthesiology, National Cerebral and Cardiovascular Center, Suita, Osaka, Japan. OPCAB was deemed to be a safe procedure that could reduce complications. We investigated the incidence of newly onset delirium after OPCAB by MRI, before and after surgery and the association of MRI findings with postoperative delirium after OPCAB. A total of 88 patients undergoing elective off-pump CABG were investigated. Postoperative MRI detected new focal brain lesions in 7 patients (7.9%). Univariate analysis revealed that older age, preoperative myocardial infarction, and white matter disease had a significant association with postoperative delirium. Multivariate logistic regression analysis demonstrated that white matter disease was a significant risk factor for postoperative delirium.

A255  Preoperative Predictors of Troponin Elevation After Noncardiac Surgery

Judith V. Waes, M.D., Hendrik M. Nathoe, M.D., Ph.D., Linda M. Peelen, Ph.D., Wilton A. van Klei, M.D., Ph.D., Jurgen C. de Graaff, M.D., Ph.D., Department of Anesthesiology, Department of Heart and Lungs, Julius Center for Health Sciences and Primary Care, Department of Anesthesiology, University Medical Center Utrecht, Utrecht, Netherlands. This study identified age, high risk surgery, emergency surgery and renal failure as independent predictors of postoperative Tnl elevation. However, the predictive value of this current model does not seem to be high enough to be used for standard preoperative selection of patients.

A256  Impact of Mitral Regurgitation on Long-Term Outcomes After Aortic Valve Replacement

Grace McCarthy, M.D., Barbara G. Philips-Bute, Ph.D., Patricia L. McGugan, L.P.N., Joseph P. Mathew, M.D., Burkhard Mackensen, M.D., Ph.D., Donald D. Glower, M.D., Madhav Swaminathan, M.D., Anesthesiology, Surgery, Duke University Medical Center, Durham, NC. Mitral regurgitation (MR) is common in patients presenting for aortic valve replacement (AVR). The impact of uncorrected MR after AVR on long-term adverse outcomes was examined and an association between early worsening of MR, assessed intraoperatively by TEE, after AVR surgery and worse long-term outcomes could not be confirmed.
A257 Increased Preoperative and Peak Postoperative B-Type Natriuretic Peptide (BNP) Associate With Decreased Left Ventricular Ejection Fraction After Primary Coronary Artery Bypass Graft Surgery

Amanda Fox, M.D., M.P.H., Simon Body, M.B., Ch.B., Charles D. Collard, M.D., M.S., Xiaoxia Liu, M.S., Jochen D. Muehlislegel, M.D., Edward Marcantonio, M.D., M.S., Stanton Sherman, M.D., Brigham and Women’s Hospital, Boston, MA, Texas Heart Institute, Houston, TX, Beth Israel Deaconess Medical Center, Boston, MA. In a single institution longitudinal cohort study of patients undergoing primary CABG surgery (n=879), both increased preoperative and peak postoperative B-type natriuretic peptide (BNP) concentrations associate with lower postoperative left ventricular ejection fractions (LVEF), even after adjusting for clinical risks. Follow-up LVEF data was collected retrospectively from reports from echocardiograms conducted as part of routine postoperative care through 9.5 years after surgery. Future prospective studies may be warranted to assess if medical management to reduce elevated perioperative BNP in CABG surgery patients associates with improved postoperative cardiac structure and function.

A258 A Multicenter Evaluation of Acute Kidney Injury Incidence and Recovery Following Major General Surgery: Results From the Multicenter Perioperative Outcomes Group (MPOG)

Sachin Kheterpal, M.D., M.B.A., Robert Freundlich, M.D., M.S., Milo Engoren, M.D., Amy Shanks, M.S., Michael Aze, M.D., Leslie Jameson, M.D., William Paganelli, M.D., Ph.D., Kevin Tremper, M.D., Ph.D., University of Michigan, Ann Arbor, MI, Oregon Health And Science University, Portland, OR, University of Colorado, Aurora, CO, Fletcher Allen Healthcare, Burlington, VT. Using the MPOG database, 24,375 patients undergoing major general surgery at 4 institutions were reviewed for the incidence of acute kidney injury (AKI) and renal recovery. 1.9%, 3.5%, and 16% of patients demonstrated AKI-Failure, AKI-Injury, and AKI-Risk, respectively.

A259 Pre-Induction Isolated Systolic Hypertension and Postoperative Outcomes in Noncardiac Surgery

Alaa Abd-Elayed, M.D., Joseph Abdellalak, M.D., Jarrod Dalton, M.A., John Lawrence, M.D., Basem Abdellalak, M.D., University of Cincinnati, Cincinnati, OH, Quantitative Health Science, Depts. of General Anesthesiology and Outcomes Research, Cleveland Clinic, Cleveland, OH. Pre-induction isolated systolic hypertension is not independently associated with adverse outcomes after elective noncardiac surgery.

A260 Intraoperative and Postoperative Whole Blood NGAL Values Are Predictive of the Severity of Acute Kidney Injury

Muhammad Muntazar, M.D., Marc C. Torjman, Ph.D., Ahmed Awad, M.D., Robyn Tarpley, M.S., Ashley Shapiro, B.A., Michael Rosenbloom, M.D., Richard Highbloom, M.D., Srijnshara Vajiala, M.D., Michael E. Goldberg, M.D., Department of Anesthesiology, Departments of Surgery, Cooper University Hospital, Cooper Medical School of Rowan University, Camden, NJ. In this study we tested whether rise and fall of intraoperative and postoperative Plasma Neutrophil gelatinase-associated lipocalin (NGAL) correlates with the severity of acute kidney injury (AKI). Early rise of plasma NGAL level was highly correlated to the postoperative serum creatinine level suggesting that intraoperative measurement of plasma NGAL may have value in predicting the severity of kidney injury in cardiac surgery patients.

A261 Genome Wide Association Study of Perioperative Myocardial Infarction Following Coronary Bypass Grafting

Mihai V. Podgoreanu, M.D., Miklos Kertai, M.D., Ph.D., Yi-Ju Li, Ph.D., William D. White, M.P.H., John H. Alexander, M.D., M.P.H., Mark F. Newman, M.D., Mark Stafford-Smith, M.D., M.P.H., Joseph P. Mathew, M.D., M.P.H., Anesthesiology, Biostatistics and Bioinformatics, Medicine, Duke University, Durham, NC. Multiple genetic loci exist affecting susceptibility to perioperative myocardial infarction after CABG.

PD05-1 CLINICAL NEUROSCIENCES: POSTOPERATIVE COGNITIVE DEFICIT

NA
1:23 p.m.
Room 103B

A262 Evaluation of Emergence From General Anesthesia - A Comparison of Three Scores to Detect Elderly Patients at Risk for Adverse Postoperative Outcome

Finn M. Radke, M.D., Martin Franck, M.D., Sebastian Stukenberg, Student, Maren Schmidt, M.D., Claudia Spies, M.D., Anesthesiology and Intensive Care Medicine, Charité Universitätsmedizin, Berlin, Germany. Evaluation of emergence from general anesthesia according to the Nu-DESC and RASS criteria provided the best correlation with longterm outcome after general anesthesia.

A263 A Pilot Prospective Study of Postoperative Cognitive Changes in the Elderly

Sonya Farber, M.A., Amanda Sacks, Ph.D., Alex Bekker, M.D., Ph.D., Michael Haile, M.D., Elizabeth Pirraglia, M.A., Alice Chu, B.A., Sorosch Didehvar, M.D., Daniel O’Neill, M.D., Mony de Leon, Ed.D., Anesthesiology, Department of Psychiatry, Department of Biology, NYU Langone Medical Center, New York, NY, Department of Anesthesiology, University of Medicine and Dentistry, Newark, NJ. Elderly subjects with and without mild cognitive impairment improved their neurocognitive scores from presurgical baselines to 6 months post surgery in aspects of attention and motor processing speed. However, subjects with MCI performed significantly worse than normals on delayed memory on both baseline and six month time points. Improvements in cognitive performance in both groups may be attributable to improved functionality and mood.
A264 Intraoperative Cerebral Perfusion, Autoregulation and Tissue Oxygenation: A Comparison Between Elderly Patients With and Without POCD

Ariane Rossi, M.D., Christoph S. Burkhart, M.D., Andreas U. Monsch, Ph.D., Christian Kern, M.D., Marek Czosnyka, Ph.D., Stephan P. Strebel, M.D., Luzius A. Steiner, M.D., Ph.D., Anesthesiology, Centre Hospitalier Universitaire Vaudois (CHUV), Lausanne, Switzerland, Anesthesia and Intensive Care Medicine, University Hospital Basel, Department of Geriatrics, Memory Clinic, University Hospital Basel, Basel, Switzerland, Neurosurgery, Clinical Neurosciences, University of Cambridge, Cambridge, United Kingdom. We compared cerebral perfusion, autoregulation and tissue oxygenation in patients ≥65 yrs with and without POCD undergoing surgery under sevoflurane based general anesthesia, using transcranial Doppler and near-infrared spectroscopy. POCD 3 months postoperatively was associated with higher intraoperative Doppler flow velocities and tissue oxygenation.

A265 Intraoperative Cerebral Tissue Oxygenation and Postoperative Cognitive Dysfunction After on- and off-Pump Coronary Artery Bypass Surgery

Anthony R. Absalom, M.B., B.Ch.B., Annemarie van Harten, M.D., Eline L. Aarden, Student, Linde F. Kok, Student, Thomas Wl Scheeren, M.D., Anesthesiology, University Medical Center, University of Groningen, Groningen, Netherlands. Sixty patients scheduled for elective CABG were randomized to surgery either with or without cardiopulmonary bypass (on or off-pump respectively). Perioperative cerebral oxygenation saturation was measured, and cognitive function was assessed before and after surgery. There was no difference in the incidence of cerebral desaturation and POCD between on- and off-pump CABG. Although the incidence of POCD was similar to other published studies, the depth and duration of intraoperative cerebral desaturations was less severe in our study population. This suggests that factors other than CPB and cerebral oxygenation, such as inflammatory responses, play an important pathophysiological role in the development of POCD.

A266 Incidence of Neurologic Deficits Ater Adenosine Induced Flow Arrest for Intracranial Aneurysm Clip Ligation: A Case-Control Cohort Study

John Patrick F. Bebawy, M.D., Sonal Sharma, M.D., Edina Kim, M.D., Laura B. Hemmer, M.D., Antoun Kohl, M.D., Dhanesh K. Gupta, M.D., Anesthesiology, Neurological Surgery, Neurology, Northwestern University Feinberg School of Medicine, Chicago, IL. The use of adenosine induced flow arrest to facilitate intracranial aneurysm clip placement has been well described in the recent literature. Very little is known, however, regarding the neurologic safety of this technique. After matching for the two major predictors of neurologic outcomes after aneurysm clip ligation – aneurysm location and rupture status – it appears that the use of adenosine induced flow arrest does not increase the incidence of neurologic deficits.

A267 The Association of Plasma Melatonin Levels With Delirium After Sevoflurane Anesthesia

Moritoki Egi, M.D., Shiko Yoshitaka, M.D., Tomoyuki Kanazawa, M.D., Yuichiro Toda, M.D., Ph.D., Hiroshi Morimatsu, M.D., Ph.D., Kiyoshi Morita, M.D., Ph.D., Department of Anesthesiology and Reuscitology, Okayama University Hospital, Okayama, Japan. This study was a prospective observational investigation to assess the association of perioperative plasma melatonin levels with postoperative delirium and/or general anesthesia in a tertiary teaching hospital with 22 beds in ICU. Plasma melatonin levels at 1 hour after operation were significantly lower in patients with delirium compared with those without delirium (p=0.037). Even after adjusted with multiple variables, both maximum and cumulative exposure of sevoflurane were associated with reduction of plasma melatonin levels. Inversely, total fentanyl dose was independently associated with increase plasma melatonin levels.

A268 Statin Therapy Is Associated With Improved Cognitive Performance in Patients Having Carotid Endarterectomy

Eric J. Heyer, M.D., Ph.D., Joanna L. Mergeche, B.A., Zirka H. Anastasian, M.D., Robert A. Solomon, M.D., George J. Todd, M.D., James F McKinsey, M.D., Sander E. Connolly, Jr., M.D., Anesthesiology, Neurological Surgery, Surgery, Columbia University, New York, NY. The incidence of cognitive dysfunction after CEA has decreased from 1995 to 2011 along with an increase in statin therapy at the time of surgery. Our findings suggest that statin therapy is beneficial for CEA patients primarily by maintaining healthier lipid profiles at the time of surgery. More specifically, these findings suggest that simvastatin may be the preferred statin of choice for patients undergoing CEA because it increases protective HDL levels more than other statins, especially when compared to the commonly used atorvastatin.

A269 Modafinil’s Impact on Learning, and Memory at 1 Week and 3 Months in Older Adults: Effect of Gender and Educational Covariates

Ronak Desai, D.O., Michael Goldberg, M.D., Marc C. Torjman, Ph.D., Robyn Tarpley, M.S., Ashley Shapiro, B.A., Department of Anesthesiology, Cooper University Hospital, Cooper Medical School of Rowan University, Camden, NJ. Thirty to fifty percent of patients have POCD at 1 week and 10-15% at 3 months after surgery. We hypothesized that postoperative learning ability at one week would improve in modafinil treated patients compared to placebo, with no expected differences between male and female older adults. RAVLT learning curve performance was enhanced up to one week after modafinil administration compared to placebo, and scores returned to baseline at 3 months. There were no significant effects of gender or educational level.

PD08-1 Equipment, Monitoring and Engineering Technology: Hemodynamics

FA
3-4:30 p.m.
Room 103A
A270 **Skeletal Muscle Oxygenation Measured by Near Infra-Red Spectroscopy is Potentially Useful to Monitor Peripheral Tissue Perfusion in Cardiac Surgery**

Ken Kuwajima, M.D., Kenji Yoshitani, M.D., Yoshihiko Ohnishi, M.D., Department of Anesthesiology, National Cerebral and Cardiovascular Center, Osaka, Japan. Previous study demonstrated cardiopulmonary bypass (CPB) can impair microcirculation of organs and peripheral tissues. We examined the relationship between skeletal muscle oxygenation measured by near infra-red spectroscopy (NIRS) and hemodynamic variables after CPB in 14 patients. The results reveal that percent changes of tissue oxygenation index at upper arms are significantly associated with percent changes of cardiac output after CPB. Noninvasive NIRS is potentially useful to monitor peripheral tissue perfusion in cardiac surgery.

A271 **Stroke Volume Variation Obtained With Vigileo/Flotrac System During Acute Normovolemic Hemodilution and Hypervolemic Hemodilution**

Fuhai Ji, Ph.D., Wenjin Li, M.D., Jianying Yang, Ph.D., Hong Liu, M.D., First Affiliated Hospital of Soochow University, Suzhou, China, University of California Davis, Sacramento, CA. SVV is more sensitive than CVP during hypovolemia, but on the contrary CVP is more sensitive than SVV during hypervolemia.

A272 **Influence of Systemic Vascular Resistance on the Accuracy of Cardiac Output and Tracking Changes in Vigileo-Flotrac System**

Koichi Suehiro, M.D., Katsuaki Tanaka, M.D., Ph.D., Tomoharu Funao, 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, Japan. This study suggested that the ability of new third-generation Vigileo-FloTrac system to measure cardiac output (CO) and track changes in CO induced by phenylephrine administration was not clinically acceptable. It was much influenced with the systemic vascular resistance. The Vigileo-Flotrac system has the ability to measure CO only in the normal peripheral resistance state, and not in the low and high systemic vascular resistance state. Additionally, the trending ability of the Vigileo-Flotrac system against SVV is more sensitive than CVP during hypovolemia. It is concluded that the Vigileo-Flotrac system has a reliable ability to measure CO only in the normal peripheral resistance state.

A273 **Continuous Cardiac Output Monitoring During Major Intra-Abdominal Surgery: Physioflow Signal-Morphology Impedance Cardiography Versus Flotrac/Vigileo vs. Central Venous Oxygen Saturation**

Irwin Gratz, D.O., Edward Deal, D.O., Francis Spitz, M.D., Elaine Allen, Ph.D., Erin Pukenas, M.D., Anesthesiology, Cooper University Hospital, Cooper Medical School at Rowan University, Camden, NJ, Babson College, Boston, MA. We compared continuous cardiac output measurements obtained with PhysioFlow Signal-Morphology Impedance Cardiography vs. FloTrac/Vigileo vs. central venous oxygen saturation during major abdominal surgery. Cardiac output values obtained with the Vigileo with the third generation software is more variable and appears to mirror changes seen in systolic blood pressure. In contrast, CO values obtained by PhysioFlow are less variable, and trends better with Svo2. The third-generation Vigileo device appears unreliable for tracking changes in CO during abdominal surgery.

A274 **Bioreactance Based Hemodynamic Monitoring During Military Air Ambulance Evacuation: Preliminary Results of a French Pilot Study**

Clement Dubost, M.D., Sandra Dusonchet, M.D., Christophe Pelletier, M.D., Thierry Villevecille, M.D., Jean-Marie Rousseau, M.D., Sebastien Coste, M.D., HIA Begin, Saint-Mande, France, Service Medical Base Aerienne 107, Villacoublay, France. Monitoring with NICOM is possible during air evacuation without interferences or loss of signal and without invasive interventions. It can provide reliable information that is important and clinically meaningful particularly in the case of severely injured patients.

A275 **Comparison of Ventillatory-Induced Variations in Mean Arterial Pressure and Pulse Pressure Using Coherence Analysis**

Zachary Walton, M.D., Ph.D., Aymen Alain, M.D., Kirk Shelley, M.D., Ph.D., Anesthesiology, Yale University, New Haven, CT. While static indices such as central venous pressure are poor predictors of volume status, dynamic indices such as the respiratory variation of hemodynamic parameters (e.g., systolic pressure and pulse pressure) have been shown to predict fluid responsiveness. Relative phase plays an essential role in determining how these dynamic indices are related. We collected radial-artery-pressure-waveforms from eight patients receiving CAGB surgery and evaluated the relative phase between respiratory modulations in mean pressure and pulse pressure. We found that these signals are quite synchronized, with the biggest phase shift (~1.5s) representing a small fraction of the typical respiratory period (~8s). In addition, we found a statistically significant shift of the relative phases before and after bypass.

A276 **Accuracy of Automated Continuous Calculation of Stroke Volume Variation Measured by Oesophageal Doppler in Anesthetized Patients**

Emmanuel Lorne, M.D., Yasmine Mahjoub, M.D., Clément Buchalet, M.D., Julien Sleghem, M.D., Hervé Dupont, M.D., Anesthesiology and Critical Care Medicine, University Hospital of Amiens, Amiens, France. Accuracy of automated continuous calculation of stroke volume variation measured by oesophageal Doppler in anesthetized patients. This study evaluated a new algorithm included in the cardio Q Deltex Medical® monitor that provides automated and continuous calculation of SVV (SVVauto). SVVauto was closely correlated with SVVman R2 = 0.88 [0.82–0.94] (p < 0.0001) and correctly discriminated SVVman values greater than 14% and less than 14%.

A277 **Closed Loop vs. Anesthesiologist Fluid Administration During Simulated Massive Hemorrhage Using Stroke Volume, Heart Rate, and Mean Arterial Pressure**

Joseph B. Rinehart, M.D., Elena Chung, M.D., Maxime Cannessson, M.D., Anesthesiology & Perioperative Care, University of California Irvine, Orange, CA. Closed-loop fluid administration has been successfully demonstrated in-silico using cardiac output and pulse-pressure variation. This study expands on the previous work showing closed-loop fluid administration can be done in the absence of a dynamic predictor using stroke volume alone.
A1126 Effects of a 1:1 Inspiratory to Expiratory Ratio on Respiratory Mechanics and Oxygenation During One-Lung Ventilation in the Lateral Decubitus Position

Shin Hyung Kim, M.D., Young Jun Oh, M.D., Ph.D., Yong Seon Choi, M.D., Ph.D., Anesthesiology and Pain Medicine, Yonsei University College of Medicine, Seoul, Korea, Republic of. In the present study, VCV with an I:E ratio of 1:1 showed favourable performance in terms of respiratory mechanics for OLV: this simple ventilatory strategy effectively reduced Ppeak and Pplat, increased dynamic compliance, and improved the efficiency of alveolar ventilation compared with conventional VCV with an I:E ratio of 1:2 during OLV. However, the overall systemic oxygenation did not improve with VCV at an I:E ratio of 1:1 compared with an I:E ratio of 1:2 due to a decrease in both intrapulmonary shunt and ScvO2.

A1127 Inspired Oxygen Concentration During Thoracic Surgery With One-Lung Ventilation Does Not Affect Postoperative Pneumonia, Cardiovascular Complications, or Survival

Peter H. Norman, M.D., Peter F. Thall, Ph.D., Ronaldo V. Punyagaman, M.D., Dilip R. Thakar, M.D., Ara A. Vaprucayan, M.D., Heather Y. Lin, Ph.D., Anesthesiology and Perioperative Medicine, UT MD Anderson Cancer Center, Houston, TX, Biostatistics, UT MD Anderson Cancer Center, Houston, TX, Thoracic and Cardiovascular Surgery, UT MD Anderson Cancer Center, Houston, TX, Thoracic and Cardiovascular Surgery, UT MD Anderson Cancer Center, Houston, TX. A retrospective analysis was made of the effect of inspired oxygen concentration during one lung ventilation for lung cancer surgery. There was no difference in pulmonary, cardiovascular or long-term survival whether 100% or less than 70% oxygen was utilized.

A1128 Postoperative Oxygenation Pattern in Patients With Obstructive Sleep Apnea

Fredrik Boer, M.D., Ph.D., Saidja L. Noter, M.D., Albert Dahan, M.D., Ph.D., Anesthesiology, Leiden University Medical Center, Leiden, Netherlands, Leiden University Medical Center, Leiden, Netherlands. The postoperative oxygenation pattern of patients with confirmed or suspected OSA was compared to patients with obesity (BMI>35) and control patients. The postoperative saturation pattern was studied with SpO2 values (SpO2<90% indicating deoxygenation) and rapid changes of SpO2 (delta < -0.63 %/sec indicating obstruction). In all three groups patients had significantly more deoxygenation on the third compared to the first postoperative night. OSAS patients did not suffer from more deoxygenation than control or obese patients during the first 3 postoperative nights. Since half of the OSA patients had CPAP masks in use, this could have protected them from severe deoxygenation.

A1129 Comparison of Volume Control Ventilation (VCV), Pressure Control Ventilation (PCV) and Pressure Control Ventilation-Volume Guarantee (PCV-VG) in Patients Undergone to Laparoscopic Cholecystectomy

Leopoldo E. Ferrer Zaccaro, Sr., M.D., Claudia Niño, M.D., Fabian Manrique, M.D., Daniel Benítez, M.D., Hugo Mantilla, M.D., Fundación Santa Fe de Bogotá, Bogotá, Colombia. We compared the effects of pressure-controlled ventilation (PCV), volume-controlled ventilation (VCV) and pressure controlled with volume guarantee ventilation (PCV-VG) on respiratory mechanics and gas exchange in patients ASA I-II without lung disease undergone Laparoscopic Cholecystectomy. There was not a significant difference on respiratory mechanic, oxygenation and ventilation variables among the three Ventilation Modes, except for a higher pre-exubation tidal volume favoring to PCV, under similar mechanic conditions.

A1130 Perioperative Considerations in Obesity Hypoventilation Syndrome

Edmond H. Chau, M.D., David Lam, B.Sc., Jean Wong, M.D., Babak Mokhlesi, M.D., Frances Chung, M.D., Anesthesiology, Toronto Western Hospital, University Health Network, University of Toronto, Toronto, ON, Canada, Medicine, Section of Pulmonary and Critical Care Medicine, Sleep Disorders Center, University of Chicago Pritzker School of Medicine, Chicago, IL. Obesity hypoventilation syndrome is associated with increased morbidity and mortality. It is often unrecognized in surgical patients. We present the prevalence, pathophysiology, clinical assessment, and perioperative management of this disease entity.

A1131 Changes of Respiratory Parameter During Robotic Prostatectomy: Effect of Pneumoperitoneum and Head-Down Position

Kosuke Kuroda, M.D., Hiroshi Morimatsu, M.D., Ph.D., Satoshi Mitsui, M.D., Mari Shibata, M.D., Kiyoshi Morita, M.D., Ph.D., Department of Anesthesiology and Resuscitology, Okayama University Hospital, Okayama, Japan. Robotic prostatectomy requires profound head-down position and high pneumoperitoneum pressure. We assessed the effects of these conditions on respiratory functions in consecutive 6 patients using the spirometer. Twenty-five degree head-down position decreased pulmonary compliance by 24% and 15 mmHg pneumoperitoneum by 44% . This result suggested that respiratory compromise caused by pneumoperitoneum is severer than that by head-down position in case of robotic prostatectomy.
9-10 a.m.  
Hall C, E-Poster area

A1132 The Effect of Prophylactic Bronchodilator Treatment With Transdermal Tulobuterol Patch on Lung Compliance and Airway Resistance  
Do Won Lee, M.D., Anesthesia and Pain Medicine, Pusan National University Hospital, Busan, Korea, Republic of. We hypothesized that prophylactic treatment with a transdermal β2-agonist tulobuterol patch (TP) would decrease airway resistance and increase lung compliance after endotracheal intubation. And we found that prophylactic treatment with TP produced lower airway resistance and higher dynamic lung compliance after endotracheal intubation compared with placebo medication.

A1133 STOP-BANG Questionnaire to Preoperatively Identify Patients at Risk for Obstructive Sleep Apnea at a Tertiary Care Medical Center  
Phillip S. Adams, D.O., Ibtesam A. Hilmi, M.B., Ch.B. Anesthesiology, University of Pittsburgh Medical Center, Pittsburgh, PA. Obstructive sleep apnea (OSA) is associated with airway management difficulty and postoperative complications. STOP-BANG screening over a 7-week period at our institution revealed that 49% of all patients evaluated at our preoperative clinic were high-risk for OSA (112/229). The use of this questionnaire has prompted our institution to create an advisory committee to create practice guidelines to better treat these high-risk patients in the perioperative period. The STOP-BANG screening tool should be adopted as a routine practice at preoperative clinics.

A1134 The Effect of Prolonged Inspiratory Time on Gas Exchange and Respiratory Mechanics in Patients Undergoing Laparoscopic Gynecologic Surgery: A Randomized Controlled Trial  
Won Ho Kim, M.D., Ga Hyun Kim, M.D., Jong Hwan Lee, M.D., Ph.D., Tae Soo Hahn, M.D., Ph.D., Chung Su Kim, M.D., Ph.D., Hyun Sung Cho, M.D., Ph.D., Eun Ah Cho, M.D., Young Gon Son, M.D., Ph.D., Anesthesiology and Pain Medicine, Samsung Medical Center, Sungkyunkwan University, School of Medicine, Seoul, Republic of Korea. The gynecologic laparoscopic surgery with Trendelenburg position is known for its adverse effects on the pulmonary gas exchange and respiratory mechanics. The authors evaluated the effect of prolonged inspiratory time on these adverse effects by comparing various inspiration to expiration (I:E) ratio.

A1135 The Change of Respiratory System During Shoulder Arthroscopic Rotator Cuff Repair Surgery Under General Anesthesia With Brachial Plexus Block  
Won Ho Kim, M.D., Ga Hyun Kim, M.D., Jong Hwan Lee, M.D., Ph.D., Mi Sook Gwak, M.D., Ph.D., Chung Su Kim, M.D., Ph.D., Sangmin M. Lee, M.D., Ph.D., Hye Won Lee, M.D., Mi Hyo Park, M.D., Anesthesiology and Pain Medicine, Samsung Medical Center, Sungkyunkwan University, School of Medicine, Seoul, Republic of Korea. Shoulder arthroscopic surgery with extracapsular irrigation can cause a serious respiratory complication. The aim of the present study was to evaluate the effect of shoulder arthroscopic surgery on the respiratory system by evaluation of respiratory mechanics, gas exchange status, pulmonary function test and cuff leak test.

A1136 Upper Lip Bite Test vs. Modified Mallampati Classification in Predicting Difficult Laryngoscopy and/or Intubation Among Morbidly Obese Patients  
Freda Richa, M.D., Christine El-Hage, M.D., Patricia Yazbeck, M.D., Anesthesia and Intensive Care, Hotel-Dieu de France Hospital, Beirut, Lebanon. In this study, we compare the upper lip bite test (ULBT) with the modified mallampati classification (MMPC) in predicting difficult laryngoscopy and/or difficult intubation among 100 morbidly obese patients undergoing general anesthesia. Our findings suggest that ULBT has higher specificity and accuracy than MMPC. The risk of difficult laryngoscopy and/or intubation must be assessed by the combination of several tests including MMPC and ULBT.

A1137 Effects of Elevation of the Upper Body on Upper Airway Anatomy and Pulmonary Function in Postpartum Patients  
Anne Heisig, Martina Grosse-Sundrup, M.D., Hooman Mirzakhani, M.D., Susanne Franke, B.A., Alan Hoang, B.Sc., Karen Kan, M.A., Yasuko Nagasaka, M.D., Ph.D., Brian Bateman, M.D., M.P.H., Lisa Leffert, M.D., Matthias Eikermann, M.D., Ph.D., Anesthesia and Critical Care, Massachusetts General Hospital, Boston, MA. Upper airway patency may be impaired after delivery. We compared anatomic and physiologic parameters in postpartum patients and non-pregnant control women. We tested whether supine position leads to a diminished pharyngeal cross sectional area in postpartum patients, particularly during inspiration. After delivery, many characteristics of the upper airway suggest vulnerability to airway collapse, reflected in an impaired forced inspiratory volume. Sitting compared with supine position increased airway size in its most collapsible segments which may decrease the incidence of postpartum airway obstruction and improve maternal safety.

10-11 a.m.  
Hall C, E-Poster area

A1138 Intraoperative Ventilation With Lowered Tidal Volumes in Patients of Perforation Peritonitis: Effect on Postoperative Organ Dysfunction and Systemic Inflammatory Mediators  
Vanya Chugh, M.B., B.S., Asha Tyagi, M.D., Shukla Das, M.D., Ashok Kumar Sethi, M.D., Anesthesiology, Microbiology, University College of Medical Sciences, Delhi, India. Intraoperative use of lowered tidal volume (6 ml/kg with 10 cmH2O PEEP) does not cause any significant difference in postoperative organ dysfunction/failure or systemic inflammatory mediators in patients of perforation peritonitis induced sepsis, as compared to higher tidal volumes of 10 ml/kg.

A1139 Adaptive Support Ventilation Compared With Volume-controlled Ventilation for Patients Undergoing Robotic Assisted Laparoscopic Radical Prostatectomies  
Shusuke Sekine, M.D., Ph.D., Takeo Nagura, M.D., Toshio Itabashi, M.D., Mikiko Tomino, M.D., Chihiro Ando, M.D., Kentaro Masumoto, M.D., Koki Kaneko, M.D., Ryuta Hamada, M.D., Tadashi Tanoue, M.D., Ph.D., Hiroyuki Uchino, M.D., Ph.D., Tokyo Medical University, Tokyo, Japan. The respiratory management by Adaptive support ventilation mode is safer than by volume-controlled ventilation in terms of respiratory management of patients with CO2 pneumoperitoneum and in a steep Trendelenburg position.
A1140 Effects of Albuterol on Oxygenation in Patients Undergoing Open Heart Surgery Using Cardiopulmonary Bypass

Golnaz Alemdadeh, M.D., Gennadiy Voronov, M.D., Reza Mohammad, M.D., Feodor Gloss, D.O., Anesthesiology, John Stroger Hospital of Cook County, Chicago, IL. Open heart surgery using Cardiopulmonary bypass is associated with a range of post-operative pulmonary complications with a significant role in post-operative morbidity, mortality and health care cost. We conducted a prospective randomized clinical trial to evaluate the effects of intraoperative albuterol in patients undergoing heart surgery. Our data showed the albuterol improved oxygenation in a subgroup of patients which was statistically significant. We conclude that intra-operative albuterol could have a preventive effect on the degree of pulmonary compromise and improve oxygenation in this setting.

A1141 Effects of Pressure Release Ventilation on Oxygenation in Acute Lung Injury Piglets: Evaluation With Transesophageal Echography

Toshihito Tsubo, M.D., ICU and Department of Anesthesiology, University of Hirosaki, School of Medicine, Hirosaki-shi, Japan. The application of APRV reduced the area and shunt flow of the dependent lung lesion in acute lung injury piglets. Spontaneous breathing increases those effects. Ultrasonography is applicable to observe the lung change during APRV and APRV with spontaneous breathing.

A1142 The Resistance of Different Syringe Types Used in the Loss-of-Resistance Technique

Osamu Nishiuki, Ph.D., Takeshi Tateda, Ph.D., Yu Satou, Ph.D., Kazuyuki Serata, Ph.D., Anesthesiology, St. Marianna University School of Medicine, Kawasaki, Japan, Showa University School of Medicine, Yokohama, Japan. The aim of this study was to determine the optimal syringe type for the loss-of-resistance (LOR) technique. We compared the inherent resistance of general-purpose resin syringes, glass syringes, and specialized LOR resin syringes. We recorded the static force of resistance at the instant the plunger movement began. The mean static force of resistance of the glass syringes was significantly lower than that of the general-purpose resin syringes and the specialized LOR syringes. The present results suggest that the glass syringes tested are more suitable for the LOR technique.

A1143 Effect of Setting a Heat Moisture Exchange Filter in a Vertical Position on Water Accumulation in Low-Flow Anesthesia

Go Hirabayashi, M.D., Yuichi Furukawa, M.D., Ryoji Maeda, M.D., Hideto Kaneko, M.D., Yukihiko Oghira, M.D., Akifumi Omi, M.D., Anesthesiology, Hachioji Medical Center, Tokyo Medical University, Tokyo, Japan. Setting an HMEF in a vertical position prevents excessive water accumulation and enables safe low-flow anesthesia.

A1144 Comparison of Penetration Forces of Various Types of Needles for Central Venous Catheterization

Hideaki Sasaki, M.D., Masanori Yamauchi, M.D., Michiaki Yamakage, M.D., Ph.D., Department of Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan. We compared penetration forces and load displacement curve of central venous catheterization needles. Penetration force of Legaforce EX®, which has a narrow needle, was significantly lower than that of needles in other CVC kits, and the use of Legaforce EX® would decrease the incidence of mechanical complications such as posterior wall puncture.

A1145 Endurance of Reusable Metal Stylets to Repeated Bending

Masatoshi Urasawa, M.D., Tomoyuki Kawamata, M.D., Hanuki Kachi, Tadao Nakagomi, Ph.D., Mikito Kawamura, M.D., Anesthesiology and Resuscitology, Shinshu University School of Medicine, Matsumoto, Japan, Shinshu University, Nagano, Japan. A stylet is used to facilitate endotracheal intubation. Both disposable stylets and reusable metal stylets are clinically available. Broken pieces of reusable metal stylets have been reported within tracheal tubes or the ascending colon. To prevent the shearing of reusable metal stylets due to repeated usage, it is necessary to know the endurance of metal stylets for repeated mechanical stress. In this study, we examined the endurance of reusable metal stylets to repeated bending. Our results showed that chrome-plated brass stylets were sheared off when bending and straightening was repeated 210 times at 2% distortion. In addition, the stylets were sheared off immediately after a crack of 3 was observed on the tension side.

A1146 Demonstration of Distance Training of a Complex Medical Task Using Adobe Connect

Thomas A. Nicholas, IV, M.D., Ben Boedeker, M.D., Dan Iriarry, M.D., Mary Bernhagen, B.S., Gail Kuper, B.S. Anesthesiology, University of Nebraska Medical Center, Omaha, NE. A demonstration of telementoring the placement of an intubating laryngeal tracheal airway using Adobe Connect.

A1147 How Clean Are the Overhead Lights in Operating Rooms?

Arun Kalava, M.D., Monica Midha, Student, Lakshmi N. Kumutala, M.D., Joseph Schianodiciola, M.D., Joel M. Yarmush, M.D., Department of Anesthesiology, New York Methodist Hospital, Brooklyn, NY, St George’s University School of Medicine, St. George’s, Grenada. In our study, bacteria including Staphylococcus, Streptococcus and Neisseria grew from the illuminating surface of overhead lights in three out of five operating rooms in an ambulatory surgical suite. The contamination may be caused by using wipes to clean the lights that have already been used to clean other surfaces in the operating room. Without specific guidelines for cleaning these lights, we propose that a fresh cleaning wipe should be used to sanitize these surfaces and that the lights be cleaned thoroughly between cases, especially in ambulatory sites where there are high rates of turnover. Contaminated lights are positioned over the sterile field and represent a potential source of surgical wound infection.
**A1148 Using a Clinical Information System to Examine Perceived Intraoperative Efficiency**

Khensani Marolen, M.P.H., Shilo Anders, Ph.D., Brian Rothman, M.D., Jesse Ehrenfeld, M.D., Department of Anesthesiology, Vanderbilt University Medical Center (VUMC), Vanderbilt University, Nashville, TN, Center for Research & Innovation in Systems Safety, Department of Anesthesiology, Vanderbilt University, Nashville, TN. We investigated the impact of a novel clinical information system, both mobile and desktop, on team communication and perceived efficiency among anesthesia providers. Our novel application, VigiVu, provides clinicians with real-time vital signs and video for each of the patients under their care. This study is a critical first step in understanding how information technology, especially mobile systems, impact team communication and efficiency.

**A1149 Resident Use of iPads: A Quick Look**

Joel M. Yarmush, M.D., Michael Das, Student, Joseph SchianodiCola, M.D., Anesthesiology, New York Methodist Hospital, Brooklyn, NY, Phillips Academy, Andover, MA. Apple’s iPad has been hailed as a must have productivity tool, but can it stand up to a physicians daily stresses? The iPad promoted learning new medical techniques, aided in time management, and helped doctors stay informed when dealing with patients. Overall the iPad increased the productivity of the residents taking part in the survey, while decreasing time wasted waiting for various electronic resources.

**A1150 Oxygen Consumption of a Field Anesthesia Machine's Ventilator**

Dale F. Szpisjak, M.D., M.P.H., Cheryl Starrett-Keller, M.D., Richard R. Kyle, M.S., Anesthesiology, Uniformed Services University, Anesthesiology, Walter Reed National Military Medical Center, Ananomy, Physiology, & Genetics, Uniformed Services University, Bethesda, MD. Compressed O₂ consumption increases with increasing Vₐ and decreasing compliance in the Magellan-2200 model 2 ventilator. In the worst case tested, a full E-cylinder of O₂ would be depleted in approximately 113 min.

**A1151 Reduced Propofol Measurement Intervals by Increasing the Temperature of the Multi-Capillary Column in an Ion Mobility Spectrometer**

Heiko Buchinger, M.D., Sasidhar Maddula, Ph.D., Thomas Volk, M.D., Ph.D., Joerg Ingo Baumbach, Ph.D., Patrick Favrod, Student, Sascha Kreuer, M.D., Ph.D., Department of Anesthesiology, Intensive Care and Pain Therapy, Saarland University Medical Center and Saarland University Faculty of Medicine, Homburg, Germany, Department Microfluidics and Clinical Diagnostics, Korea Institute of Science and Technology Europe, Saarbruecken, Germany. Propofol can be identified and quantified in exhaled air directly with different techniques. One of the methods for measuring propofol is a β-radiation ion mobility spectrometer coupled to a multi-capillary column (MCC-IMS). A standard MCC-IMS can measure propofol every 600 sec. We were able to show a reduction of the measuring time to 26 sec by increasing the MCC-IMS temperature. These results are important for the development of a propofol-IMS that can measure propofol during anesthesia.

**A1152 Ion Molecule Reaction Mass Spectrometry for Gram-Negative Bacteria Differentiation**

Michael E. Dolch, M.D., Cyril Hornuss, M.D., Siegfried Praun, Ph.D., Wolfgang Denzer, Ph.D., Soeren Schubert, M.D., Gustav Schelling, M.D., Anesthesiology, University Hospital Großhadern - Ludwig-Maximilians-University of Munich, Munich, Germany, V&S Medical Development GmbH, Absam, Austria, Avacta / Oxford Medical Diagnostics Ltd, Centre for Innovation & Enterprise, Oxford, United Kingdom, Max von Pettenkofer-Institut für Hygiene und Medizinische Mikrobiologie, Ludwig-Maximilians-University of Munich, Munich, Germany. Analysis of the volatile organic compound headspace composition of gram-negative cultures using ion molecule reaction mass spectrometry revealed species specific mass spectra. Species differentiation was achieved after 24 h of growth while analysis time per sample was 3 min.

**A1153 Desiccated Soda Lime Can Be Detected Easily With a Commercially Available Humidity Indicator Strip**

Mitchel Sosis, M.D., Anesthesiology, Holy Redeemer Hospital and Medical Center, Lafayette Hill, PA. In this investigation, the humidity indicator strips evaluated were readily able to determine whether soda lime was desiccated or fresh.

**A1154 Evaluation of the Static Performance of a Respiratory Flow Measurement Module**

Michael B. Jaffe, Ph.D., Philips-Respironics, Wallingford, CT. Static performance testing of the instrumentation portion in a respiratory flow module has demonstrated high accuracy (<0.3%), excellent linearity, low hysteresis and high repeatability and been shown to be a small contributor to the overall error under these conditions.

**A1155 Time-Delay When Updating Infusion Rates in the Graseby 3400 Pump Results in Reduced Drug Delivery**

Jeff E. Mandel, M.D., M.S., Elie Sarraf, M.D., Tony Tan, Student, Cassi J. Henderson, Student. Anesthesiology & Critical Care, Perelman School of Medicine, Biomedical Engineering, University of Pennsylvania, Philadelphia, PA. The Graseby 3400 pump has been extensively used for computer-controlled infusions. During updates in infusion rate, the output of the pump temporarily stops, as was determined by weighing the infusate during infusion sequences. When TCI is employed with updates every ten seconds, this may produce an error of 15% in predicted concentration, as determined by computer simulation. The relevance of this to previously reported results with TCI is unknown.

**A1156 Development of an Accurate CO₂ Flow Meter to Study CO₂ Absorber Efficiency**

Jan E. Hendrickx, M.D., Ph.D., Tom Van Zundert, M.D., Sohe De Cooman, M.D., Andre M. De Wolf, M.D., Anesthesiology, OLV Hospital, Aalst, Belgium, Anesthesiology, Sint-Jan Hospital, Brussels, Belgium, Anesthesiology, Northwestern University, Chicago, IL. To allow us to study in vitro how efficient different anesthesia machines use CO₂ absorbent, we had to develop a means to accurately measure CO₂ flow. CO₂ is readily available from the wall outlet, but available rotameters are not accurate enough for the purposes of our studies. We developed an accurate means to administer CO₂ using pressure measurements (accuracy of the order of 3.4 mL/min). Vice versa, pressure measurements over time can be used to trace CO₂ flow fluctuations and to calculate cumulative CO₂ usage. A new calibration curve is needed after changing any of the components.
A1157 Fabius Anesthesia Machines Respond Differently to Unidirectional Valve Failures

Benjamin D. Garol, M.D., Benjamin Pate, M.D., John J. Badal, M.D., Robert G. Loeb, M.D., Anesthesiology, University of Arizona, Tucson, AZ. Effect of inspiratory and expiratory unidirectional valve malfunctions on end-tidal carbon dioxide concentration and capnography during both spontaneous and controlled ventilation in two anesthesia machines currently used in clinical practice. The Fabius breathing circuit contains a piston ventilator, a fresh gas decoupler valve, and a ventilator-controlled expiratory valve, which all affect its response to unidirectional valve failures. This is the first report that fresh gas decoupled breathing circuits respond differently to unidirectional valve failures than do traditional circle breathing circuits.

A1158 In-Vitro CO2 Absorbent Usage With Different Fresh Gas Flows With the Zeus and Aisys Anesthesia Machines

Jan F Hendricks, M.D., Sofie De Cooman, M.D., Tom Van Zundert, M.D., Andre M. De Wolf, M.D., Anesthesiology, OLV Hospital, Aalst, Belgium, Anesthesiology, Sint-Jan Hospital, Brussels, Belgium, Anesthesiology, Northwestern University, Chicago, IL. The two commercially available automated low flow anesthesia machines used with their company specific CO2 absorber differ in their canister usage, both with regard to the pattern relative to FGF and usage per mass of fresh granules. With FGF above minute ventilation, the Aisys uses no absorbent but the Zeus becomes slowly exhausted over the course of several days. With lower FGF usage decreases almost (but not entirely) linear with FGF with the Zeus. With the Aisys, the relationship is sigmoidal (with FGF lower than 600 mL/min the difference becomes small). These different patterns need to be taken into account when comparing differences anesthesi machines.

A1159 The Implementation of an Automated Medication Dispensing System Has Minimal Effect on Anesthetic Practice

John Draper, M.D., James Harding, M.D., Maria Jensen, M.D., Brian Starr, M.D., Timothy Petersen, Ph.D., Department of Anesthesiology & Critical Care Medicine, University of New Mexico, Albuquerque, NM. The implementation of Automated Medication Dispensing Systems had minimal effect on the administration of anesthesia.

A1160 Repeatability and Performance of the T4-EMG and TOF-Watch Evoked Neuromuscular Responses in Volunteers

Sorin J. Brull, M.D., Jolanda A. Witteveen, M.Sc., David R. Hampton, Ph.D., Anesthesiology, Mayo Clinic, Ponte Vedra Beach, FL, Applied Biomedical Systems, Maastricht, Netherlands, T4Analytics, Atlanta, GA. This IRB-approved clinical investigation compared evoked responses from a battery-operated prototype EMG monitor (T4-EMG) to those obtained from an AMG-based TOF-Watch monitor.

A1161 Anesthetic Delivery System for Treatment of Status Asthmaticus

Jarred R. Mondoñedo, B.S., David W. Kaczka, M.D., Ph.D., Biomedical Engineering, Boston University, Anesthesia, Critical Care, and Pain Medicine, Beth Israel Deaconess Medical Center, Boston, MA. Although treatment of status asthmaticus frequently involves the use inhaled anesthetics, such agents can induce significant sedative and hemodynamic side effects. This project aims to develop a functioning ventilator system for the optimal delivery of inhaled anesthetics exclusively to conducting airways in patients and large animals, thereby maximizing therapeutic bronchodilatory actions while minimizing systemic side effects.

A1162 Propofol in the Exhaled Alveolar Gas As a Setpoint for Closed-loop Controlling

Astrid E. Berggreen, M.D., Balamurugan Varadarajan, Ph.D., Katharina Beisenherz, Hartmut Gehring, M.D., Martin Grossherr, M.D., Anesthesiology, University of Luebeck, Luebeck, Germany, University, Bern, Switzerland. Exhaled gas concentration of propofol measured with ion molecule reaction mass-spectrometer may serve as a setpoint in a closed-loop control system for infusion propofol.

A1163 Impact of the Newly Developed, Next-Generation Artificial Endocrine Pancreas

Naoji Mita, M.D., Shinji Kawahito, M.D., Ph.D., Kazumi Takaishi, D.D.S., Hirishi Kitahata, M.D., Ph.D., Shuzo Oshita, M.D., Ph.D., Anesthesiology, Dental Anesthesiology, Tokushima University Hospital, Tokushima, Japan. The glycemic control system using the STG-55 (a newly developed, next-generation artificial pancreas) could provide an alternative way to achieve effective and safe perioperative glycemic control.

A1164 Clinical Evaluation of Closed-Loop Administration of Propofol Guided by the NeuroSENSE Monitor in Children

Klaske van Heusden, Ph.D., Guy A. Dumont, Ph.D., Kristian Soltesz, M.Sc., Chris Petersen, Ph.D., Nicholas West, Aryannah Umedaly, John M. Ansermino, M.D., University of British Columbia, Vancouver, BC, Canada, Lund University, Lund, Sweden. This contribution describes the results of a clinical evaluation of closed-loop controlled propofol infusion in children. The system was evaluated in 43 cases requiring anesthesia for elective upper or lower gastrointestinal endoscopic investigations. Automated induction of anesthesia using a simple robustly tuned proportional-integral-derivative (PID) controller led to limited overshoot in children age 7-17. Depth of anesthesia was adequate during maintenance of anesthesia despite the large interpatient variability in PK/PD behavior in children.

A1165 Improved OR Communication Through the Use of Wifi Enabled Smart Phones vs. Two-Way Pagers

Ryan Lauer, M.D., Mohammed Nour, M.D., Ashley Abilmona, M.D., Jason Gatling, M.D., John Lenart, M.D., Richard Applegate, M.D., Anesthesiology, Loma Linda University, Loma Linda, CA. This study is a comparison of a hospital two-way paging system for communicating OR information versus using smart-phone technology for the same purpose. Smart phones, operating over WiFi, prove to be much faster. Hospitals may need to reconsider bans on smart phones as more rapid communication could lead to improved patient safety.

A1166 Equipment Availability and Patient Safety Study

Steven Ginsberg, M.D., Alan R. Solina, M.D., Sameet Syed, M.D., Shaul Cohen, M.D., Sal Zisa, M.D., Andre Hylton, M.D., Anesthesiology, UMDNJ Robert Wood Johnson Medical School, New Brunswick, NJ, Anesthesiology, Robertwood Johnson University Hospital-UMDNJ, New Brunswick, NJ, Anesthesiology, Robertwood Johnson university hospital-UMDNJ, New Brunswick, NJ. This data should serve to provide normative information and may also help provide a basis for institutional negotiation for needed safety equipment. Perhaps in the future, our national societies will look into establishing guidelines for safety equipment availability.
Where There Is Smoke, There Is Fire

Wendy K. Bernstein, M.D., David Schreibman, M.D., Yue Zhu, M.D., M.S., Ivan George, Carl Zellhofer, D.V.M., Kerry Murphy, D.V.M., Department of Anesthesiology, Department of Surgery, University of Maryland, MASTRI Center, University of Maryland, Baltimore, MD. A high-fidelity ultra-realistic simulated clinical scenario can depict multiple deficiencies in the knowledge and management of an intraoperative airway fire, including instruction in patient safety issues, use of fire extinguishers, and misconceptions about pulling fire alarms. These events have had dramatic results in changing current fire safety policies and procedure, with the relocation of fire pulls, and establishment of Code Red drills.

Cross-Sectional Study: Climate of Bullying Among Anesthesia Care Providers

Sergey Pisklakov, M.D., Melissa L. Davidson, M.D., Andrea F. Marcus, M.P.H., Catherine Schoenberg, B.S., UMDNJ New Jersey School of Medicine, Department of Anesthesiology, UMDNJ-NJMS, Epidemiology, UMDNJ - School of Public Health, Newark, NJ. This is a study to develop a survey to aid in determining the incidence and consequences of bullying among anesthesia providers, to assist in ascertaining the causes, to develop preventive measures to deal with bullying. The input from the Phase I focus group provided a definition for bullying. In Phase II we developed survey. Phase III resulted in survey validation. In Phase IV survey was launched in our department and revealed unique data. Phase V is to do survey nationwide. Bullying is a behavior intended to cause distress and involves an imbalance of power, causes thwarting productivity. Preventive methods should include antibullying education as a part of the curricula.

Patient Perspectives on Informed Consent for Anesthesia: What Patients Want to Hear and When They Want to Hear it

Christopher Burkle, M.D., Mark T. Keegan, M.D., Matthew H. Armstrong, M.D., Jeffrey J. Pasternak, M.D., Anesthesiology, Mayo Clinic, Rochester, MN. Most patients wished to be informed of material risks with few believing the potential fear elicited by discussion of anesthetic risks outweighed benefit. Further, our results demonstrate the importance patients place on personal discussion of risks with their anesthesia provider. Regarding timing of information exchange, a majority of respondents prefer discussion of anesthetic risks to take place before the day of surgery.

A Customizable, Office-Based Surgical Safety Checklist Improves Key Patient Safety Indicators

Richard Urman, M.D., M.B.A., Noah Rosenberg, M.D., John Stenglein, M.D., Sean Gallagher, M.D., Fred E. Shapiro, D.O., Anesthesiology, Brigham and Women’s Hospital/Harvard Medical School, Boston, MA, University of Massachusetts Medical Center, Worcester, MA, Tufts University School of Medicine, Anesthesiology, Beth Israel Deaconess Medical Center/Harvard Medical School, Boston, MA. Introduction of a surgical safety checklist in an office-based setting was associated with statistically significant increases in the rates of a number of important patient safety indicators and recommended practices. Further work will define the impact of the checklist on adverse outcomes and its applicability to a range of different types of office settings.

Acute Fulminant Malignant Hyperthermia Syndrome in the O.R. and No I.V. Dantrolene: Urgent Need for a Global Initiative for Worldwide Patient Safety

Murugesan Chinnamuthu, M.D., Sanjayakumar Banakal, M.D., Ishtiaque Ahamed, M.D., Surya Kanta Mohanty, M.D., Hs Jayanthkumar, M.D., Br Harish, M.D., Prashanth Kulkarni, M.S., Kumar G. Belani, M.B.,B.S., Anesthesiology and Critical Care, Narayana Hrudayalaya Institute of Medical Sciences, Bangalore, India, Anesthesiology, University of Minnesota Medical School, Minneapolis, MN. Malignant hyperthermia (MH) occurs worldwide. Unfortunately i.v. dantrolene is not available in all countries. Acute fulminant MH occurred in a Nigerian athlete visiting India for donor nephrectomy. He was fortunate to survive without i.v. dantrolene. This near-death event induced us to explore options to ensure i.v. dantrolene availability in India. Developing countries will benefit if anesthesia societies undertake this as a global public health patient safety initiative - confirming i.v. dantrolene availability wherever general anesthesia is used.

Evaluation of Perioperative Morbidities: Two Scores Are Better Than One

Pankaj Malhotra, M.D., Trevor M. Banack, M.D., Feng Dai, Ph.D., Klifford Roccus, M.D., David G. Silverman, M.D., Anesthesiology, Yale University School of Medicine, New Haven, CT. The combined scoring of local as well as pansystemic impact reduces the differences in severity assessment between the anesthesiologists and hospitalists.

Perioperative Visual Injury in Radical Prostatectomy: A 10 Year Study From 2000-2009

Ajay Sampat, M.D., David Glick, M.D., Steven Roth, M.D., Anesthesia and Critical Care, University of Chicago, Chicago, IL. Increasing rates of perioperative visual injury, specifically corneal abrasion, in radical prostatectomies from 2000-2009 correlate with the rise of robotic use during this time period.
A1174 Social Network Analysis of a Stroke System: Impact of Multi-Level Node Failure

Patrick Tighe, M.D., M.S., Jennifer Chang, M.D., Anas Dalloul, Mohsen Sadrameli, Brian Hoh, M.D., Steve Robicsek, M.D., Ph.D., Anesthesiology, Neurosurgery, University of Florida, Gainesville, FL. Patients with acute stroke may benefit from catheter-directed thrombolytic and/or thrombectomy therapy performed by a multidisciplinary interventional stroke therapy team (Stroke-IR). Prior to therapy, rapid patient evaluation must occur among numerous subspecialties including emergency medicine, neurology, neurosurgery, anesthesiology, and radiology. Here, we quantified the system-level complexity inherent to a Stroke-IR alert using a social network analysis approach incorporating nodal metrics, network metrics, and indices of network degradation following multi-level nodal failures.

A1175 In a Tertiary Care Hospital, the Anesthesiology History and Physical Provided the Most Complete Patient Diagnostic Profile When Compared to the Epic System Wide Problem List and History

Leslie Cyd Jameson, M.D., Kenneth Bullard, B.S., Anesthesiology, University of Colorado, Aurora, CO. In a tertiary care hospital, the anesthesiology history and physical provided the most complete patient diagnostic profile when compared to the Epic system wide problem list and history.

A1176 Improving Patient Care Experience for Ambulatory Surgery: Underutilized Role of Perioperative Nurses

Chunyun Qiu, M.D., Renato Etrata, M.D., Charleen Sommer, B.S.N., John Morkos, Student, Chandra Heyman, M.B.A., Celine Jo, M.D., Jessica Qiu, Student, Vu Nguyen, M.D., Narenadra Trivedi, M.D., Anesthesiology, Kaiser Permanente Baldwin Park Medical Center, Baldwin Park, CA. Preoperative period is where anxiety and uncertainty are the highest and patient’s mental state was undisturbed. Therefore, it is the most important time for implementing measures that can affect patient satisfaction. We empowered our perioperative nurses in delivering perioperative care prior to anesthesiologist’s arrival. This act in return is responsible for our high patient’s satisfaction. This high patient satisfaction score was achieved in spite of the fact that our patients did not enjoy the shortest PRT, PACU and LOS time.

A1177 Reducing Preventable Errors in Anesthesia Via Near Miss Reporting: One Institution’s Experience

Angela Lipshutz, M.D., M.P.H., Catherine Chen, M.D., M.P.H., David Robinowitz, M.D., James Caldwell, M.B., Ch.B., Department of Anesthesia and Perioperative Care, University of California, San Francisco, San Francisco, CA. Near miss reports may identify weaknesses that can be corrected prior to the occurrence of an adverse event. In this study, we analyzed three years of near miss reports from our institution and the changes made in response to them. We found that the bulk of near misses were explained by a few causal mechanisms, and that the number of reports on a specific topic required to generate a change varied widely.

A1178 Excellence in Communication and Professionalism: Patient and Physician’s Perspectives About the Pre-anesthetic Interaction

Theodora Wingert, M.D., Lucine Torosian, B.S., Andrew Leitner, M.D., Tony Nguyen, M.D., Ali Salehi, M.D., Yue Ming Huang, Ed.D., Anesthesiology, UCLA, Los Angeles, CA. Anesthesiologists and patients were surveyed to identify and characterize the behaviors that demonstrate excellence in communication and professionalism during the pre-anesthetic interaction. Results obtained in this study may serve as a guide for further educational interventions and an assessment tool for the pre-anesthetic interaction to evaluate physician competency and enhance patient satisfaction.

A1179 Offspring Sex Ratio (OSR) is Skewed to Female Offspring in Anesthesia Care Providers: A Questionnaire-Based Nationwide Study

Deepak Gupta, M.D., Michelle Daryanani, D.O., Arvind Srirajakalidindi, M.D., Edward Kaminski, M.D., George Mckelvey, Ph.D., Hong Wang, M.D., Ph.D., Anesthesiology, Pediatric Anesthesiology, Detroit Medical Center, Detroit, MI, Wayne State University, Detroit, MI. An anesthesia care provider who practices inhalational induction of anesthesia during peri-conceptional period is significantly more likely to have female offspring.

A1180 A Multimodal Simulation Approach to the Centers for Medicare & Medicaid Services Regulation 482.52: Sedation and Rapid Sequence Intubation for the Non-Anesthesia Provider

Ryan J. Fink, M.D., Raquel Bartz, M.D., Rebecca Schroeder, M.D., Holly Muir, M.D., Melanie C. Wright, Ph.D., Jonathan Mark, M.D., Alberto Bonifacio, R.N., David Turner, M.D., Artilio Barbeito, M.D., Jeffrey M. Taekman, M.D., Anesthesiology, Pediatrics, Duke University, Durham, NC, Trinity/St. Alphonsus Health System, Boise, ID, Durham VA Medical Center, Durham, NC. At our institution, three separate initiatives are being aligned to offer a multi-modal simulation program to meet the requirements of the CMS guidelines focusing on training, oversight, and credentialing of healthcare workers who use sedation in their practice and provide effective sedation training.

A1181 Behind the Blue Curtain: A New Way to Assess Intraoperative Hand-offs

Sara Neves, M.D., Jordan Martin, M.D., David Silverman, M.D., Shiveta Cherwoo, Yale University, New Haven, CT. We offer a new method of standardizing and assessing hand-offs which addresses challenges specific to hand-offs in the intraoperative setting.

A1182 Safe Injection Practices Among Anesthesiology Residents

Tricia A. Meyer, Pharm.D, Linda Pearson, M.D., Russell K. McAllister, M.D., Charles Roberson, M.D., Timothy Bittenbinder, M.D., Kevin Robinson, Pharm.D, Department of Anesthesiology; Department of Pharmacology, Scott and White Healthcare, Temple, TX. This study examined the injection practices of 17 anesthesiology residents. Using a media fill test, this process simulation test replicated typical admixture practices used in preparing IV medications. Additionally, a trained practitioner observed any breaches in aseptic technique during the testing. The study evaluated the participants’ capability to demonstrate aseptic procedures in IV medication preparation.
A1183 Impact of Determinants of a Good Day in the Operating Room
Tobias B. Iversen, M.Sc., Katherine A. Anderson, B.A., Khensani N. Marolen, M.P.H., Andreas R. Seim, Ph.D., Jesse M. Ehrenfeld M. Ehrenfeld, M.D., M.P.H., Department of Computer and Information Science, Norwegian University of Science and Technology, Trondheim, Norway, University of Mississippi, Jackson, MS, Vanderbilt University, Nashville, TN. Survey of factors associated with perceptions of having a 'good' day in the OR. Smooth on time start of first case was associated with perception of 'good day'. Teams and flow were highly important to respondents' day.

A1184 Development of an Inter-Professional, Inter-Generational and Inter-Disciplinary Patient Safety Education Tool
Katherine P. Grichnik, M.D., Gwendolyn Murphy, Ph.D., Kathryn Andolsek, M.D., The Duke Resident Patient Safety and Quality Council, Community and Family Medicine, Office of Graduate Medical Education, Duke University Medical Center, Durham, NC. This abstract describes the development of an inter-professional, inter-generational and inter-disciplinary patient safety education tool. This tool was validated across multiple types of learners in a complex medical center, from transporters to trainees to practicing physicians to hospital executives.

PO05-2 Clinical Neurosciences: Anesthesia for Spine Surgery; Electrophysiology

NA
8-11 a.m.
Hall C-Area D

A1185 Performance Characteristics of Motor Evoked Potentials During Intracranial Aneurysm Surgery With Adenosine Induced Flow Arrest
Sonal Sharma, M.D., Edina Kim, M.D., Laura B. Hemmer, M.D., John F. Bebawy, M.D., Anotun Koht, M.D., Dhanesh K. Gupta, M.D., Anesthesiology, Northwestern University Feinberg School of Medicine, Chicago, IL. MEPs and SEPs had equal performance between patients who did and did not receive adenosine. Therefore, when evaluating the performance of MEPs and SEPs during intracranial aneurysm surgery, the results of all patients can be pooled for analysis, regardless of the use of adenosine induced flow arrest.

A1186 Comparison of Motor-Evoked Potentials Monitoring in Response to the Transcranial Electrical Stimulation in Subjects Undergoing Neurosurgery With Partial vs. No Neuromuscular Blockade
Won Ho Kim, M.D., Ga Hyun Kim, M.D., Jjong Hwan Lee, M.D., Ph.D., Jeong Jin Lee, M.D., Ph.D., Chung Su Kim, M.D., Ph.D., Ik Soo Chung, M.D., Ph.D., Mi Na Park, M.D., Ph.D., Anesthesiology and Pain Medicine, Samsung Medical Center, Sungkyunkwan University, School of Medicine, Seoul, Republic of Korea. The authors tried to find the allowable degree of partial neuromuscular blockade (NMB) during motor evoked potential (MEP) monitoring for neurosurgery. They also tried to compare this degree of partial NMB with no NMB to confirm whether no NMB is preferable to partial NMB during MEP monitoring.

A1187 Optimal Stimulation Protocols for Transcranial Electrical Motor Evoked Potentials: A Porcine Study
Matthew T. V. Chan, FANZCA, Qinzhou Wang, M.Sc., Quanmeng Liu, Ph.D., Hongen Liu, M.B., B.S., Wei Ni, M.Sc., The Chinese University of Hong Kong, Hong Kong, Hong Kong. Multipulse stimulation was effective in eliciting TceMEP during propofol, etomidate, ketamine and sevoflurane anesthesia. Varying stimulation protocols are required to optimize TceMEP monitoring.

A1188 Secondary Insults During Orthopedic Surgery in Traumatic Brain Injury
Nelson N. Algarra, M.D., Anesthesiology, University of Washington, Seattle, WA. Secondary insults are common during orthopedic surgery in patients with moderate-severe TBI, with hypotension, intracranial hypertension and reduced cerebral perfusion being most common. Future studies should evaluate the impact of these secondary insults on outcomes of TBI.

A1189 Models for Predicting Postoperative Cardiac Morbidity in Spine Fusion Surgery: The Accuracy of the Revised Cardiac Risk Index vs. Common Preoperative Variables
Loanne M. Carabini, M.D., Natalie C. Moreland, M.D., Carine Zeeni, M.D., Robert W. Gould, M.D., Laura B. Hemmer, M.D., John F. Bebawy, M.D., Tyler R. Koski, M.D., Antoun Koht, M.D., Dhanesh K. Gupta, M.D., Anesthesiology, Neurosurgery, Northwestern University Feinberg School of Medicine, Chicago, IL. A revised model that included age and ACE inhibitor use had better predictive performance than the RCRI for cardiac morbidity after major spine fusion surgery.

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A1190 Optic Nerve Sheath (ONS) Diameter as a Predictor of Intracranial Pressure: Comparison of Sonographic and Direct Measurements of the Porcine ONS
Jacek A. Wojtczak, M.D., Ph.D., Department of Anesthesiology, University of Rochester School of Medicine and Dentistry, Rochester, NY. In this study ocular ultrasound was performed in the porcine heads obtained in the slaughterhouse immediately after the animals' death. The diameter of the optic nerve shadow was compared with the direct measurements of the optic nerve sheath diameter in the eyeballs removed from the orbit.

A1191 Does Prone Positioning for Spine Surgery Cause Rhabdomyolysis-Induced Renal Failure?
Huan Wang, B.S., Louvonia Boone, M.D., Singh Nair, M.D., Elisabeth Abramowicz, M.D., Albert Einstein College of Medicine, Bronx, NY, Anesthesiology, Montefiore Medical Center, Albert Einstein College of Medicine, Bronx, NY. Rhabdomyolysis and postoperative kidney impairment occurs in up to 30% of cases of morbidly obese patients undergoing lengthy procedures. Preoperative statin use, propofol infusion, and paraspinal muscle dissection may all contribute to CPK elevations. We evaluated the frequency of rhabdomyolysis and renal impairment in patients who had spine surgery between 1/1/2006 and 6/30/2011 at Montefiore Medical Center. We concluded that although CPK elevation has a prevalence of 11% in our database of prone spine surgery patients, it seldom results in renal failure.
A1192 Outcomes of Primary Anterior Versus Primary Posterior Cervical Fusion: Implications for Anesthesiologist

Chunyuan Qiu, M.D., Renato Erratta, M.D., Diana LaPlace, M.D., Vu Nguyen, M.D., Jessica Qiu, Celine H. Jo, John Morkos, Chandra Heyman, M.B.A., Anesthesiology, Kaiser Permanente Baldwin Park Medical Center, Baldwin Park, CA. Both ACDF and PCDF carry high cost and potential serious complications. PCDF was associated with a significant increase in surgical time and total hospital stay as compared to ACDF. If all other factors are treated as equal, one should consider ACDF over PCDF.

A1193 The Predictive Accuracy of the Revised Cardiac Risk Index in Major Spine Fusion Surgery

Carine Zeeni, M.D., Louanne M. Carabini, M.D., Natalie C. Moreland, M.D., Robert W. Gould, M.D., Laura B. Hemmer, M.D., Tyler R. Koski, M.D., Antoun Koht, M.D., Dhanesh K. Gupta, M.D., Anesthesiology, American University of Beirut, Beirut, Lebanon, Anesthesiology, Neurological Surgery, Northwestern University Feinberg School of Medicine, Chicago, IL. None of the preoperative variables that comprise the RCRI were able to individually distinguish between patients with or without cardiac complications. In addition, neither conservative nor liberal definitions of the risk of the surgical procedure produced a RCRI score that was able to accurately predict cardiac complications.

A1194 The Influence of Major Transfusion on Morbidity and Mortality in Spine Fusion Surgery

Natalie C. Moreland, M.D., Louanne M. Carabini, M.D., Carine Zeeni, M.D., Robert W. Gould, M.D., Laura B. Hemmer, M.D., John F. Bebawy, M.D., Tyler R. Koski, M.D., Antoun Koht, M.D., Dhanesh K. Gupta, M.D., Anesthesiology, Northwestern University Feinberg School of Medicine, Chicago, IL. Major transfusion (>4 units RBCs) is associated with an increased risk of cardiac, pulmonary, thromboembolic, and infectious complications after major spine fusion surgery.

A1195 Effects of Ketamine on Feedforward and Feedback Connectivity in Humans

UnCheol Lee, Ph.D., Seung-Woo Ku, M.D., Ph.D., Gyu-Jeong Noh, M.D., Ph.D., Byung-Moon Choi, M.D., M.S., George A. Mashour, M.D., Ph.D., Division of Neuroanesthesiology, Department of Anesthesiology, University of Michigan Medical school, Ann Arbor, MI, Department of Anesthesiology and Pain Medicine, Department of Clinical Pharmacology and Therapeutics, Division of Neuroanesthesia, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Republic of Korea. Ketamine reduces the dominant feedback connectivity in the frontoparietal network as well as propofol and sevoflurane. The reduction of dominant feedback connectivity could provide a common metric for general anesthesia.

A1196 Droperidol Decreases the Bispectral Index During General Anesthesia With Sevoflurane and Remifentanil

Yushi Adachi, M.D., Ph.D., Tetsuya Tamura, M.D., Junpei Tochikubo, M.D., Nanayuki Matsuda, M.D., Ph.D., Department of Emergency Medicine, Nagoya University Hospital, Department of Emergency & Critical Care Medicine, Nagoya University Graduate School of Medicine, Nagoya, Japan. Supplemental administration of droperidol on sevoflurane anesthesia might induce deeper anesthesia determined by Bispectral index, however, the circulatory parameters, including heart rate and blood pressure, during anesthesia and the recovery time from general anesthesia were not changed at the end of operation. Thus, the results show a possibility of droperidol to reduce the required dose of sevoflurane for maintenance of anesthesia without delay of emergence.

A1197 Agent and Gender Specific EEG Changes During Induction of Anesthesia

Gabriele Kraus, M.D., Juergen Lorenz, M.D., Barbara Schultz, M.D., Arthur Schultz, M.D., Klinikum Region Hannover, Medizinische Hochschule Hannover, Hannover, Germany. Agent and gender specific characteristics could be detected in EEGs recorded during intravenous induction of anesthesia with etomidate, methohexital, propofol, or thiopental. Women had higher mean amplitudes of delta waves than men. When the EEG effects of the different agents were compared, etomidate had, on average, the highest dominant frequency in the delta range and the highest amplitude. Epileptiform potentials were observed only in the etomidate group.

A1198 Influence of Gender, Age, and EEG Stage on Recovery Times After Propofol/Remifentanil Anesthesia

Gabriele Kraus, M.D., Matthias Mensak, M.D., Arthur Schultz, M.D., Barbara Schultz, M.D., Klinikum Region Hannover, Medizinische Hochschule Hannover, Hannover, Germany. The patient’s gender and the EEG stage at propofol/remifentanil discontinuation significantly affect the recovery times. When women and men are in the same EEG stage at propofol/remifentanil discontinuation, women's recovery times are shorter. The patient's age has no significant influence on the recovery times.

A1199 Reversal of Paradoxical EEG Pattern After Successful Endovascular Treatment of Vein of Galen Malformation

Liza Starecki, M.D., Franklin Chiao, M.S., Franco Resta-Flarer, M.D., Jinu Kim, M.D., Jonathan Lesser, M.D., Anesthesiology, St Luke's- Roosevelt Hospital Center, New York, NY. Patients with intracranial malformations present with an EEG pattern that is a paradoxical inversion of the pattern seen in patients without intracranial malformations. Specifically, one patient with vein of Galen, who was initially observed to have this inversion, reversed EEG patterns after successful embolization.

A1200 The Effect of Depth of Anesthesia on Outcomes Following Major Noncardiac Surgery (DeLiT Trial)

Basem B. Abdelmalak, M.D., Ankit Maheshwari, M.D., Edward Mascha, Ph.D., Angela Bonilla, M.D., Daniel I. Sessler, M.D., Quantitative Health Science, Outcomes Research, Cleveland Clinic, Cleveland, OH. Our randomized trial did not show any evidence that lighter planes of anesthesia reduce serious surgical outcomes following major noncardiac surgery.

A1201 Effects of Hypovolemia and Hypervolemia on Bispectral Index in a Canine Model

Piedad N. Henao-Guerrero, D.V.M., Carolina Ricco, D.V.M., Andre C. Shih, D.V.M., Noah Pavlisko, D.V.M., Maria Killos, D.V.M., Patricia Queiroz, D.V.M., Carsten Bandt, D.V.M., Small Animal Clinical Sciences, Virginia Tech, Blacksburg, VA, Large Animal Clinical Sciences, University of Florida, Gainesville, FL, Veterinary Clinical Sciences, Louisiana State University, Baton Rouge, LA. Bispectral index (BIS) was evaluated under severe hypovolemia and consequent hypervolemia in a canine model with propofol anesthesia. BIS decreases with hypovolemia but it is not affected by hypervolemia.
**A1202** Growth Hormone and Insulin-like Growth Factor-1 for Spinal Cord Injury: A Porcine Study

Matthew T. V. Chan, FANZCA, Qinhao Wang, M.Sc., Hongen Liu, M.Sc., Quanmeng Liu, Ph.D., The Chinese University of Hong Kong, Hong Kong, China, The Chinese University of Hong Kong, Hong Kong, Hong Kong, The Chinese University of Hong Kong, Hong Kong, Hong Kong. In a porcine model of traumatic spinal cord injury, intrathecal injection of IGF-1 enhanced clinical and histological recovery.

**A1203** Ultrasound-Guided Subcostal and Midaxillary Transversus Abdominis Plane Blocks: Thiel Human Cadaveric Study for Adequate Volume of Injectate

Takeshi Murouchi, M.D., Masanori Yamachi, Ph.D., Eri Gi, M.D., Yukimasa Takada, M.D., Mineko Fujimiya, Ph.D., Michiaki Yamakage, Ph.D., Department of Anesthesiology, Department of Anatomy, Sapporo Medical University School of Medicine, Sapporo, Japan, Department of Anesthesia, Obihiro Kyokai Hospital, Obihiro, Japan. The volume of injectate needed to achieve subcostal and midaxillary transversus abdominis plane (TAP) blocks was examined in Thiel-embalmed cadavers. Fifteen mL was sufficient for successful dye injection for T7-T9 nerves by the subcostal approach and for T10-L1 nerves by the midaxillary approach.

**A1204** Development of New Wound Catheters: Diffusion Study

Tomoki Nishiyama, M.D., Ph.D., Anesthesiology and Critical Care, Higashi Omiya General Hospital, Saitama, Japan. We developed two new catheters and this study experimentally investigated diffusion from the catheters. The catheter A is divided into four equal lumens inside with 90 degrees angle starting at 10 mm from the tip of the catheter. The catheter B has a single lumen and has a first hole of 0.3 mm in diameter at 10 mm from the tip. It has another 9 holes of 0.1 mm in diameter with an interval of 10 mm and 180 degrees angle starting at 10 mm from the first hole. Both catheters were put on test tubes or tray and a dye was infused at a rate of 2, 4, or 10 mL/h. Diffusion of dye was optically observed. At all flow rates, a new four-lumen catheter had uniform diffusion, but a single lumen catheter did not have.

**A1205** Design and Assessment of a Novel Echogenic Needle for Ultrasound Guided Anesthesia

Annelot C. Krediet, M.D., Daniella Smith, M.D., Paul E. Bigeleisen, M.D., Anesthesiology, University Medical Center Utrecht, Utrecht, Netherlands, University of Maryland, Baltimore, MD. This study documents the design process of a novel grooved echogenic needle which is now available as Echobright needle (LifeTech Inc., Stafford, TX). A simulation model based on finite element analysis was successfully used to optimize design parameters for a sawtooth grooved echogenic needle. The final design was tested in a polyurethane and a cow carcass model using quantitative measurements of echogenicity. The resulting design displayed “objective visibility” scores that correspond to “good” to “excellent” subjective needle visibility.

**A1206** Interest of Ultrasound-Guided Interscalene Brachial Plexus Block for Reduction of Glenohumeral Dislocation

Ingrid Millot, Jr., M.D., David Plancade, M.D., Pascal Boulland, M.D., Laurent Raynaud, M.D., Sophie Cottez, M.D., Ariane Gentile, M.D., Julien Nadaud, M.D., Nicolas Gagnon, M.D., Jean-Christophe Favier, M.D., Anesthesia and Critical Care, Instruction Military Hospital Legouest, Metz, France. Interscalene brachial plexus block was performed in 20 patients presenting glenohumeral dislocation, after failure of first reduction attempt in emergency room. Successful reduction occurred in 95% of cases. Patients, surgeons and anaesthesiologists were satisfied with this technic. Ultrasound-guided ISBPB seems feasible and efficient for GHDR reduction.

**A1207** Minimum Effective Anesthetic Volume of 0.5% Ropivacaine in Ultrasound-Guided Popliteal Sciatic Nerve Block in Patients With Foot and Ankle Surgery: Evaluation of ED50 and ED95

Jiseon Jeong, M.D., Heejong Lee, M.D., Ph.D., Joowon Cho, M.D., Hyunhoo Song, M.D., Jaehyun Cho, M.D., Department of Anesthesiology and Pain Medicine, School of Medicine, Hanyang University, Seoul, Republic of Korea. Patients scheduled for foot and ankle surgery evaluate the minimum effective anesthetic volume of 0.5% ropivacaine for successful surgical anesthesia of ultrasound-guided popliteal sciatic nerve block using a up-and-down method. The ED50 of 0.5% ropivacaine for ultrasound-guided popliteal sciatic nerve block is 6 mL and ED95 of 0.5% ropivacaine is 20 mL. We conclude that a lower volume of local anesthetic is necessary to block the ultrasound-guided popliteal sciatic nerve block as compared sciatic nerve block using nerve stimulator.
A1208 The Combination of Ultrasound-Guided Rectus Sheath(RS) and Transversus Abdominis Plane(TAP) Blocks is Superior to RS or TAP Block Alone for Pain Control After Gynecologic Transumbilical Single Incision Laparoscopic Surgery(SILS)

Rie Shimizu, M.D., Ryoko Kawahara, M.D., Yutaka Tamai, M.D., Kyoko Yamasaki, M.D., Satoko Okuno, M.D., Rumi Hanada, M.D., Takao Funato, M.D., Anesthesiology, Obstetrics and Gynecology, Nissay Hospital, Osaka, Japan. Efficacy of combined rectus sheath(RS) and transversus abdominis plane(TAP) blocks was studied in 32 patients with single incision laparoscopic surgery(SILS) for ovarian tumors. TAP block was done in 12 (Group A), TAP and RS blocks in 11 (Group B), and RS block in 9 (Group C). Analgesic effects were evaluated with the presence of umbilical pain after general anesthesia and visual analogue pain scales at 0, 6, 12, 24, and 48 hrs after surgery. Umbilical pain was significantly less frequent in Group B than Group A.The pain score was significantly lower in Group B than Groups A and C. The combined RS and TAP blocks is useful to reduce postoperative umbilical pain after SILS.

A1209 Execution Time for Brachial Plexus Block Under Radiographic Monitoring is Shorter Than That For Ultrasound-Guided Supraclavicular Block

Miyuki Tanabe, M.D., Mitsutaka Edanaga, M.D., Ph.D., Ryo Miyashita, M.D., Michiaki Yamakage, M.D., Ph.D., Nippon Telegraph and Telephone East Corporation Sapporo Hospital, Sapporo Medical University, Sapporo, Japan. Execution time for brachial plexus block (BPB) under radiographic monitoring was shorter than that for ultrasound-guided supraclavicular block. Knowledge of the technique could be acquired in a short time. BPB under radiographic monitoring is therefore considered to be an educational and useful technique.

A1210 Ultrasound Guided Obturator Nerve Block-Out of Plane Method

Tadahiko Ishiyama, Ph.D., Masao Kato, M.D., Kazuhiro Shibuya, Ph.D., Takashi Matsukawa, Ph.D., Surgical Center, University of Yamanashi, Chuo, Yamanashi, Japan, Department of Anesthesiology, University of Yamanashi, Chuo, Yamanashi, Japan. This study evaluated the effectiveness of ultrasound guided out of plane obturator nerve block, and stimulation points of anterior and posterior branch of obturator nerve. The needle, which was attached to a nerve stimulator, was advanced with out-of-plane technique. To block anterior branch of obturator nerve, we should move the needle to various positions. On the contrary, we should position the needle to the fascial plane between adductor brevis and magnus muscle to block posterior branch of obturator nerve. Because rate of vigorous movement caused by TUR-Bt procedure was low, this method could be effective for blocking obturator nerve.

A1211 Objective Quantification of Ultrasound Image Quality on Adult Obese and Non-Obese Spine

Kishor Gandhi, M.D., M.P.H., Jaime Baratta, M.D., Michele Beam, D.O., Michele Mele, M.D., Jiawei Li, Ph.D., Manoj Karmarkar, M.D., Anesthesiology, Thomas Jefferson University, Philadelphia, PA, Anesthesiology, The Chinese University of Hong Kong, Shatin, Hong Kong. Ultrasound imaging of neuraxial spine continues to be difficult in obese patients. This volunteer observation study sought to maximize imaging in different color hues and objectively defines the best plane for lumbar spine visualization.


Takahiro Terada, M.D., Ph.D., Tomoko Mac, M.D., Ph.D., Naoko Hanayama, M.D., Ph.D., Takashi Yamasaki, M.D., Ph.D., Makoto Ozaki, M.D., Ph.D., Anesthesiology, Tokyo Women’s Medical University, Shinjuku, Anesthesiology, Tokyo Metropolitan Police Hospital, Nakano, Tokyo, Japan. Some reports said nerve block with only ultrasound guide provides enough analgesia, but we report that continuous sciatic nerve block with both ultrasound nerve and nerve stimulator guide provides more precise analgesia compared with the guide under ultrasound or nerve stimulator only.

A1213 Efficacy of Ultrasound-Guided Caudal Epidural Block for Transrectal Prostate Needle Biopsy

Atsushi Sawada, M.D., Yukitoshi Niiyama, M.D., Masahito Omote, M.D., Michiaki Yamakage, M.D., Ph.D., Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan. We assessed the efficacy of ultrasound-guided caudal epidural block compared with spinal block for transrectal prostate biopsy. Ultrasound-guided caudal epidural block is more effective in maintenance of motor function and a stable hemodynamic state than spinal block for transrectal prostate biopsy.

A1214 Use of Chlorhexidine Impregnated Patch Does Not Decrease Incidence of Femoral Nerve Catheter Colonization

Kristopher M. Schroeder, M.D., Brooke M. Anderson, R.N., Robert A. Jacobs, M.D., Anesthesiology, University of Wisconsin School of Medicine and Public Health, Madison, WI. High rates of bacterial colonization (57%) have been reported for femoral nerve catheters (FNC) placed for postoperative analgesia. The Biopatch is a chlorhexidine impregnated patch that is designed to inhibit bacterial growth for a number of days. Following IRB approval and written informed consent, 100 adult patients scheduled for total knee arthroplasty (TKA) were prospectively enrolled and randomized to either have a biopatch applied to their FNC exit site or not. No statistically significant differences in skin inflammation or colonization or FNC colonization were found. Local skin inflammation and FNC exit site colonization by >1 type of bacteria trended towards increased values in the no Biopatch group but were unable to achieve significance.

A1215 An Estimation of the Minimum Effective Anesthetic Rate Of 0.2 % Ropivacaine in Ultrasound-Guided Popliteal Continuous Sciatic Nerve Block

Didier Y. Morau, M.D., Séverine Terracina, M.D., Philippe Biboulet, M.D., Anne Gourari, M.D., Sophie Bringuier-Branchereau, Pharm.D, Xavier Capdevila, M.D., Ph.D., Dar A, Lapeyronie Hospital, Montpellier, France. Ultrasound guidance facilitates popliteal sciatic perineural catheter insertion. We performed an up-and-down study to determine the minimum rate of ropivacaine 0.2 % (continuous infusion +bolus with electronic pump) which could be used for 24 hours after hallux valgus repair.If patients used more than 6 bolus / 24 h, the technique was considered as a failure. Our results show a drop up to 0.5 mL/h. It is related to a precise positioning of the catheter. The tips of the catheter were beyond the outer tissue layer surrounding both the tibial and peroneal nerves.
A1216 Ultrasound-Guided Versus Neurostimulated Intermediate Cervical Plexus Block for Endarterectomy: A Retrospective Study

Anne-Laure Calderon, M.D., Quentin Cellier, M.D., Farida Benatir, M.D., Françoise Christin, M.D., Julien Davidson, M.D., Mary-Charlotte le Goff, M.D., Najia Rahali, M.D., Cyrille Truc, M.D., Bernard Allaouchiche, M.D., Ph.D., Emmanuel Boselli, M.D., Ph.D., Anesthesiology and Intensive Care, Édouard Herriot Hospital, HCL, University of Lyon, Lyon, France. In this retrospective study, US and NS intermediate cervical plexus blocks were equally effective for carotid endarterectomy. Prospective studies are needed to determine the benefits of US guidance in this indication.

A1217 Use of CT in Facilitating Thoracic Epidural Catheter Placement: A Prospective Randomized Pilot Study

Tariq Malik, M.D., Department of Anesthesia and Critical Care, University of Chicago Hospitals, Chicago, IL. This is the first study in which CT evaluation of spine has been used for epidural placement. Previous studies were retrospective and had less than 40 patients each. With the use of CT images readily available for most surgical patients and using computer software, a clear map of epidural space can be formulated for most patients before the procedure begins. This will improve patient safety and success rate of epidural catheter as false LOR at shallow depth will not be blindly accepted. US may provide the same information but requires time to setup and significant experience to visualize epidural window.

A1218 Ultrasound-Guided Paravertebral Catheter Placement for Post-operative Pain Control in Video Assisted Thoracoscopic Surgery

Robby S. Sikka, M.D., Amit Goyal, B.A., Jacob Hutchins, M.D., Jonathan DYCunha, M.D., Ph.D., Rafael Andrade, M.D., Kumar Belani, M.B.B.S., University of Minnesota, Minneapolis, MN. Paravertebral blocks control pain following thoracoscopic surgery. We conducted a cohort review of a matched group of patients cared for contemporaneously with either a conventional i.v. analgesic opioid PCA method versus a group that also received local anesthetic infusion via a paravertebral catheter placed with ultrasound guidance in the distribution of the surgical site. Our results suggest that continuous paravertebral infusion of local anesthetics is a safe and suitable option for pain control following thoracoscopic surgery.

A1219 Should Anesthesiologists Be Credentialed Prior to Practicing Ultrasound Guided Regional Anesthesia?

Emine A. Salviz, M.D., John P. Poek, M.D., Sanford M. Littwin, M.D., Catherine F. Vandepitte, M.D., Caroline Vloka, Student, Ashton Frulla, B.S., Admir Hadzic, M.D., Ph.D., Anesthesiology, Columbia University College of Physicians & Surgeons St Luke’s Roosevelt Hospital, New York, NY, Anesthesiology, Catholic University of Leuven, Leuven, Belgium, Harvard Medical School, Boston, MA. The use of USGRA has resulted in a controversy over what constitutes appropriate training and certification. We conducted an online poll with the question: “Should Anesthesiologists be credentialed prior to practicing USGRA?” Three response choices were offered: 1.Yes, 2.No, 3. Not sure. 848 responses were received. 95% of respondents thought that anesthesiologists should be credentialed.

A1220 Ultrasound Guided Estimated Length of Sciatic Nerve Block to Achieve Complete Motor Paralysis

Mark C. Kendall, M.D., Antoun Nader, M.D., Luminita M. Tureanu, M.D., Robert J. McCarthy, Pharm.D. Anesthesiology, Northwestern University Feinberg School of Medicine, Chicago, IL. A spread of 5cm along the sciatic nerve is associated with a rapid complete block independent of the dose of the local anesthetic. A minimum volume of 10mL of local anesthetic was required to achieve a 5cm estimated spread.

A1221 Impact of Epineurium on Minimum Stimulation Threshold Current During Ultrasound-Guided Subgluteal Sciatic Nerve Block

Yogen G. Asher, M.D., Mark C. Kendall, M.D., Antoun Nader, M.D., Robert J. McCarthy, Pharm.D. Anesthesiology, Northwestern University Feinberg School of Medicine, Chicago, IL. Traversing the epineurium of the sciatic nerve substantially decreased the MTC needed to obtain an EMR, suggesting that MTC &lt;0.22 mA is likely associated with subepineural positioning. Subepineural injections may be preferred for sciatic nerve block to reduce onset time and increase block success. Similar to previous studies we did not observe an increased incidence of long-term clinical sequelae following subepineural injection.

PO04-4 Clinical Circulation

CA 1-2 p.m.
Hall C, E-Poster area

A1222 Carboxyhemoglobin Level Reflects Hepatic Ischemia During Liver Resection With Inflow Occlusion

Kohei Godai, M.D., Maiko Hasegawa-Moriyama, M.D., Ph.D., Atsushi Yoshikawa, M.D., Kei Enohata, M.D., Akira Matsunaga, M.D., Ph.D., Yuichi Kanamura, M.D., Ph.D., Department of Anesthesiology, Graduate School of Medical and Dental Sciences, Kagoshima University, Kagoshima, Japan. Endogenous carboxyhemoglobin (COHb) is produced from the oxidative degradation of heme proteins. We evaluated intraoperative events related to changes in endogenous COHb levels during liver resections with inflow occlusion. Levels of COHb were significantly increased after the Pringle maneuver, which correlated with duration of inflow occlusion. Total blood loss also correlated with increased COHb level, although transfusion volume of packed red blood cells had no correlation with COHb. Inflow occlusion and blood loss correlated with increased COHb levels in patients undergoing liver resection, which suggests that endogeneous COHb can be used as a biomarker for oxidative processes in the perioperative period.
A1223 Effect of the Surgeon on Bleeding and Transfusion for Liver Transplantation
Evan G. Pivalizza, M.D., Brian Marasigan, M.D., Sara Reyes-Guzman, M.D., Vladimir Melnikov, M.D., Oscar Quintana, M.D., Karel Riha, M.D., Sam D. Gumbert, M.D., Steve Bybon, M.D., Anesthesiology, Surgery, University of Texas Health Science Center, Houston, TX. After arrival of an experienced LT surgeon at our institution, we noted significantly less bleeding and transfusion than previously, prompting formal retrospective evaluation to confirm our hypothesis. The first 15 first-time, adult, liver-only transplants with the new surgeon (group A) were compared to the last 15 similar subjects for the prior surgeon (group B). Baseline MELD scores, laboratory data and ICU admission hematocrit and INR were similar. However, group A subjects had profoundly less bleeding and all blood product transfusions. This suggests that surgical experience and expertise is a major influence on perioperative bleeding and transfusion in LT surgery.

A1224 aFVIIa use in Cardiac Surgery
Heather M. Reed, M.D., Greg Janelle, M.D., Teccan Baslanti, Ph.D., Charles Kladell, M.D., Department of Anesthesiology, Department of Cardiothoracic Surgery, University of Florida, Gainesville, FL. This study suggests that rFVIIa is safe to use in the intraoperative setting when faced with refractory bleeding in cardiac surgery. There is no increase in either peripheral or neurologic thromboembolic events, need for reoperation or increased mortality when rFVIIa is used in the intraoperative setting. Conversely, there does not appear to be any benefit in using rFVIIa in the post-operative setting given the high rate of reoperation for refractory bleeding. These findings are limited to the experience at one academic institution.

A1225 Anesthesia for Transcatheter Aortic Valve Implantation (TAVI): Does the Gender Matter?
Patrick N. Mayr, M.D., Klaus Martin, M.D., Gunther Wiesner, M.D., Ph.D., Thomas Ried, M.D., Alexander Hapfelmeier, M.Sc., Peter Tassani, M.D., Ph.D., Institut für Anesthesiologie, Deutsches Herzzentrum München, Technische Institute of Medical Statistics and Epidemiology, Technische Universität München, Munich, Germany. We analyzed patients undergoing a Medtronic CoreValve Transcatheter Aortic Valve Implantation (TAVI) for gender difference in anaesthesiologic care.

A1226 Massive Transfusion in Both Pre- and Post-Reperfusion Periods During Orthotopic Liver Transplantation: Incidence, Risk Factors And Outcome
Wonapat Apinyachon, M.D., Randolph H. Steadman, M.D., Victor W. Xia, M.D., Anesthesiology, Ramathibodi Hospital Mahidol University, Bangkok, Thailand, Anesthesiology, David Geffen School of Medicine at UCLA, Los Angeles, CA. In this large retrospective study, one-third OLT recipients required massive transfusion in both pre- and postreperfusion periods. Massive transfusion in both pre- and postreperfusion periods was associated with high postoperative mortality and were influenced by non acute liver disease, the use of venovenous bypass, large volume of ascites, the presence of anemia and the high MELD score.

A1227 Cardioprotective Properties After Remote Ischemic Preconditioning are Related to the Type of Surgery: A Double-Blinded Randomized Controlled Pilot Study
Berthold Bein, M.D., Ph.D., Matthias Gruenewald, M.D., Jochen Renner, M.D., Ph.D., Ole Broch, M.D., Patrick Meybohm, M.D., Ph.D., Anesthesiology and Intensive Care Medicine, University Hospital Schleswig-Holstein, Campus Kiel, Kiel, Germany, Clinic of Anesthesiology, Intensive Care and Pain Therapy, University Hospital Frankfurt, Frankfurt, Germany. After remote ischemic preconditioning, decreased Troponin release was only observed in patients undergoing isolated CABG surgery, while in the whole patient population there was only a non-significant trend to reduced Troponin release in preconditioned patients.

2-3 p.m. 
Hall C, E-Poster area

A1228 Evaluation of an Un-Calibrated Arterial Pulse Contour Cardiac Output Monitoring System in Patients With TR
Takeshi Omae, M.D., Yuichi Kannura, M.D., Naka Imakiire, M.D., Toshiro Fujimoto, M.D., Departments of Anesthesiology, Fujimoto Hayasuzu Hospital, Miyakonojo, Japan, Kagoshima University, Kagoshima, Japan. We compared the accuracy and precision of an uncalibrated arterial pulse contour cardiac output monitoring system and of thermodilution with results from transesophageal echocardiography in measuring cardiac output for 40 patients who underwent elective valvoplasty to treat tricuspid regurgitation. We postulated that an uncalibrated arterial pulse contour cardiac output monitoring system measures cardiac output more accurately and reproducibly than thermodilution in patients with coexisting tricuspid regurgitation.

A1229 A Comparison of the Effects of Remifentanil and Fentanyl on the QTc Interval During Propofol Induction
Akiko Sakai, M.D., Yoshiaki Terao, M.D., Ph.D., Hiroko Araki, M.D., Mai Okada, M.D., Sojiro Matsumoto, M.D., Makoto Fukusaki, M.D., Ph.D., Koji Sumikawa, M.D., Anesthesia, Nagasaki Rosai Hospital, Sasebo, Japan, Anesthesiology, Nagasaki University School of Medicine, Nagasaki, Japan. Besides laryngoscopy and tracheal intubation, most anesthetics influence heart-rate corrected QT (QTc) interval. But it is still conflicting that the effects of opioids on QTc interval when they are used during propofol induction. The aim of this study is to compare the effects on QTc interval between remifentanil and fentanyl during propofol induction. In both groups, QTc interval shortened after anesthetic induction with propofol. As compared with fentanyl, remifentanil could prevent the prolongation of QTc interval associated with tracheal intubation.

A1230 TPR, SVR and the Importance of Precision: The Measurement of Vascular Resistance
Stephen F. Woodford, M.B., B.S., Australian School of Advanced Medicine, Sydney, Australia. Although the importance of the vasculature has been long recognized, its measurement and treatment has been neglected in the delivery of anesthesia and critical care. If the vasculature is the “other half” of pressure in the systemic circulation, its measurement and significance deserve greater attention. A new generation of hemodynamic monitors offers measurements of vascular resistance, but the invasiveness and method vary. There is little comparison literature. This study compared the resistance measurement of FloTrac with the Cheetah NICOM.
A1231 Impact of Allogeneic Blood Transfusion on Renal Function and Mortality in Patients Undergoing Reconstructive Aortic Arch Surgery
Shao Feng Zhou, M.D., Anthony L. Estrera, M.D., Krishna Shah, B.A., Paul Loubser, M.D., Craig Ignacio, M.D., Sreelatha Panthayi, M.D., Hazim J. Sah, M.D., Roy Sheinbaum, M.D., Department of Anesthesiology, Department of Cardiothoracic and Vascular Surgery, University of Texas Medical School at Houston, Houston, TX. This study reviewed 874 patients undergoing repair of the ascending transverse arch using PHCA to analyze the impact of transfusion on the incidence of acute renal failure (ARF) and hospital morbidity/mortality. The results reviewed that transfusions have a negative impact on postoperative ARF, prolonged ventilation, LOS and hospital mortality.

A1232 White Blood Cell Count Used as an Inflammatory Marker to Predict Clinical Outcomes in Patients Undergoing Ascending Aorta and Arch Repair With Deep Hypothermic Circulatory Arrest
Krishna B. Shah, B.A., Anthony Estrera, M.D., Paul Loubser, M.D., Roy Sheinbaum, M.D., Shao Zhou, M.D., Anesthesia, University of Texas Medical School at Houston, Houston, TX. This study analyzed 777 patients who underwent Ascending Aorta and Arch Repair with DHCA. An inflammatory response to surgery was measured by the White Blood Cell (WBC) count. The percent change in WBC immediately post-operatively was used to determine clinical outcomes including need for dialysis, a tracheostomy, ARF, length of ICU and hospital stay, and days of ventilation. In addition, discharge disposition was also tracked for each patient. The results suggest that patients with a lower immediate post-operative WBC response compared to higher response groups have an increase in need for dialysis and tracheostomy, and mortality.

A1233 Comparison of Peripheral to Central Venous Oxygen Saturation in Postoperative Cardiac Surgery Patients
Vera Santos, M.D., Bernardo Costa, M.D., Hugo Ferreira, M.D., Ph.D., Miguel Marques, M.D., João Santos, M.D., Guilherme Mota, M.D., Ricardo Pereira, M.D., Celine Marques, M.D., Ivo Pires, M.D., Hugo Vilela, M.D., Anesthesiology, University Hospital of Santa Maria, CHLN, Lisbon, Portugal. There is scarce information on the relationship between ScvO2 and SpvO2. We prospectively compared ScvO2 and SpvO2 in postoperative cardiac surgery patients at the intensive care unit. We consider that the two methods cannot be used interchangeably and that SpvO2 cannot be used to predict ScvO2 in this sample of postoperative cardiac patients.

3-4 p.m.
Hall C, E-Poster area

A1234 Coagulation Factor Levels During Aortic Reconstructive Surgery
Ian Welsby, M.B.,B.S., Frederick W. Lombard, M.D., G. C. Hughes, M.D., Jeffrey Gaca, M.D., Anesthesiology, Duke University, Durham, NC. We describe perioperative alterations in individual, procoagulant factors during aortic reconstructive surgery with deep hypothermic circulatory arrest.

A1235 Effect of Heart Rate on Stroke Volume Variability in Patients
Nate Roeth, M.D., Timothy Ball, M.D., William C. Culp, Jr., M.D., W. Todd Bohannon, M.D., Marvin D. Atkins, Jr., M.D., William E. Johnston, M.D., Anesthesiology, Division of Cardiothoracic Anesthesiology, General Surgery, Division of Vascular Surgery, The Texas A&M University System Health Sciences Center College of Medicine Scott & White Memorial Hospital, Temple, TX. We present a prospective study examining the combined effects of heart rate and tidal volume on stroke volume variability in intubated patients in the operating room.

A1236 Inferior Vena Cava Diameter and Central Venous Pressure: Is There a Correlation?
Antonio Chiricolo, M.D., Fawad Ghafoori, M.D., Brian Colin, M.D., Robert Thiele, M.D., Ryan Fink, M.D., Madhav Swaminathan, M.D., Anesthesiology, Duke University, Durham, NC. Measurement of the inferior vena cava diameter by transesophageal echocardiography can provide an estimate of CVP in mechanically ventilated patients and several formulae are used to make this assessment, but is there a significant correlation?

A1237 Plasma Fibrinogen Concentration Does Not Predict Perioperative Bleeding in Surgical Repair of Adolescent Idiopathic Scoliosis
Tomohiro Suhara, M.D., Nobuyuki Katori, M.D., Eiki Hatori, M.D., Hiroshi Morisaki, M.D., Junzo Takeda, M.D., Anesthesiology, Keio University, Tokyo, Japan. The correlation between perioperative bleeding and coagulation parameters including plasma fibrinogen concentration was examined in the posterior interbody fusion for adolescent idiopathic scoliosis. None of the coagulation parameters including PT-INR, APTT, fibrinogen concentration or platelet count was associated with bleeding during the surgery. Number of fused vertebrae correlated with intraoperative bleeding. PT-INR at the end of the surgery correlated with postoperative 24 hour bleeding significantly. Fibrinogen concentration does not predict perioperative bleeding.

A1238 Postpartum Hemorrhage and Inherited Coagulation Dysfunction
Thomas M. Chalifoux, M.D., Jonathan H. Waters, M.D., Anesthesiology, University of Pittsburgh School of Medicine, Pittsburgh, PA. The incidence rate of postpartum hemorrhage and subsequent blood transfusion appear to have doubled over the last decade. This study is designed to determine whether unrecognized inherited coagulation defects may be a contributory factor to this increase. The pharmacy information system at a single institution was queried as to all women who had received carboxprotromethamine for postpartum hemorrhage since 2005. To date, 91 patients and 169 controls have been enrolled. A medical history and blood samples were obtained and a bleeding survey was completed. Blood samples were evaluated for PT/PTT, fibrinogen, thrombin time, Factors II, V, VII, VIII, IX, X, XI, XII, XIII, vWF antigen, and vWF ristocetin cofactor. It appears that the role of inherited coagulation dysfunction in this phenomenon is not significant.
A1239 Remote Ischemic Preconditioning Regulates Apoptosis and Inflammation in Myocardial Tissue of Cardiac Surgical Patients

Martin Albrecht, Ph.D., Karina Zitta, Ph.D., Berthold Bein, M.D., Jochen Renner, M.D., Daniela Maahs, B.M., Sonja Schroeder, B.M., Moritz Jonigk, B.M., Torben Schuett, B.M., Markus Steinfath, M.D., Patrick Meybohm, M.D., Department of Anesthesiology, University Hospital Schleswig Holstein, Kiel, Germany, Department of Anesthesiology, University Hospital Frankfurt, Frankfurt, Germany. Employing heart biopsies from cardiac surgery patients we show that remote ischemic preconditioning (RIPC) regulates apoptotic and inflammatory events in the heart tissue and influences the levels of circulating cytokines. We propose that cardioprotective effects of RIPC may be mediated by reduced apoptosis and induction of an early inflammatory response.

A1240 Sevoflurane Protection Against Liver Ischemic/Reperfusion Injury Depends on Continuous Administration of the Anesthetic

Fernanda P. Cavalcante, M.D., Ana Maria M. Coelho, Ph.D., Marcel C. Machado, Ph.D., Sandra N. Sampietre, M.B.,B.S., Nilza A. Molan, M.B.,B.S., Eleazar Chaib, Ph.D., Luiz Augusto C. D’Albuquerque, Ph.D., Gastroenterology, University of Sao Paulo School of Medicine, Sao Paulo, Brazil. This experimental study showed that sevoflurane protection against ischaemia/reperfusion injury depends on continuous administration of the anesthetic and may not be related to a preconditioning effect.

A1241 Effects of Epinephrine on Myocardial Ischemia-Related Gene Expression in Cultured Rat Cardiomyocytes

Henry Liu, M.D., Jiao Liu, M.D., Ting Zhou, M.D., Yiru Tong, M.D., Santiago Gomez, M.D., Nakeisha Pierre, M.D., Charles Fox, M.D., Amanda Gelineau, M.D., Alan Kaye, M.D., Ph.D., Francis Rosinia, M.D., Tulane University Medical Center, New Orleans, LA, Union Hospital of Tongji Medical College, Wuhan, China, Hunan Children's Hospital, Changsha, China, Louisiana State University Health Science Center, New Orleans, LA. Epinephrine is a commonly used for low cardiac output. However epinephrine does not improve clinical outcomes. H9C2 cardiomyocytes were used to study gene expressions related to myocardial ischemia. We found that epinephrine up-regulated the following genes: Matrix metalloproteidase-2 (MMP2) by 2.092 times; Phosphodiesterase 4b (PDE4b) by 3.881 times; TNNT2 up-regulated the following genes: Matrix metallopeptidase-2 (MMP2) by 2.621 times. These myocardial ischemia-related gene expression changes were likely to be partially responsible for the adverse outcome.

A1242 Interaction of Remote Ischemic Preconditioning With Anesthetics in Rat Hearts

Shuhei Matsumoto, M.D., Sungsam Cho, M.D., Koji Sumikawa, M.D., Anesthesiology, Nagasaki University School of Medicine, Nagasaki, Japan. In rat hearts, a sedative dose of propofol suppressed cardioprotective effect of RPC. In contrast, low-dose sevoflurane and ischemic stimulus by RPC had an additive protective effect against myocardial I/R injury.

A1243 Functional Cardiomyocytes Differentiated From Type 1 Diabetic Patient-Derived Induced Pluripotent Stem Cell as a Model for Studying Anesthetic Preconditioning

Chika Kikuchi, M.D., Martin Bienengaerber, Ph.D., Xiaowen Bai, M.D., Ph.D., Scott Canfield, B.S., Richard Schaefer, M.D., Zeljko Bosnjak, Ph.D., Anesthesiology, Pharmacology and Toxicology, Department of Anesthesiology, University of Wisconsin, Milwaukee, WI, Stem Cell and Regenerative Biology, Harvard University, Cambridge, MA. Nondiabetic and type 1 diabetic patient-derived induced pluripotent stem cells were differentiated into functional cardiomyocytes. Isoflurane effect on cell viability under oxidative stress and mitochondrial bioenergetics was assessed on the differentiated cardiomyocytes.
A1247 Cardioprotection by Protein Kinase an Activation Is Mediated by Mitochondrial Ca2+-Sensitive Potassium Channels

Friederike Behem-burg, M.D., Ragnar Huhn, M.D., Ph.D., Marianne de Schmidt, M.D., Inge Bauer, Ph.D., Markus W. Hollmann, M.D., Ph.D., Andre Heinen, M.D., Ph.D., Department of Anesthesiology, University Hospital Dusseldorf, Dusseldorf, Germany, Department of Anesthesiology, Academical Medical Center (AMC), University of Amsterdam, Amsterdam, Netherlands. Activation of PKA and mKCa-channels induces cardioprotection in a dose dependent manner. Furthermore, the protective effect of PKA activation is mediated by mKCa-channels.

A1248 Effects of Remote Ischemic Preconditioning on Connexin43 Expression in the Rat Heart In-Vivo

Andre Heinen, M.D., Ph.D., Ragnar Huhn, M.D., Ph.D., Nicole Heinen, M.D., Inge Bauer, Ph.D., Timo Brandenburger, M.D., Department of Anesthesiology, University Hospital Dusseldorf, Dusseldorf, Germany. Remote ischemic preconditioning attenuates the decreas of Connexin43 after myocardial ischemia/reperfusion.

A1249 Isoflurane Enhances the Inhibitory Effect of Red Blood Cell-Derived Nitric Oxide on Mitochondrial Respiration During Reoxygenation

Svjetlana Dosenovic, M.D., Martin Bienengraeber, Ph.D., Medical College of Wisconsin, Milwaukee, WI. Isoflurane enhances nitric oxide-dependent inhibition of cardiac mitochondrial respiration at the time of reoxygenation when red blood cells and nitrite are present. This effect may reduce reactive oxygen species production during reperfusion of the heart after an ischemic event, leading to less cardiac injury.

A1250 Isoflurane Reduces Cardiomyocyte Death through Modulation of Mitochondrial Dynamics

Ivan Zaja, M.D., Anesthesiology, Medical College of Wisconsin, Milwaukee, WI. Volatile anesthetics such as isoflurane have been shown to be able to precondition the myocardium against ischemia. The objective of our study was to determine the role of mitochondrial fission and dynamin-related protein 1 (Drp1) which is the main protein involved in mitochondrial fission in the anesthetic-induced cardiac protection. Our preliminary data show a novel mechanism by which isoflurane protects the heart from H/R injury. Hypoxia and reperfusion induce Drp1 translocation to mitochondria which induces mitochondrial fission and isoflurane inhibits this translocation of Drp1 leading to better cell survival.

A1251 Lipid Emulsion Can Preserve Cardiac Function of Intact and Ischemia-Reperfused Isolated Rat Hearts via Mitochondrial Activation

Ryo Miyashita, M.D., Naoyuki Hirata, M.D., Ph.D., Daisuke Matuyama, M.D., Ryoichi Kawaguchi, M.D., Tomohisa Niya, M.D., Ph.D., Michiaki Yamakage, M.D., Ph.D., Department of Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan. A lipid emulsion has been reported to have a cardioprotective effect against several pathologic conditions via mitochondrial protection. However, the effect of a lipid emulsion on the intact heart under physiological conditions is still controversial. We investigated the effects of a lipid emulsion on intact isolated hearts and isolated mitochondria. Our results showed that a lipid emulsion can preserve intact cardiac function and activate mitochondrial oxidative phosphorylation.

A1252 Tempol Reestablishing the Redox Status and Restoring Cyclosporine a Cardioprotection in Aged Rat Heart

Jiang Zhu, M.D., Anesthesiology, Stony Brook University Medical Center, Stony Brook, NY. The major determinant of cardiomyocyte death following an episode of I/R injury is the formation of the mPTP. Our work has demonstrated that cardioprotective effects of CsA are lost with aging. Here, we investigated that role of oxidative stress in the age-related loss CsA protection by chronic treatment with, a exogenous SOD mimetic, Tempol. Methods: Rats were pre-treat with Tempol 2 or 4 weeks. Antioxidant protein, enzymes activities, tmPTP and MI were measured. Results: MI in the aged rat was significantly reduced by Tempol 4wks treatment plus CsA compared to control animals subjected to CsA. Antioxidant enzymes activities and MnSOD protein expression were increased. Conclusions: Four weeks Tempol treatment restores CsA protection in the aged heart and this is associated with decreased oxidant stress and improved mitochondria function.

A1253 17β-estradiol Reduces Survival After 45 Minutes of Deep Hypothermic Circulatory Arrest in Female Rats

Kristine Kellermann, D.V.M., Franziska Hoetzinger, Petra Wolf, Manfred Blobner, M.D., Ph.D., Eberhard F Koeh, M.D., Ph.D., Bettina Jungwirth, M.D., Anesthesiology, Department of Medical Statistics and Epidemiology, Klinikum Rechts Der Isar, Munich, Germany. In a rat model of cardiopulmonary bypass with 45 min of deep hypothermic circulatory arrest (DHCA), the sole substitution of a physiologic level of 17β-estradiol leads to a significantly reduced survival rate after DHCA compared to intact female rats and female rats substituted with both 17β-estradiol and progesterone. Further investigations will include systemic inflammation as well as ischemia/reperfusion damage in relevant organs such as heart, lung, liver and the kidney.

A1254 Preconditioning Effect of High Dose Insulin in Isolated Rat Heart

Hisashi Fukushima, M.D., Takeshi Oguchi, M.D., Ph.D., Tamaki Sato, M.D., Hiroaki Sato, M.D., Ph.D., Thomas Schricke, M.D., Ph.D., Takashi Matsukawa, M.D., Ph.D., Mito Medical Center, Ibaraki, Japan, Yamanashi University Hospital, Yamanashi, Japan, McGill University Health Center, Montreal, QC, Canada. High dose insulin administration, starting prior to ischemia, protected cardiac function in the isolated rat heart better than applying insulin only at post ischemic reperfusion period. The current study suggests that high dose insulin elicit preconditioning effect in isolated rat heart.

A1255 A Novel Rodent Model of Combined Coronary Ligation Followed by Cardiopulmonary Bypass and Cardioplegic Arrest

Qing Ma, M.D., Zhiquan Zhang, Ph.D., Kevin Friede, B.A., R. Eduardo Chaparro, M.D., Ph.D., G. Burkhard Mackensen, M.D., Ph.D., Mihai V. Podgoreanu, M.D., Anesthesiology, Duke University Medical Center, Durham, NC. This rodent model is more suitable to study the clinically relevant problem of emergent CABG as the primary reperfusion strategy in patients with acute ST-elevation myocardial infarction who are not candidates for fibrinolysis or primary PCI, and to test the cardioprotective efficacy of various compounds.
A1256 Annexin-A1 Tripeptide Attenuates Phosphorylation and Nuclear Translocation of NF-kB p65 and Produces Cardioprotection Following Cardiac Surgery
Zhiquan Zhang, Ph.D., Qing Ma, M.D., G. Burkhard Mackensen, M.D., Ph.D., Miha V. Podgoreanu, M.D., Duke University Medical Center, Durham, NC. Our current research provides preliminary evidence that a novel Annexin-A1 tripeptide, an anti-inflammatory agent, attenuates DHCA-induced phosphorylation and nuclear translocation of NF-kB p65 (ser536) in myocardium following cardiac surgery. This is associated with inhibited NF-kB activity, suppressed expression of downstream target pro-inflammatory genes, and cardioprotection from perioperative ischemia/reperfusion injury.

A1257 Gonadectomized Mice With XY Sex Chromosome Are More Protected Against Ischemia/Reperfusion Injury Compared to XX Mice
Jingyuan Li, Ph.D., Rebecca Watkins, Ph.D., Xuqi Chen, Ph.D., Arthur P. Arnold, Ph.D., Mansoureh Eghbali, Ph.D., UCLA, Los Angeles, CA. Sex differences in expression of X or Y genes contributes to sex differences in ischemia/reperfusion injury.

A1258 Myocardial Ischemia/Reperfusion Injury in Late Pregnancy Results in Reduced Mitochondrial Function and Increased Superoxide Production
Jingyuan Li, Ph.D., Andrea Iorga, Ph.D., Ji-Youn Youn, Ph.D., Hua Cai, Ph.D., Vera Regitz-Zagrosek, Ph.D., Mansoureh Eghbali, Ph.D., UCLA, Los Angeles, CA, Institute of Gender in Medicine and Center for Cardiovascular Research, Charite University Hospital, Berlin, Germany. Reduced mitochondrial function and increased ROS production underlie the higher myocardial vulnerability in late pregnancy to ischemia/reperfusion injury.

A1260 Effects of Exogenous AMPA on Cerebral Metabolism in a Model of Autism
Oak Z. Chi, M.D., Sylviana Barsoum, M.D., Xia Liu, M.D., Harvey R. Weiss, Ph.D., Department of Anesthesia, UMDNJ- Robert Wood Johnson Medical School, New Brunswick, NJ, Department of Physiology and Biophysics, UMDNJ- Robert Wood Johnson Medical School, Piscataway, NJ. Our data showed a reduced importance of AMPA receptors in controlling cortical metabolism related to reduced AMPA receptor protein suggesting altering AMPA receptor activity may not be an effective regimen for children with autism.

A1261 Effects of Isoflurane Post-Treatment on Blood-Brain Barrier Integrity and Brain Edema After Transient Cerebral Ischemia: Focusing on the Role of Hypoxia-Inducible Factor-1α, Aquaporin, and Matrix Metalloproteinase
Jae Hoon Lee, M.D., Bon-Nyoo Koo, M.D., Hui Song Cui, Ph.D., Jong Eun Lee, Ph.D., Anesthesiology and Pain Medicine, Anesthesia and Pain Research Institute, Anatomy, Yonsei University Health System, Seoul, Republic of Korea. Post-treatment of isoflurane could attenuate cerebral edema that occurs after transient cerebral ischemia in rats, which is associated with reduction in the expression of AQPs and MMPs after isoflurane post-treatment might result from the suppression of HIF-1α expression.

A1262 The Effect of Aminocaproic Acid on Cerebral Edema and Neurobehavior in a Rat Surgical Brain Injury Model
Esther S. Komanapalli, M.D., John Zhang, M.D., Ph.D., Richard Applegate III, M.D., Robert D. Martin, M.D., Gary Stier, MD, MBA, Cherine Kim, B.S., William Rolan, B.S., Anesthesiology, Neurosurgery, Loma Linda University Medical Center, Loma Linda, CA, Loma Linda University School of Medicine, Loma Linda, CA. Surgical brain injury is the unavoidable collateral tissue trauma of surgical dissection. The pharmacological agent, aminocaproic acid, is commonly used by anesthesiologists to minimize blood loss during operations with a significant risk of hemorrhage. In addition to its fibrinolytic activity, ACA has been shown to maintain the integrity of the blood-brain barrier, via the inhibition of MMP-9, a key enzyme in BBB disruption. Preliminary results reveal ACA administration can decrease brain edema and improve neurological outcome after surgical brain injury.

A1263 Blockade of NMDA Receptor Attenuated the Increase of Cerebral O2 Consumption Induced by BBB Disruption
Oak Z. Chi, M.D., Sylviana Barsoum, M.D., Jeremy Grayson, M.D., Christine Hunter, M.D., Xia Liu, M.D., Harvey R. Weiss, Ph.D., Department of Anesthesia, UMDNJ- Robert Wood Johnson Medical School, New Brunswick, NJ, Department of Physiology and Biophysics, UMDNJ- Robert Wood Johnson Medical School, Piscataway, NJ. Our data showed that an increase of O2 consumption with BBB disruption by hyperosmolar mannitol became insignificant with blockade of NMDA receptors suggesting involvement of NMDA receptors in controlling neuronal metabolism associated with BBB disruption.
**TUESDAY, OCTOBER 16**

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**A1264 Increasing Anesthetic Duration in Association With Lower Arterial Pressure Following Embolic Stroke Increases Mortality in Rats**

Tzu-Yuan Chuang, M.D., Alex Papangelou, M.D., Thomas Toung, M.D., Ray Koehler, Ph.D., Anesthesiology, Cathay General Hospital, Taipei City, Taiwan, Johns Hopkins Medical Institutions, Baltimore, MD. The study showed extended anesthesia time at early stage of stroke significantly increased mortality. During this extended anesthetic period, cerebral hypoperfusion worsened as the result of relative systemic hypotension. The association of high mortality with relatively low arterial pressure suggests that avoidance of hypotension at an early stage of cerebral ischemia is critical to prevent poor outcome after stroke.

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**A1265 Pial Arteriolar Vasoinconstriction After Unclamping of Abdominal Aortic Cross-Clamp Is Not Associated With Obvious Cerebral Endothelial Dysfunction**

Tomohiro Michino, M.D., Motosayo Takenaka, M.D., Ph.D., Masayoshi Uchida, M.D., Ph.D., Mami Iida, M.D., Ph.D., Masahiko Kumaizawa, M.D., Ph.D., Junko Sugimoto, M.D., Kumiyo Tanabe, M.D., Ph.D., Kenji Iwata, M.D., Hiroki Iida, M.D., Ph.D., Department of Anesthesiology, Chuno-Kousei Hospital, Seki-City, Gifu, Japan, Department of Anesthesiology and Pain Medicine, Gifu University Graduate School of Medicine, Department of Internal Medicine, Gifu Prefectural General Medical Center, Gifu, Japan. Cerebral pial arteriolar vasoinconstriction induced by release of a 20-min abdominal aortic cross-clamping may not be accompanied by endothelial dysfunction.

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**A1266 A Novel Rat Model of Focal Cerebral Ischemia Induced by Direct Intra-Arterial Injection of Collagen**

Thomas Tung, M.D., Jian Zhang, M.D., Kathryn Jaques, Ph.D., Nader Faraday, M.D., Raymond Koehler, Ph.D., JHMI, Baltimore, MD. Intravascular platelet activation is known to play a critical role in thromboembolic stroke. Several rat-models of focal cerebral ischemia have been described, each having their own limitation. We report here a new model of focal cerebral ischemia in rats by direct intra-arterial injection of collagen, which is a strong physiologic platelet activator.

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**A1267 Effects of Topical and Intravenous JM1232(-) on Cerebrovascular Reactivity in Rats**

Kenji Iwata, M.D., Mami Iida, M.D., Naokazu Fukuoka, M.D., Kazuhiro Kito, M.D., Chihiro Iwata, M.D., Tomohiro Michino, M.D., Kumiyo Tanabe, M.D., Motosayo Takenaka, M.D., Hiroki Iida, M.D., Department of Anesthesiology and Pain Medicine, 2nd Department of Internal Medicine (Cardiology), Gifu University Graduate School of Medicine, Gifu, Japan, Department of Anesthesiology, Chuno-Kousei Hospital, Seki-City, Japan. This study shows the effects of JM1232(-) on the cerebral pial arterioles by a closed cranial window preparation in rats.

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**A1268 The Neuro-Behavioral Profile in Rats After Subarachnoid Hemorrhage**

Alexander Zlotnik, M.D., Ph.D., Abed N. Azab, Ph.D., Ruslan Kurtz, M.D., Benjamin F. Gruenbaum, B.S., Matthew Boyko, Ph.D., Department of Anesthesiology and Critical Care, Soroka Medical Center, School for Community Health Professions, Ben-Gurion University of the Negev, Beer-Sheva, Israel. The principle finding of this study was that both a single and double injection model of rats subarachnoid hemorrhage are associated with significant behavioral disturbances including locomotor abnormalities, depressive behavior and increased anxiety, even as little as three weeks after subarachnoid hemorrhage.

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**A1269 Inducible Measurements of Cerebrovascular Autoregulation**

Ronald B. Easley, M.D., Ken Brady, M.D., Kathleen Kibler, B.S., David Kaczka, M.D., Dean B. Andropoulos, M.D., Peter Smielewski, Ph.D., Marek Czosnyka, Ph.D., Craig Rusin, Ph.D., Anesthesiology and Pediatrics, Anesthesiology, Texas Children’s Hospital, Houston, TX, Beth Israel Deaconess, Boston, MA, Neurosurgery, Cambridge University, Cambridge, United Kingdom, Pediatric Cardiology, Baylor College of Medicine, Houston, TX. Cerebrovascular autoregulatory monitoring using spontaneous hemodynamic slow waves has been associated with clinical outcomes of survival and improved function when perfusion pressure is optimized using this technique. We demonstrate inducible hemodynamic waves which improves the speed and accuracy of cerebrovascular autoregulatory measurements. Such improvements in autoregulation monitoring may improve the care of patients with brain injury.

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**A1270 Palmitoyl Protein Thioesterase-1 Deficiency is Associated With Thermoregulation Impairment and Lipid Handling Abnormalities in Mice**

Alfa Khaibullina, Ph.D., Virginia Gupthill, Ph.D., Nicholas Kenyon, B.S., LeShon Middleton, Zena Quezado, M.D., Sheikh Zayed Institute, CNMC, Washington, DC, Department of Perioperative Medicine, NIH, Bethesda, MD, Stetson University, Deland, FL. Pediatric patients with Infantile Neuronal Ceroid Lipofuscinosis (INCL) have lower body temperature and develop profound hyperthermia during anesthesia. The presented study researched possible mechanisms of thermoregulation abnormalities in a mouse model of INCL.

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**A1271 Sex-Based Differences in a Murine Model of Intracerebral Hemorrhage**

Beli Lei, M.D., Ph.D., Haichen Wang, M.D., Michael L. James, M.D., Duke University Medical Center, Durham, NC. In this study, we demonstrated that in a murine model of collagenase-induced intracerebral hemorrhage, female sex was associated with improved outcome following injury which is similar to humans. The translation between both mice and human will allow for more rapid development and translation of innovative therapeutic strategies.

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**A1272 Isoflurane Anesthesia Attenuates Blood-Brain Barrier Damage in a Rat Model of Embolic Stroke Compared to Halothane**

Francisco J. Bezerra, M.D., Kishor Karki, Ph.D., Robert Knight, Ph.D., Joseph Fenstermacher, Ph.D., Morris Brown, M.D., Tavarekere Nagaraja, Ph.D., Anesthesiology, Neurology, Henry Ford Hospital, Detroit, MI. Isoflurane anesthesia attenuates blood-brain barrier damage in a rat model of embolic stroke compared to halothane.

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**A1273 Hemorrhage Size and Early Clinical Grade Determines Long-Term Cognitive Outcomes in Experimental SAH**

Toshihiro Sasaki, M.D., Huaxin Sheng, M.D., David S. Warner, M.D., Frederick W. Lombard, M.D., Department of Anesthesiology, Multidisciplinary Neuroprotection Laboratories, Duke University Medical Center, Durham, NC. The etiology of cognitive dysfunction associated with subarachnoid hemorrhage remains unknown. This study shows that both hemorrhage size and early clinical grade are associated with poorer cognitive outcomes, suggesting early brain injury may determine long-term cognitive outcomes in experimental subarachnoid hemorrhage.
A1274 Differential Roles of Mast Cells Between the Formation and Rupture of Intracranial Aneurysms
Kosuke Wada, M.D., Yoshiteru Tada, M.D., Ph.D., Hiroshi Makino, M.D., Elena I. Liang, B.S., Mari Kudo, M.D., Shoko Murakami, M.D., Ph.D., Kenji Shimada, M.D., Tomoki Hashimoto, M.D., Anesthesia and Perioperative Care, University of California, San Francisco, San Francisco, CA. We investigated the role of mast cells against intracranial aneurysm formation and rupture with mouse model. In this model, a combination of hypertension and disruption of elastic lamellar results in aneurysm formation. There was strong trend that the stabilization of mast cell after the formation of aneurysms prevented aneurysmal rupture and delayed the onset of aneurysmal rupture. However mast cell stabilization during the formation of aneurysms did not prevent the formation of aneurysm or aneurysmal rupture. While mast cells do not appear to be critical for the aneurysmal formation, mast cells play key roles in aneurysmal rupture. Pharmacological stabilization of mast cells may be an effective treatment for the prevention of aneurysmal rupture.

A1275 TCI Propofol-TCI Remifentanil Anaesthesia in Morbidly Obese Patients: The Performance of Servin's Formula During BIS/AEP-Guided Target-Controlled Infusion
Alisher Agzamov, Sr., Ph.D., AbdullaReema Al Qattan, Sr., Ph.D., Anesthesiology & ICU, Al Sabah & Zain Hospitals, Kuwait. Our study of the predictive performance of 'Servin's formula' for Bispectral Index and AEP index (BIS/AEP)-guided target-controlled infusion: TCI Propofol-TCI Remifentanil in morbidly obese patients shows that significant bias between predicted and measured plasma Propofol concentrations was found while the low wobble values suggest that TCI Propofol system is able to maintain stable drug concentrations over time. As already suggested before, a computer simulation confirmed that the TCI system performance could be significantly improved when total body weight and BIS/AEP Monitoring are used.

A1276 Effects of Ramosetron and Dexamethasone on Postoperative Nausea, Vomiting, Pain, and Shivering in Female Patients Undergoing Thyroid Surgery
Cheol Lee, M.D., Yoon-Kang Song, M.D., Ph.D., Myeong-Jong Lee, M.D., Ph.D., Anesthesiology and Pain Medicine, College of Medicine Wonkwang University, Iksan, Korea, Republic of, Chungju Hospital, School of Medicine, Konkuk University, Chungju, Republic of Korea. Although dexamethasone and ramosetron showed similar efficacy in terms of reduction of pain severity in the present study, ramosetron was superior to dexamethasone in the reduction of nausea, anti-emetic consumption, and severity but not incidence of shivering, our results showed that ramosetron 0.3 mg was more efficacious than dexamethasone 10 mg when monotherapy against PONV and shivering was implemented, although the difference in cost between these drugs may affect the use of ramosetron.

A1277 Flurbiprofen for Preventing Postanesthetic Shivering
Yoshimi Nakamura, M.D., Mutsuko Matsumoto, M.D., Maiko Inai, M.D., Taro Kawase, M.D., Tomoko Nishiumi, M.D., Naohiro Shioji, M.D., Chiaki Matsui, M.D., Fumiko Ishii, M.D., Kiyoshi Morita, Ph.D., Department of Anesthesiology, Japanese Red Cross Society Himeji Hospital, Himeji, Japan, Department of Clinical Laboratory, Japanese Red Cross Okayama Hospital, Department of Anesthesiology and Resuscitology, Okayama University Hospital, Okayama, Japan. Flurbiprofen, which is one of NSAIDs, is effective in preventing postanesthetic shivering.

A1278 Postoperative Residual Neuromuscular Blockade Is Associated with Impaired Clinical Recovery and Prolonged Postanesthesia Care Unit Length of Stay
Glenn S. Murphy, M.D., Joseph Szokol, M.D., Steven Greenberg, M.D., Michael Avram, Ph.D., Anesthesiology, Northshore University Healthsystem, NorthShore University HealthSystem, Evanston, IL, Northwestern University Feinberg School of Medicine, Chicago, IL. In this observational trial, the incidence and severity of symptoms of muscle weakness was increased in the PACU in patients with TOF < 0.9. Impaired neuromuscular recovery was also associated with prolonged PACU length of stay and reduced patient perceived quality of recovery.

A1279 Perioperative Eye Care and the Management of Corneal Abrasions
Sioned N. Phillips, M.B., B.S., Somi Desikan, M.B., Ch.B., Anesthetics, Surrey and Sussex Health Care Trust, Redhill, United Kingdom. The most common ophthalmological compliant post operatively is corneal abrasions. If not managed appropriately these may go on to have medico legal implications. We carried out a survey of anaesthetists within our region, which showed the level of knowledge with regard to corneal abrasion diagnosis and management was poor. We look at the options available for eye care during anaesthesia and aim to promote education amongst anaesthetists on this subject as well as produce local guidelines.

A1280 Ultrasound Visual Guided Versus Doppler Auditory Assisted Versus Palpation Technique for Radial Arterial Cannulation in Adult Patients
Kenichi Ueda, M.D., Christopher Johnson, M.D., Neadum J. Odum, M.D., Emine O. Bayman, Ph.D., Anesthesia, University of Iowa Hospitals and Clinics, Iowa City, IA, Anesthesia Associates of Great Falls, PC, Great Falls, MT, Department of Anesthesia, Johns Hopkins Hospital, Baltimore, MD. In this randomized prospective study, authors compared three different radial arterial cannulation techniques; Ultrasound(USS)-guided versus Doppler-assisted versus Palpation performed by anesthesia trainees in adult surgical patients. US-guided radial arterial cannulation improved the first attempt success rate compared with palpation and Doppler-assisted technique. Overall success rate limited in five minutes period did not differ among the group.
A1281 Accuracy of Malignant Hyperthermia Diagnosis in Hospital Discharge Records
Barbara Lang, B.S., Henry Rosenberg, M.D., Teeda Pinyavat, M.D., Lena S. Sun, M.D., Cynthia A. Wong, M.D., Joanne E. Brady, M.S., Guohua Li, M.D., Ph.D., Anesthesiology, Columbia University, New York, NY, Graduate Medical Education, Saint Barnabas Medical Center, Livingston, NJ, Anesthesiology, Northwestern University, Chicago, IL. Thirty-two cases with the International Classification of Diseases, 9th revision (ICD-9) code for malignant hyperthermia (MH) were reviewed from four academic medical centers in order to evaluate the accuracy of MH diagnosis in ICD-9 coded hospital discharge records. Approximately half of the ICD-9 coded MH diagnoses refer to MH incidents or patient or family history. The remaining are mostly cases with high temperatures due to sepsis or other causes.

A1282 Incidence, Risk Factors, and Outcome of Acute Kidney Injury in Patients Undergoing Live Donor Liver Transplantation
Daniela Damian, M.D., Raymond M. Planinsic, M.D., Tetsuro Sakai, M.D., Charles Boucek, M.D., Ibtessaaim Hilmi, M.D., Anesthesiology, UPMC, Pittsburgh, PA. A retrospective chart review in a single transplant center regarding acute kidney injury incidence, risk factors and outcome for all patients with first time living donor liver transplantation during a five-year period (Jan, 2005-Dec, 2009).

A1283 Is Transesophageal Echocardiography Safe for Patients Undergoing Liver Transplantation?
Christine C. Myo Bui, M.D., Worapot Apinyachon, M.D., Nhat M. To, M.D., Randolph H. Steadman, M.D., Victor W. Xia, M.D., UCLA, Los Angeles, CA. In this retrospective study, we demonstrated that the incidence of major complication following TEE in LT patients was low (0.18%). TEE placement during LT surgery was not associated with an increased rate of postoperative GI consultation or an increased amount or percentage of bloody NG output following LT. In conclusion, despite concerns and theoretical risks, TEE appears to be safe for patients undergoing LT.

A1284 Pre-Operative Survey of Patients Understanding and Expectations About Pain Following an Upcoming Surgery
Kiana Kashef, M.D., Angela M. Bader, M.D., M.P.H., Darin J. Correll, M.D., Anesthesiology, Perioperative and Pain Medicine, Harvard Medical School, Brigham & Women’s Hospital, Boston, MA. Our data shows that patients would like to know, but are poorly informed, of their persistent postsurgical pain risk. Thus, there is an increased need for health care providers to adequately discuss this significant risk with patients in the preoperative setting.

A1285 Volume-Controlled Ventilation vs. Pressure Controlled Ventilation-Volume Guaranteed Mode During One-Lung Ventilation for Thoracic Surgery
Jin Y. Jung, M.D., Backjin Kim, M.D., Jonghae Kim, M.D., Yunback Kim, M.D., Anesthesiology and Pain Medicine, Daegu Catholic University Hospital, Daegu, Republic of Korea. The purpose of this study was to investigate the changes in airway pressure and arterial oxygenation between the ventilation mode and set tidal volume (TV) during one-lung ventilation (OLV). Subjects received 4 mode of ventilation with random sequence during operation; volume controlled ventilation (VVC) with TV 10 ml/kg, VCV with TV 8 ml/kg, pressure controlled ventilation-volume guaranteed with TV 10 ml/kg and PCV-VG with TV 8 ml/kg. PIP was significantly lower with PCV-VG8 (19.4 ± 2.4 cmH2O) than with VVC10 (27.0 ± 4.2), VCV8 (23.4 ± 3.3) and PCV-VG10 (23.3 ± 3.1) (p = 0.000). However, there was no difference in arterial oxygen tension.

A1286 Patient Medication Compliance on the Day of Surgery: Effects of Providing Patients With Standardized Written Medication Instructions
Michelle E. Downing, M.D., Sean C. Vanlantingh, B.S., Terry L. Byars, B.S.N., Thomas R. Vetter, M.D., M.P.H., Anesthesiology, Medical Student Services, University of Alabama School of Medicine at UAB, Birmingham, AL. Patients seen in the Preoperative Assessment Clinic (PAC) at The University of Alabama at Birmingham (UAB) were not being provided medication instructions in a standardized manner. This study was undertaken to evaluate the effects of standardized, written medication instructions on patient preoperative medication compliance and Post Anesthesia Care Unit (PACU) length of stay (LOS). Introduction of a standardized Patient Medication Instruction sheet significantly increased patient medication compliance. Mean PACU LOS was significantly reduced. Improved patient education and medication compliance may help reduce healthcare costs.

A1287 Using a Standardized Anesthetic Technique for Bariatric Surgery and its Effects on Postoperative Pain and Nausea
Andrew Voris, M.D., Joseph May, B.S., Courtney Auman, M.D., Trevor Taylor, B.S., Lauren Hoke, B.S., Melissa Laxton, M.D., Deborah Whelan, M.D., Randy Calicott, M.D., Yvon Bryan, M.D., Anesthesiology, Wake Forest School of Medicine, Winston-Salem, NC. Using a standardized anesthetic technique combining an infusion of dexmedetomidine and limiting intraoperative fentanyl, we found low incidence of nausea/vomiting and low dose of morphine administered in PACU.

A1288 Randomized Cross-Over Study to Define the Optimal Dose of Rocuronium and Succinylcholine to Control Muscle Strength for Electroconvulsive Therapy (ECT)
Hooman Mirzakhani, M.D., Ala Nozari, M.D., Ph.D., Charles A. Welch, M.D., Mary E. Doran, R.N., Teresa O. MacDonald, R.N., Edward George, M.D., Ph.D., Matthias Eikermann, M.D., Ph.D., Anesthesia, Critical Care and Pain Medicine, Psychiatry, Post Anesthesia Care Unit (PACU), Massachusetts General Hospital, Boston, MA. Neuromuscular blocking agents are required during electroconvulsive therapy (ECT) to avoid injuries from brisk evoked tetanic contraction. Submaximal muscle relaxation is typically sufficient to meet this goal, and also allows for visual monitoring of the duration of the therapeutic convulsion. In a cross-over, assessor-blinded, prospective, randomized study, we evaluated the optimal dose of rocuronium and succinylcholine for ECT and compared their recovery time from neuromuscular block after ECT.
A1289 Effect of Single-dose Dexmedetomidine on Emergence Excitement in Adults With Nasotracheal Intubation After Orthognathic Surgery
Sung Yeon Ham, M.D., Jeongsoo Lee, M.D., Jong Wha Lee, M.D., Ph.D., Sang Beom Nam, M.D., Yon Hee Shim, M.D., Ph.D., Yonsei University College of Medicine, Seoul, Republic of Korea. Intravenous single-dose dexmedetomidine (1 mcg/kg) at the end of surgery prevent emergence excitement in adults with nasotracheal intubation after orthognathic surgery, without delay in emergence. In addition, dexmedetomidine induced hemodynamic stability during the emergence and recovery phase.

A1290 Internal Jugular Vein Catheterization Made Safer: Anatomical-Based Study
Ramsis F. Ghaly, M.D., Golnaz Alemzadeh, M.D., Gennady Voronov, M.D., Reza Mohammad, M.D., Carlo D. Franco, M.D., Ned Nasr, M.D., Zilvinas Zakarevicius, M.D., Divya Karjala, M.D., Jyoti Dangle, M.D., Anesthesiology and Pain Management, JHS Hospital of Cook County, Chicago, IL. Cannulation of IJ is a major route for central venous access. However the risk of complications remains significant especially in the situations when the use of ultrasound is not feasible. We conducted an observational study on healthy volunteers to determine the most ideal point of entry for IJ cannulation the ultrasound was used to obtain a variety of anatomical parameters in different neck levels and head positions. Analysis of data suggests neck locations at 2 cm above clavicle while the neck is at neutral position and not rotated, carries favorable IJV features for safer cannulation and the least risk for CCA inadvertent injury from anatomical point of view.

A1291 Coagulation Profile During Adult De Novo Scoliosis Surgery: A Focus on D-Dimer
Ryan Pong, M.D., Thomas Dean, M.D., Jean-Christopher Leveque, M.D., Stephen Oliviar, M.D., Sarah Hippi, M.D., Vishal Gala, M.D., Chong Lee, M.D., Kyle Kim, M.D., Rajiv Sethi, M.D., Department of Anesthesiology, Virginia Mason Medical Center, Group Health Cooperative, Seattle, WA. Major spine surgery is frequently associated with large blood volume loss as well as a coagulopathy that is difficult to both characterize with traditional lab values and correct. In this study, we provide a chronicle of hematologic measures, including d-dimer levels, and seek its utility during major spine surgery.

A1292 Assessing Preoperative Platelet Inhibition With Thrombelastograph Platelet Mapping™
Davide Cattano, M.D., Ph.D., Alfonso Altamirano, M.D., Carin A. Hagberg, M.D., Evan G. Pivalizza, M.D., Anesthesiology, University of Texas Health Science Center Houston, Houston, TX. 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 in the preoperative anesthesia clinic or day surgery unit.

A1293 Comparison Between Brachial Plexus Block and Local Infiltration Analgesia for Postoperative Status in Elbow Arthroscopy
Kazunobu Takahashi, M.D., Masanori Yamauchi, Ph.D., Riika Sekine, Ph.D., Takuro Wada, Ph.D., Michiaki Yamakage, Ph.D., Department of Anesthesiology, Sapporo Medical University School of Medicine, Sapporo, Japan. In this study, we compared the effects of analgesia and postoperative status between brachial plexus block (BPB) and local infiltration analgesia (LIA) after elbow arthroscopy. LIA provided the same analgesic effect and satisfaction as these provided by BPB and better motor function with faster performance time than BPB in elbow arthroscopy patients. The results suggest that easy LIA with rescue NSAIDs is a good alternative to BPB in soft tissue extremity surgery.

A1294 Multimodal Analgesia (TNT - TYLENOL AND TORADOL) Reduces Narcotic Consumption and Opioid Related Side Effects After Laparoscopic Gastric Bypass Surgery: An Observational Study With Historic Control
Patrick Zieman-Gimmel, M.D., Priscilla Hensel, M.D., Salam Abdo, M.D., John Koppman, M.D., Robert Marema, M.D., Coastal Anesthesiology, St. Augustine, FL., Anesthesiology, University of Illinois, Chicago, IL, Flagler Hospital, Life Institute, St. Augustine, FL, US Bariatrics, St. Augustine, FL. A multimodal analgesic regimen (TNT - Tylenol &amp; Toradol) reduced postoperative narcotic consumption by 61% after laparoscopic gastric bypass surgery. This reduction may have lead to a reduction in desaturations by 32% and to a reduced administration of antiemetic medication by 33%.

A1295 Post-Operative Analgesic Requirements for Breast Reconstructions Using DIEP Flaps: Keeping It Simple
Sohini Sengupta, M.D., F.R.C.A., Paolo Baraggia, M.D., Russel Emandee, M.D., F.R.C.A., Sandip Pal, M.D., F.R.C.A., Department of Anesthesiology, St. Andrew's Centre for Plastics and Burns, Broomfield Hospital, Chelmsford, United Kingdom, Department of Anesthesiology, St. Andrew's Centre for Plastics and Burns, Broomfield Hospital, Chelmsford, United Kingdom. A tertiary care burns and plastics Centre's experience in simplifying anaesthetic and perioperative analgesic management of patients undergoing breast reconstructive surgery. This audit of current practice demonstrated that a TIVA based minimal invasive anaesthetic technique and balanced post operative analgesia with simple analgesics and oral or subcutaneous opioids eliminated the need for intravenous patient controlled opioid analgesia regimes and epidurals in the immediate postoperative period.

A1296 Phantom Limb Sensation During Spinal Anesthesia of Patients Placed in Supine Position: A Prospective Study
Shun Kishimoto, M.D., Norihiko Fukami, M.D., Yukimasa Ogino, M.D., Kumi Nakamura, M.D., Kyoto City Hospital, Kyoto, Japan. Spinal anesthesia induces an incorrect perception of posture (phantom limb sensation, PLs). Mainly the perception of flexed lower limbs are reportedly related to the posture when the blockade progress. We examined the occurrence of PLs in 50 patients for surgery under supine position with their legs extended following spinal anesthesia. Although we placed their lower limbs in the neutral position, half of the patients experienced the perception of the flexed limbs. This result implies that spinal anesthesia-induced PLs is not due to the memory of flexed positions of hip or/and knee joints during the establishment of anesthesia.

PO16-5 Regional Anesthesia and Acute Pain: Acute Postoperative Pain
1-4 p.m.
Hall C-Area J
A1297 Continuous Paravertebral Infusion of Ropivacaine With and Without Fentanyl for Pain Relief in Unilateral Multiple Fractured Ribs

Medha Mohta, M.D., L. Emeni Ophriii, M.B.,B.S., A. K. Sethi, M.D., Deepti Agarwal, M.D., Anesthesiology and Critical Care, University College of Medical Sciences and Guru Teg Bahadur Hospital, Delhi, India, Anesthesiology & Critical Care, University College of Medical Sciences & Guru Teg Bahadur Hospital, Delhi, India, Anesthesiology and Critical Care, University College of Medical Sciences & Guru Teg Bahadur Hospital, Delhi, India. The study demonstrated that continuous paravertebral infusion of ropivacaine 0.375% with adrenaline 5μg/ml at a rate of 0.1-0.2 ml/kg/hr was effective and safe for providing analgesia to patients with unilateral multiple fractured ribs. Addition of fentanyl 2μg/ml allowed use of ropivacaine in a lower concentration of 0.2% without decreasing efficacy of the infusion or increasing opioid related side-effects.

A1298 Risk Assessment of Intractable Intravenous Patient-Controlled Analgesia Related Postoperative Nausea and Vomiting: Predictive Values of the Apfel-Score for Identification of High-Risk Patients

Shin Hyung Kim, M.D., Yong Seon Choi, M.D., Ph.D., Young Jun Oh, M.D., Ph.D., Anesthesiology and Pain Medicine, Yonsei University College of Medicine, Seoul, Republic of Korea. Our results suggest that anesthesiologists predict an increased risk of IV PCA-related intractable PONV in high Apfel-scores and head and neck surgery. Thus, patients with these strong predictors might need careful attention in the selection of intraoperative anesthetic technique, dose of fentanyl used in IV PCA and prophylactic antiemetic strategies. These results may offer practical information for the prevention of IV PCA-related PONV and the improvement of the quality of pain control with IV PCA.

A1299 Caudal Epidural Blockade in Adolescents

Brian Schloss, M.D., Tanun Bhall, M.D., Joseph D. Tobias, M.D., Anesthesia, Nationwide Children’s Hospital, Columbus, OH. A case series of adolescents receiving caudal epidural blockade for urologic and orthopedic procedures.

A1300 Rectus Sheath Block Provided Similar Qualitative Postoperative Analgesia Compared With Epidural Anesthesia

Hiroshi Yamaguchi, M.D., M.B.A., Maiko Ishigaki, M.D., Kenzo Fujikura, M.D., Kyoko Motokawa, M.D., Anesthesiology, Tsukuba Medical Center Hospital, Tsukuba, Japan. In this study we compared the postoperative analgesic effect and the incidents of postoperative nausea and vomiting (PONV) or hypotension (HPT) between PCEA and paravertebral infusion of ropivacaine 0.375% with adrenaline 5μg/ml at a rate of 0.1-0.2 ml/kg/hr was effective and safe for providing analgesia to patients with unilateral multiple fractured ribs. Addition of fentanyl 2μg/ml allowed use of ropivacaine in a lower concentration of 0.2% without decreasing efficacy of the infusion or increasing opioid related side-effects.

A1301 Shorter Successful Patient-Controlled Epidural Analgesia Depend on Large Initial Baseline Rate and Subsequent Dose Reduction

Hiroshi Yamaguchi, M.D., M.B.A., Kyoko Motokawa, M.D., Kenzo Fujikura, M.D., Maiko Ishigaki, M.D., Anesthesiology, Tsukuba Medical Center Hospital, Tsukuba, Japan. In this study using a perioperative patients’ database we elucidated how PCEA infusion rate should be managed to minimize the PCEA duration. The relationship between the duration of PCEA and the perioperative patients’ data, Prince Henry Score (PHS), and incidences of PONV or HPT was investigated using multiple regression analysis. The results of this study indicate that initial baseline infusion rate should be larger enough to meet PHS of 1 or less, and baseline infusion rate should be reduced so far as PHS 1 or less and in case of PONV on the second POD. This model will help to estimate the duration of PCEA.

A1302 Effect of Oral Low Dose Clonidine Premedication on Postoperative Pain for the Patients Undergoing Abdominal Hysterectomy

Shekoufeh Behdad, M.D., Vida Ayatollahi, M.D., Abulghasem Mortezaivzadeh, M.D., Ali Ghadami Yazdi, M.D., Fayeza Niknam, M.D., Shahid Sadoughi University of Medical Sciences, Yazd, Iran. In this study, we compared the effect of oral low dose clonidine premedication versus placebo on postoperative pain, hemodynamic status of the patients during surgery, and postoperative complications after abdominal hysterectomy. The results showed that administration of oral clonidine 100 μg as a premedication in these patients causes improved perioperative haemodynamic stability and reduction in postoperative pain scores without any side effects. Even the patients in clonidine group had lower nausea than the other group. Irct ID: IRCT201108202963N3.

A1303 Predictors of Intrathecal Morphine Efficacy for Postoperative Pain Following Thoracic and Abdominal Surgery

Eswar Sundar, M.B., B.S., Meredith Jones, R.N., Sapna Govindan, M.B., B.S., Peter Panizca, M.D., Norma Sandrock, M.D., Mary Grybinski, R.N., Bala Subramaniam, M.D., M.P.H., Department of Anesthesiology, Critical Care and Pain Medicine, Beth Israel Deaconess Medical Center, Boston, MA, Beth Israel Deaconess Medical Center, Boston, MA. A study of various factors in patients who had intrathecal morphine for major abdominal and thoracic surgery was done. The study showed that the only factor that was associated with significantly higher supplemental parenteral analgesic requirements in the PACU as well as during the first 24 hours after surgery was chronic preoperative opioid use by the patient.

A1304 Review of Case Reports of Spinal Hematoma

Honorio T. Benzon, M.D., Jonathan Snitzer, M.D., Silas Hoxie, M.D., Ryan Pollina, M.D., Ariana Nelson, M.D., Anesthesiology, Northwestern University Feinberg School of Medicine, Chicago, IL. Spinal hematoma can present as back pain alone. Recovery can occur with conservative management if there is no paralysis. Recovery after surgery depends on severity of deficit.
A1305 Comparison of Peripheral Nerve Blocks and Local Infiltration for Wrist Surgery: Effect on Anesthesia and Recovery Times
Ronald H. Wender, M.D., Roya Yumul, M.D., Ph.D., Ofelia L. Elvir-Lazo, M.D., Daniel Choi, M.D., Shetal Patel, M.D., David A. Kulber, M.D., Myles J. Cohen, M.D., Stuart H. Kuschner, M.D., Paul F. White, M.D., Ph.D., Anesthesiology, Cedars-Sinai Medical Center, Los Angeles, CA, Cedars Sinai Medical Center/White Mountain Institute, Los Angeles/Los Altos, CA. This retrospective chart review was designed to test the hypothesis that use of regional anesthesia (i.e., a peripheral nerve block) requires longer anesthesia time and delays the time to discharge home when compared to simple local anesthetic infiltration alone for outpatient undergoing minor hand surgery procedures. Our conclusion: Regional anesthesia with either an axillary or interscalene block provided improved postoperative pain control without delaying the time to discharge home after outpatient wrist surgery.

A1306 Nicotine for Postoperative Analgesia: A Systematic Review and Meta-Analysis
Basem M. Mishrikiy, M.D., Ashrar S. Habib, M.B., R.Ch., Department of Anesthesiology, Duke University Medical Center, Durham, NC. In a meta-analysis of randomized controlled trials, nicotine was effective in reducing opioid consumption at 24 hrs in patients having surgery under general anesthesia, but this was associated with an increase in the incidence of postoperative nausea and vomiting.

A1307 Changes in Perfusion Index After Spinal Anesthesia
Shunsuke Hyuga, M.D., Satoshi Tanaka, M.D., Eriko Imai, M.D., Tomoyuki Kawanaga, M.D., Mitiko Kawanaga, M.D., Department of Anesthesiology and Resuscitology, Shinshu University School of Medicine, Matsumoto, Nagano, Japan. Spinal anesthesia causes a sensory as well as a sympathetic block. Perfusion index (PI) as a new index is calculated from pulse oximeter waveforms. We investigated changes in PI at the finger, toe and groin after spinal anesthesia. Twenty patients undergoing spinal anesthesia were enrolled in this study. A pulse oximeter (Radical-7, Masimo Co., Irvine, U.S.A.) was applied to the index finger of one hand and the second toe. In a separate group, the pulse oximeter was applied to the second toe of the foot and groin. PI at the toe increased soon after induction of spinal anesthesia. PI at the finger and at groin did not change. The results suggest that PI is useful for evaluating the circulatory state after spinal anesthesia.

A1308 The Effect of Axillary Brachial Plexus Block Through by Percutaneous Localization and Identification of Nerves
Fan Su, M.D., Ph.D., Lian-zhu Wang, M.D., Qiang Jiang, M.D., Department of Anesthesiology, Dept. of Anesthesiology, Affiliated Hospital, Shandong Medical University of TCM, Jinan, China. To study the effect of axillary brachial plexus block through by percutaneous localization and identification of nerve stimulator. The use of percutaneous nerve localization of stimulator can greatly facilitate nerve block in axillary brachial plexus, though it can't do any favor to the success rate. It can make us acquire the accurate point and angle of puncture. What's more, it can just make us avoid vascular injury.

A1309 Blocks of Cutaneous Branch of Intercostal Nerve and Pectoral Nerve Improve Postoperative Pain After Breast Surgery
Yoshikko Kubo, Sr., M.D., Hiroyoshi Doi, M.D., Kazumi Ido, M.D., Massashi Adachi, M.D., Shunji Kobayashi, Ph.D., Anesthesiology, Rinku General Medical Center, Izumisano,Osaka, Japan. Blocks of the lateral and anterior cutaneous branches of intercostal nerve and the pectoral nerves were performed for the patients with breast cancer surgery and the effects on postoperative pain was compared retrospectively with intravenous fentanyl. These blocks afforded better postoperative pain control than fentanyl for patients after surgery.

A1310 Clinical Assessment of a Predictive Difficulty Score for Spinal Anesthesia
Christophe Laigle, M.D., Ph.D., Nicolas Byhet, M.D., Michael Radji, M.D., Franck Lhotellier, M.D., Hervé Dupont, M.D., Ph.D., Anesthesiology and Critical Care, University Hospital, Amiens, France. Difficulty to realize a spinal anesthesia (SA) can modify anesthetic strategy. Among factors influencing that, quality of body landmarks is essential. Our aim was to correlate a simple and reproducible score (4 grades) with assessment of SA difficulty. Receiving surgery under SA, 521 patients were enrolled in this study. A high grade in this score is statistically correlated with BMI, ASA status, difficulty of puncture and side events arising (p<0.0001). A grade ≥ 3 has a specificity of 92.3%, a sensitivity of 81.1% and an AUC of ROC curve of 0.905. An underestimation of the difficulty by anesthesiologists is noted both with predefined criterias (k=0.59) and really-felt difficulty (k=0.75). A routinely use of this score will become a new tool to safer perform SA.

A1311 Transdermal Buprenorphine for Postoperative Pain Control in Gynecological Laparatomic Surgery: A Prospective Randomized Study
Alessandro Laudani, M.D., Tommaso Setti, M.D., Filippo Sanfilippo, M.D., Yigal Levykin, M.D., Department of Anesthesiology and Intensive Care, Santa Maria degli Angeli Hospital, Pordenone, Italy. Transdermal buprenorphine is a new and safe approach for the management of moderate POP.

A1312 Comparison of Three Approaches to Saphenous Nerve Block
Joseph B. Rinehart, M.D., Kyle Ahn, M.D., Jane Ahn, M.D., Amy DeRoche, M.D., Kimberly Gimenez, M.D., Coral Sun, M.D., Phuong Hoang, R.N., Nishant Shah, M.D., Anesthesiology & Perioperative Care, University of California Irvine, Orange, CA. Three approaches to saphenous nerve block (subcutaneous cuff, perivenous, and trans-sartorial) in conjunction with sciatic block were compared using length of block, success rate, PACU narcotic usage, and overall satisfaction. In the 30 patients enrolled to date there are no significant differences in block outcomes or satisfaction.

A1313 Simple Approach to Sciatic Nerve Anatomy Revisited in Lateral Position
Sahil Chhabra, M.B., B.S., Sunitha Kandadai, M.D., Kimberly Williams, R.N., Anupama Wadhwa, M.D., Anesthesiology & Perioperative Medicine, University of Louisville, Louisville, KY. Performance of sciatic nerve blockade has been simplified compared with the conventional subgluteal approach with patients in prone position. In this study, we found that the experimental approach has an advantage over the conventional approach in patients in the lateral position as well.
Intravenous Acetaminophen Reduces Post-Operative Nausea and Vomiting: A Systematic Review and Meta-Analysis

Christian C. Apfel, M.D., Ph.D., Cyrill Hornuss, M.D., Alparslan Turan, M.D., Anesthesia and Perioperative Care, University of California, San Francisco, CA, Department of Anesthesiology, Ludwig-Maximilians-University, Munich, Germany, Anesthesia and Outcomes Research Institute, Cleveland Clinic Foundation, Cleveland, OH. We conducted a systematic review and identified 31 eligible studies with 2426 patients to evaluate the effect of I.V. acetaminophen on PONV. When I.V. acetaminophen was given either before surgery or intraoperatively the relative risk for nausea was 0.60 (0.46 to 0.78) or 0.62 (0.49 to 0.77). However, when I.V. acetaminophen was given at the onset of pain the relative risk was 1.11 (0.94 to 1.32). We conclude that prophylactic use of I.V. acetaminophen significantly reduces PONV.

Thromboelastograph® With Platelet Mapping as a Marker in Patients Who Require a Peripheral Nerve Block and are Receiving Clopidogrel and/or Aspirin

Jessen J. Mukalel, M.D., Alfonso Altamirano, M.D., Evan G. Pivalizza, M.D., Davide Cattano, M.D., Ph.D., Anesthesiology, University of California at Houston Texas Medical Center, Houston, TX. We present three cases demonstrating the use of TEG-PM in aiding the safe placement of a regional anesthetic for intraoperative anesthesia.

Intravenous Acetaminophen Reduces Post-Operative Nausea and Vomiting: A Systematic Review and Meta-Analysis

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Walter Sutton: Physician, Scientist, Inventor

Anthony L. Kovac, M.D., Gregory J. Ramirez, M.D., Anesthesiology, University of Kansas Medical Center, Kansas City, KS. Walter Sutton was an early 20th century surgeon known most prominently for his treatment on the chromosomes in heredity. He also was instrumental in early research on the colonial administration of ether, attracting the attention of surgeons and anesthetists, Drs Blake, Mayo, Binnie and Gwathmey.

Simulation-Based Training Improves Handoff Performance of Anesthesiology Trainees

Erin W. Pukenas, M.D., Kathleen Kwiat, M.D., Amanda Burden, M.D., Edward Deal, D.O., Irwin Gratz, D.O., Elaine I. Allen, Ph.D., Marc Torjman, Ph.D., Ph.D., Anesthesiology, Cooper University Hospital, Cooper Medical School of Rowan University, Camden, NJ, Babson College, Wellesley, MA. Handoffs are a source of medical error and a frequent occurrence for anesthesia trainees. This study highlights improved handoff performance of residents after the implementation of a simulation-based handoff skills training program.

How Classicists View Physician Historians Using the Iliad as a Model

George J. Crystal, Ph.D., M. Ramez Salem, M.D., Anesthesiology, Advocate Illinois Masonic Medical Center, Chicago, IL. We searched the literature for historical background, physiology, and clinical relevance relating to the effect of hypercapnia (HC) in the coronary circulation. In 1913, HC-induced coronary vasodilation was first described in isolated canine hearts. Over next century, a plethora of studies in animal models confirmed the effect, and elucidated its characteristics and mechanisms. Among the mechanisms are release of nitric oxide from the vascular endothelium, and chemoreceptor-mediated modulation of neural pathways. It took until 1998 for HC-induced coronary vasodilation to be demonstrated in man. The few human studies to date have been limited in scope and depth. More human research is needed, including an exploration of the influence of anesthetics, cardiovascular drugs, ventilatory conditions, and disease states.

Do Anesthesia Residents Seek Information to Address Self-Identified Weaknesses After Simulated Crisis Scenarios?

Michelle Y. Arnold, M.D., Sarah Zacharia, M.B.S., Sebastian Uijtdehaage, Ph.D., Yue Ming Huang, Ed.D., Sara Kim, Ph.D., Jamie Stiner, Majorie Stiegler, M.D., Anesthesiology, Medicine, Instructional Design and Technology, University of California, Los Angeles, Los Angeles, CA. The ACGME requires Practice-Based Learning as one of the six core competencies; physicians are expected to self-identify weaknesses and self-direct learning to address these. Debate exists as to whether physicians make accurate self-assessments, and whether their knowledge-seeking behaviors mirror their learning needs. This study investigated whether residents seek information about self-identified weaknesses when given an opportunity with faculty to do so. Overall, residents did not inquire about the same items they identified as weaknesses, although seniors did so more often than juniors.

Serious Gaming to Improve the Safety of Central Venous Catheter Placement

Daniel Katz, M.D., Samuel DeMaria, M.D., Prabal Khanal, M.S., Kanav Kahol, Ph.D., Anesthesiology, Mount Sinai School of Medicine, New York, NY, Arizona State University, Phoenix, AZ. About 5 million central venous catheters (CVCs) are placed annually in the United States, many with untoward complications. Currently, instruction on the placement of CVCs is usually non-standardized in an apprentice type style of see one, do one teach one. We therefore developed a serious game aimed at teaching participants a proper standardized technique in CVC placement in order to make this procedure more safe.
A1323 Medical Students’ Perspective on Large Group High-Fidelity Simulation Debriefing During Anesthesia Rotation

Abeer A. Arab, Jr., M.D., Abdulaziz M. Boker, M.D., Department of Anesthesia & Critical Care and Clinical Skills Center, King Abdulaziz University, Jeddah, Saudi Arabia. Fifth year medical students were surveyed during their first encounter with high fidelity human simulation as a teaching tool to implement crisis resource management training during their two-week anesthesia rotation.


Dinesh Kumar Jagannathan, M.D., Sukumar Desai, M.D., Anesthesiology, Brigham and Women’s Hospital, Boston, MA. In 1966, Henry Knowles Beecher, Professor of Anaesthesia at Harvard Medical School, published a landmark article that exposed gross violations of what we consider today to be ‘ethical conduct of clinical research.’ Acknowledging the difficulty in obtaining truly informed consent, he maintained that one must strive towards this goal. Over the next half century many changes have occurred in an attempt to protect human research subjects, with informed consent forming the backbone. We examine the evolution and role of informed consent in clinical research and whether it has evolved into a durable mechanism for protection as envisioned by Beecher. We also examine its current shortcomings and future challenges.

A1325 Alternative Methods to Teach History of Anesthesia

Manisha Desai, M.D., Sukumar P. Desai, M.D., Anesthesiology, University of Massachusetts Medical School, Worcester, MA, Anesthesiology, Perioperative and Pain Medicine, Brigham and Women’s Hospital, Harvard Medical School, Boston, MA. We describe our experience with alternative methods of teaching history of anesthesia - using novels, movies, and tours.

A1326 Volumetric Capnography: A Technological History of Commercial Devices

Michael B. Jaffe, Ph.D., Philips-Respironics, Wallingford, CT. From the Model 930 in the 1970s to mainstream devices of today, the availability of integrated CO2/flow devices for volumetric capnographic variables (e.g., VCO2 and dead space) has been steadily increasing. Their application as a tool for therapy and optimization of therapies in the critical care and anesthesia environments continues to expand.

A1327 Mentoring in Anesthesiology: Results of a Multi-Institutional Survey

Amanda R. Burden, M.D., Edward R. Deal, D.O., Irwin Gratz, D.O., Marc C. Torjman, Ph.D., Department of Anesthesiology, Cooper University Hospital, Cooper Medical School of Rowan University, Camden, NJ. The purpose of this study was to examine to what degree mentoring occurs in major US academic Anesthesiology Departments. Concomitantly, we examined the association between mentoring and progress toward achieving academic promotion among those surveyed.

A1328 Is Simulation a Source for Mentoring, Academic Productivity and Advancement?

Amanda R. Burden, M.D., Edward Deal, D.O., Irwin Gratz, D.O., Marc C. Torjman, Ph.D., Department of Anesthesiology, Cooper University Hospital, Cooper Medical School of Rowan University, Camden, NJ. This study examined whether involvement in simulation was associated with mentoring of junior faculty and with academic promotion. Simulation involvement was associated with more anesthesiologists who were mentored as well as more anesthesiologists who were on track for promotion.

A1329 START: A Multi-Center Study About the Educational Benefits of an Online Program to Prepare Anesthesia Interns for Residency

Lawrence Chu, M.D., M.S., Lynn Ngai, B.S., Viji Kurup, M.D., Tara Paulose, M.D., Brian Pitts, M.D., Adam Levine, M.D., Jason Epstein, M.D., Kyle Harrison, M.D., Stanford University, Stanford, CA, Keck School of Medicine of USC, Los Angeles, CA, Yale University School of Medicine, New Haven, CT, University of California Davis School of Medicine, Sacramento, CA, Mount Sinai School of Medicine, New York, NY. START is an educational program that uses informatics tools to deliver an enjoyable, useful and manageable preparation for anesthesia interns prior to beginning residency. By increasing interns’ anesthesia knowledge and subjective preparedness for residency, this prospective, multi-center study aims to yield educational benefits for interns at 4 anesthesia-training programs across the United States.

A1330 Development of a Perioperative Skills Course for PGY1 Residents

Letitia J. Easdown, M.D., Ryan Tomlinson, M.D., John T. Algren, M.D., Anesthesiology, Vanderbilt University Medical Center, Nashville, TN. This three-week orientation course was created to provide essential skills in perioperative medicine for Anesthesiology residents early in the PGY-1 year. The three week course offered 40 sessions of didactic or experiential learning. There was a significant improvement demonstrated in confidence in clinical skills.

A1331 Anesthesiology Trainees Underrate Performance in High-Fidelity Simulation

Marjorie Stiegler, M.D., Anahat Dhillon, M.D., Yue Ming Huang, Ed.D., Sebastian Uijtdehaage, Ph.D., Sarah Zacharia, M.S., Jamie Stiner, Sara Kim, Ph.D., University of California, Los Angeles, CA. Physicians’ capacity for accurate self-assessment is limited, with most tending to over-rate their performance. However, there is little information about self-assessment in high-fidelity anesthesia simulation environments. We examined whether anesthesiology trainees accurately assess their overall and nontechnical skills performance immediately after management of a simulated emergency. Contrary to existing literature, we found good correlation between faculty scores and resident self-scores, and noted a strong tendency for residents to underrate their performance.
A1332 Resident-led Debriefing Protocol Is Not Sufficient to Prevent Faculty Bias
Marjorie Stiegler, M.D., Sara Kim, Ph.D., Yue Ming Huang, Ed.D., Sebastian Uijtdehaage, Ph.D., Jamie Stiner, Sarah Zacharia, M.S., Anahat Dhillon, M.D., University of California, Los Angeles, Los Angeles, CA. The aim of this study was to evaluate whether self-reflection using the Non-Technical and Cognitive Skills tool (NTCS) would influence the qualitative content of post-simulation debriefing sessions, which are explicit opportunities for anesthesiology trainees to seek education about their performance gaps. Self-guided use of the NTCS tool may have been effective in teaching residents about NTCS skills, as evidenced by a slight trend toward increased discussion of NTCS topics. However, because we observed significant and possibly confounding differences by faculty member, we believe that faculty are strongly influencing the content of debriefing regardless of the resident-driven protocol.

A1333 Utilizing Standardized Patients to Simulate Ultrasound Experience for Anesthesia Residents: Results From a Two Year Experience
Michael R. Hernandez, M.D., Angela Blood, M.D., Matthew Satterly, M.D., Anesthesia and Critical Care, University of Chicago Simulation Center, University of Chicago, Chicago, IL. Focused experience in learning regional techniques can be provided by simulation. The use of standardized patient models, allows the learner to experience real anatomical variation that is encountered in clinical practice. We report our experience using standardized patients as part of our resident regional anesthesia curriculum.

A1334 Simulator Based TEE Training - The Initial Experience in China
Haibo Song, M.D., Fei Liu, M.D., Ji Li, M.D., West China Hospital of Sichuan University, Chengdu, China. This study is to evaluate the effect of our patented TEE simulator on learning performance of 20 anesthesia residents. All the 20 trainees reported that the simulator improved their spatial orientation and steering of the probe during TEE manipulation, which was particular useful for anesthetists, who usually did not have any foundation training in transthoracic echocardiography.

A1335 Ultrasound Assessment of Lumbar Spine, Can We Improve the Learning Process?
Alexandre Gnaho, M.D., M.B.A., Sébastien Bloc, M.D., Luc Mercadal, M.D., Christophe Pelletier, M.D., Thierry Villevielle, M.D., Stéphane Mérat, M.D., Jean Stephanazzi, M.D., Ph.D., Marc Emmanuel Gentili, M.D., Ph.D., Department of Anesthesia and Intensive Care, Hôpital d’Instruction des Armées Bégin, Saint Mandé, France, Department of Anesthesia and Intensive Care, CHP Claude Gallien, Quincy sous sénart, France, Department of Anesthesia and Intensive Care, Hôpital Cochin, Paris, France, Department of Anesthesia and Intensive Care, CHP Saint Grégoire, Saint Grégoire, France. Currently, there are very few practitioners of spinal ultrasound (US). This preliminary study evaluates the transfer of competence in spinal US. This work suggests that the teaching process usually applied in matter of spinal ultrasound, needs probably to be improved in order to give a better transfer of competence. In addition, the experience in US guided peripheral nerve blocks seems to facilitate spinal ultrasound learning.

A1336 Andranik (Andy) Ovassapian’s Airway Publications: A Way to Manage the Airway That Still Pertains to This Day
Yvon Bryan, M.D., Anesthesiology, Wake Forest School of Medicine, Winston-Salem, NC. Andranik (Andy) Ovassapian’s airway publications cover the essentials of airway management. He focused on the use of fiberoptic intubation in difficult airway management, though he never lost sight of the need to oxygenate and ventilate.

A1337 Comparison of Anesthesia Knowledge Retention between a Traditional Block Clerkship and an Integrated Longitudinal Clerkship
Anuj Aggarwal, B.S., Kyle Paredes, M.D., Kristina Sullivan, M.D., Mark Rollins, M.D., Department of Anesthesia and Perioperative Care, University of California, San Francisco, San Francisco, CA, University of California, Irvine, Irvine, CA, Parnassus Integrated Student Clinical Experiences (PISCES) is an integrated, longitudinal clerkship that incorporates anesthesia as part of its year-long curriculum. Traditional students complete a two week long continuous anesthesia clerkship. Our goal was to evaluate the long term retention of core anesthesia knowledge between these groups as assessed six months after completion of the clerkship. The six month retention of anesthesia knowledge was similar amongst the two groups. This suggests a longitudinal curriculum, despite discontinuous learning, may be equally effective as the traditional medical curriculum at retaining core anesthesia knowledge.

A1338 Skills After Two Days Workshop in Basic Ultrasound Examination for Regional Anesthesia
Xavier Sala-Blanch, M.D., Carles Morros, M.D., Oscar Aguirre, M.D., Dolores Pérez, M.D., Anna López, M.D., Belen De José Marta, M.D., Anesthesia, Hospital Clínic, University of Barcelona, Clínica Diagonal, Anesthesiology, Hospital Clínic, Barcelona, Spain, Hospital Sant Joan De Déu, Esplugues de Llobregat, Spain. Assessment of ultrasound skill acquisition following a 20-hour intensive course. Skill improves significantly, however the proportion of attendees who pass the exam was less than the expected rate of 85%.

A1339 Teaching Ultrasound Procedural Skills: Low Cost Phantoms and Animal Models
Jacek A. Wojtczak, M.D., Ph.D., Sonia Pyne, M.D., Ryan Shelton, M.D., Stefan Lucas, M.D., Department of Anesthesiology, University of Rochester School of Medicine and Dentistry, Rochester, NY. Several low cost phantoms and animal models (e.g porcine eye and upper airway) allowing teaching of the ultrasound procedural skills are presented.

A1340 Influence of Patient Behavior on Provider Communication During Pre-Anesthetic Consultations
Khensani Martelen, M.P.H., Jesse M. Ehrenfeld, M.D., Elisabeth H. Sandberg, Ph.D., Warren S. Sandberg, M.D., Department of Anesthesiology, Vanderbilt University Medical Center (VUMC), Department of Psychology, Vanderbilt University, Nashville, TN. We examined the role that patient asking plays in shaping the communication behaviors of anesthetic providers during pre-operative anesthetic consultations. With growing evidence on the benefits of effective communication, understanding how patients influence the behavior of anesthetic providers will help define more precisely the skills that will aid anesthetists in balancing the impartation of the appropriate information load and content to most effectively optimize operative preparation and care.
PO06-3 Critical Care - Sepsis, Inflammation and Metabolic Effects

CC
1-4 p.m.
Hall C-Area L

**A1341 Perioperative Surveillance of Myocardial Ischemia**

Lynne Gehr, M.D., Todd Gehr, M.D., Lorin Bachman, Ph.D., Don Farthing, Ph.D., VCU, Richmond, VA. Surveillance of hypoxanthine levels may provide a timely method for diagnosing myocardial ischemia before myocardial necrosis has occurred allowing earlier treatment and thus better patient outcome.

**A1342 Opioids Inhibit Lipopolysaccharide-Mediated Lethal Shock in Mice**

Tomoko Fukada, M.D., Rika Nakayama, M.D., Hiroko Iwakiri, M.D., Hideto Katou, M.D., Junji Yagi, M.D., Makoto Ozaki, M.D., Department of Anesthesiology, Department of Microbiology and Immunology, Department of Anesthesiology, Tokyo Women’s Medical University, School of Medicine, Tokyo, Japan. We examined whether survival rate was meditated by the μ-opioid receptor in vivo and in vitro using an LPS-mediated lethal shock model in mice, binding of morphine and naloxone to the μ-opioid receptor improved the survival in vivo and in vitro. Therefore, opioids that bind to the μ-opioid receptor may inhibit the cytokine storm and increase survival of patients in shock if they are used considering administration time, route, and dose.

**A1343 The Interaction of Chronic Glycemia on the Relationship Between Acute Glycemia and Mortality in Critically Ill Patients**

Moritoki Egi, M.D., Shiho Yoshitaka, M.D., Tomoyuki Kanazawa, M.D., Takashi Matusuki, M.D., Ph.D., Yuichiro Toda, M.D., Ph.D., Kiyoshi Morita, M.D., Ph.D., Department of Anesthesiology and Resuscitology, Okayama University Hospital, Okayama, Japan. We conducted single center retrospective study including 2162 ICU patients to test whether chronic hyperglycemia would modulate the association between acute glyceemia and outcome. In patients with ≤6.0% of HbA1c level, hospital mortality was increased according to glycemia concentration in ICU (GluTw) (p=0.003). In patients with 6.1–8.0% of HbA1c, hospital mortality was not differed according to GluTw (p=0.84). In patients with ≥8.1% of HbA1c, hospital mortality was decreased according to GluTw (p=0.04). In conclusion, there was a significant interaction between pre-existing hyperglycemia and association between acute glucose control and mortality in critically ill patients.

**A1344 Bach1 mRNA Expression is a Novel, Clinical Marker of Heme-Mediated Oxidative Liver Injury During Living Donor Liver Transplantation**

Hioroko Shimizu, M.D., Ph.D., Hiroshi Morimatsu, M.D., Ph.D., Junya Matsumi, M.D., Ph.D., Emiko Omori, M.S., Takashi Matusuki, M.D., Ph.D., Toru Takahashi, M.D., Ph.D., Kiyoshi Morita, M.D., Ph.D., Anesthesiology & Resuscitology, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama City, Japan, Nursing, Faculty of Health and Welfare Science, Okayama Prefectural University, Soja City, Japan. We demonstrated that Bach1 gene expression levels were significantly increased in the grafted livers during LDLT. The increased Bach1 gene expression levels significantly correlated not only with HO-1 gene expressions, but also with early, clinical graft function after LDLT. These results strongly suggest that Bach1 gene expression levels might be a novel, clinical marker of heme-mediated oxidative tissue injury.

**A1345 Fetal But Not Adult Acetylcholine Receptors are Upregulated Following Muscle Immobilization and Systemic Inflammation**

Christopher Kramer, M.D., Stefan Schaller, M.D., Alexander Kretschmer, Student, Claire Delbridge, M.D., Manfred Blobner, M.D., Jeevendra Martyn, M.B.,B.S., Heidrun Fink, M.D., Klinik für Anaesthesiologie, Technische Universität München, Klinikum rechts der Isar, Munich, Germany; Department of Anesthesia, Critical Care and Pain Medicine, Shriners Hospital for Children, Massachusetts General Hospital, Harvard Medical School, Boston, MA, Institut für Allgemeine Pathologie und Pathologische Anatomie, Technische Universität München, Klinikum rechts der Isar, Munich, Germany. Muscle immobilization – and even more, the combination with inflammation – upregulates fetal acetylcholine receptors while the adult receptor subunit remains unaffected.

**A1346 Prevention of Hemorrhagic Shock-induced Acute Lung Injury by Biliverdin Administration**

Junko Kosaka, M.D., Hiroshi Morimatsu, M.D., Ph.D., Hiroko Shimizu, M.D., Ph.D., Toru Takahashi, M.D., Ph.D., Kiyoshi Morita, M.D., Ph.D., Department of Anesthesiology and Resuscitology, Okayama University Medical School, Faculty of Health and Welfare Science, Okayama Prefectural University, Okayama, Japan. We investigated the hypothesis that biliverdin (BV) administration before hemorrhagic shock and resuscitation (HSR) could ameliorate HSR-induced lung injury in rats. BV administration significantly ameliorated HSR-induced lung injury and attenuated TNF- and iNOS mRNA expressions of the lungs.

**A1347 The Temporal Change of MASP-2 is Associated With In-Hospital Mortality in Septic Shock Patients**

Ming Zhang, M.D., Ph.D., Jean Charchaflieh, M.D., Jiandong Wei, M.D., Georges Labaze, M.D., Yunfang Hou, M.D., Benjamin Babarsh, B.S., Helen Stutz, D.O., Samrat Worah, M.D., Anesthesiology, SUNY Downstate Medical Center, Brooklyn, NY, Anesthesiology, Yale University School of Medicine, New Haven, CT. Acute decrease of MASP-2 at the early phase of septic shock may be associated with in-hospital mortality.
A1348 Hypogammaglobulinemia Is Associated With Mortality in Patients With Severe Sepsis and Septic Shock
Tomohiko Kimijima, M.D., Yoshihiko Masuda, M.D., Ph.D., Hitoshi Imaiumi, M.D., Ph.D., Hiroomi Tatsumi, M.D., Ph.D., Ryoko Kyan, M.D., Kyoko Goto, M.D., Michiaki Yamakage, M.D., Ph.D., Department of Anesthesiology, Department of Critical Care Medicine, Sapporo Medical University, Sapporo, Japan. We assessed serum IgG levels in patients with severe sepsis and septic shock. There was a significant correlation between serum IgG levels and 28-day mortality, and 28-day mortality in sepsis patients with low IgG levels (IgG<650mg/dl) was significantly higher than that in patients with normal IgG levels (≥650mg/dl). This study provides a rationale for clinical research to assess serum IgG as a marker for indication of IVIG therapy in patients with severe sepsis and septic shock.

A1349 Potential Role of Caveolin-3 in Lymphocyte Activation
Chinh Tran, M.D., Ph.D., Mike Migita, B.S., Creed M. Stary, M.D., Ph.D., Sarah E. Kellerhalts, B.S., Brian P. Head, Ph.D., Fiyush M. Patel, M.D., Hemal H. Patel, Ph.D., David M. Roth, M.D., Ph.D., Anesthesiology, University of California, San Diego, San Diego, CA. Examining the role of caveolin-3 in lymphocyte activation, cytokine production and differentiation.

A1350 Sauchinone, a Lignan From Saururus Chinesis, Attenuates Neutrophils Pro-Inflammatory Activity and Acute Lung Injury
Seong Heon Lee, M.D., Hong-Beom Bae, M.D., Ph.D., Cheol-Won Jeong, M.D., Ph.D., Seong Wook Jeong, M.D., Ph.D., Myung Ha Yoon, M.D., Ph.D., Sang Hyun Kwak, M.D., Ph.D., Chonnam National University Medical School, Gwangju, Republic of Korea. This study was performed to clarify the effects of Sauchinone, a lignan from Saururus chinesis, on lipopolysaccharide (LPS)-induced acute lung injury. Neutrophils were cultured with or without sauchinone for 1 hours and then exposure to LPS for 1 hr or 6 hrs. LPS was injected intratracheally to mice lung 1 hr after sauchinone administration. Sauchinone increased AMPK activity in murine bone marrow neutrophils. Sauchinone decreased production of TNF-α, IL-6 and MIP-2 as well as degradation of IkappaBalpha. These effects of sauchinone were reversible by the specific AMPK inhibitor in LPS stimulated neutrophils. Administration of sauchinone to mice was associated with decreased severity of LPS-induced lung injury.

A1351 Urine Flow as an Early Predictor of Acute Kidney Injury After Cardiac Surgery
Micha Y. Shamir, M.D., Mor Grinstein, Ph.D., Ira Michaels, M.D., Oz Shapiro, M.D., Charles Weissman, M.D., Dept of Anesthesiology, Division of Anesthesiology and OCM, Hadassah Hebrew University Medical Center, Jerusalem, Israel, Dept. of Anatomy and Cell Biology, Rappaport Faculty of Medicine, Technion-Israel Institute of Technology, Haifa, Israel. We tried to find if 1minute urinary flow rate (1mUFR) carries information regarding renal function during cardiac surgery. We found that 1mUFR increased significantly when cardiopulmonary bypass was initiated. The magnitude of increase was significantly higher in patients with normal preoperative serum Creatinine. Furthermore, on bypass 1mUFR was significantly lower in patients that developed post-operative AKI.

A1352 Effect of Erythropoietin on Ischemia-Reperfusion Injury and Recovery of Donated Liver in Patients Undergoing Liver Transplantation
Young-Chul Yoo, M.D., Jeong-Rim Lee, M.D., Department of Anesthesiology and Pain Medicine, Anesthesia and Pain Research Institute, Yonsei University College of Medicine, Seoul, Republic of Korea. A single intravenous bolus of erythropoietin administrated to recipients and donors after anesthetic induction facilitated the recovery of postoperative liver function in patients undergoing living donor liver transplantation, implicating its potential role as a protective agent.

A1353 Early Enteral Nutrition is Acceptable in Cyanotic Patients With Systemic-Pulmonary Shunt After Cardiovascular Surgery
MinHye So, M.D., Yoshihito Fujita, M.D., Ph.D., Takeshi Sugira, M.D., Ph.D., Nobuyoshi Kusama, M.D., Ph.D., Kazuya Sobue, M.D., Ph.D., Department of Anesthesiology and Medical Crisis Management, Nagoya City University Graduate School of Medical Sciences, Nagoya, Japan. The cases with cyanotic congenital heart diseases, especially the cases with systemic-pulmonary shunt have been reported that they have risks to gastrointestinal complications (GCs). We studied GCs in pediatric patients after cardiovascular surgery, separating them into two groups: cyanotic and acyanotic groups. In our study, patients were well tolerated to early EN even in cyanotic patients with systemic-pulmonary shunt.

A1354 Interleukin-19 Upregulates Keratinocyte Growth Factor Expression and Promotes Cutaneous Wound Healing
Chung-Hsi Hsing, M.D., Ph.D., Ching-Hua Yeh, Ph.D., L. y. Wang, M.S., Ding-Ping Sun, M.D., Edmund Cheung So, M.D., Ph.D., Chi-Mei Medical Center, Tainan, Taiwan, Chung Jung Christian University, Graduate Institute of Medical Sciences, Taiwan. In mice wound healing model, IL-19 and keratinocyte growth factor (KGF) were significantly increased in the epithelialization-phase of wounded skin tissue. Induced IL-19 upregulates KGF expression and promoted cutaneous wound healing process.

A1355 Persistent Hyperglycemia Alters CD4 T Lymphocyte Subsets in Gut-Associated Lymphoid Tissue
Katsuya Mori, M.Sc., Hiroshi Morisaki, M.D., Ph.D., Toru Igarashi, M.D., Takeshi Suzuki, M.D., Ph.D., Junzo Takeda, M.D., Ph.D., Anesthesiology, Keio Univercity School of Medicine, Tokyo, Japan. We demonstrated that persistent hyperglycemia altered the expression of CD4 T lymphocytes transcriptional factor in GALT, suggesting that hyperglycemia per se contributes to the modulation of host immunity.

A1356 Regulatory T Cells Contribute to the Protective Effect in Renal Ischemia Reperfusion Injury
Cao Jun, M.D., Li Qingshu, M.D., Liu Li, M.D., Min Su, M.D., Department of Anesthesiology, The First Affiliated Hospital of Chongqing Medical University, Department of Pathology, Chongqing Medical University, Chongqing, China. The study investigated the dynamic changes of peripheral CD4CD25CD127 Tregs in mice renal ischemia reperfusion(IRI). It showed the peripheral Tregs expanded in the early phase after IRI. Depletion of Tregs resulted in worse outcome of renal function and kidney histology. These data revealed the protective role of Tregs in renal ischemia reperfusion. The peripheral CD4CD25CD127 Tregs might a potential indicator for renal function recovery after IRI.
A1357 Effect of Balanced Versus Unbalanced HES Solution on Inflammatory Response in a Rat Model of Peritonitis

Martin Umer, M.D., Martin Schläpfer, M.D., Stefanie Voigtsberger, M.D., Ralph Schimmer, M.D., Beatrice Beck-Schimmer, M.D., Institute of Physiology, Institute of Anesthesiology, University Hospital Zurich, Zurich, Switzerland. The influence of fluid resuscitation with HES 6% in unbalanced versus balanced solution on inflammatory mediator expression was investigated in intestinal and hepatic tissue in a rat model of fecal peritonitis.

A1358 Direct Oxygen Pressure Monitoring in Rat Subcutaneous Tissue and Muscle in an Experimental Sepsis Model

Masayuki Ozaki, M.D., Ph.D., Shigeki Fujitani, M.D., Ph.D., Akiko Hosoyama, Maiko Shiozaki, Takamitsu Kodama, M.D., Yasuhiko Taira, M.D., Ph.D., Department of Emergency and Critical Care Medicine, St. Marianna University School of Medicine, Kawasaki, Japan. Direct measuring of tissue oxygen pressure is useful for monitoring of septic shock and early suspected septic shock. Decrease in oxygen pressure in the subcutaneous tissue and muscle in sepsis was indicative of microcirculatory failure prior to the detection of the collapse of the vital signs.

A1359 Bicarbonate Therapy Cuts Oxygen Availability, a Cause for Poor Outcomes?

John M. Watkins-Pitchford, M.B.,B.S., Colleen Rodriguez, M.D., Jimmie P. Watkins, M.D., Ph.D., Anesthesiology, McGuire Veterans Administration Medical Center, Richmond, VA, Anesthesiology, McGuire VAMC, Richmond, VA. Bicarbonate therapy may be associated with poor outcomes. Alkaline left-shift of the Hemoglobin-oxygen dissociation curve severely decreases oxygen release at tissue, maybe further contributing to intracellular acidosis. We calculate the shift in terms of Functional Hemoglobin, a measure for the clinician.

A1360 Comparing the Incidence of Post-reperfusion Syndrome in Orthotopic Liver Transplantation Using Live Donor Versus Deceased Donor Grafts: A Propensity Score Matched Analysis

Annu L. Jayaraman, M.D., Ph.D., Takashi Matsusaki, M.D., Ph.D., Yi-Fan Chen, B.S., Anthony Fabio, Ph.D., Tetsuro Sakai, M.D., Ph.D., Anesthesiology, University of Pittsburgh, Pittsburgh, PA, Okayama University Medical School, Okayama, Japan. The aim of this retrospective analysis was to use propensity score matching to accurately and separately compare the effects of donor graft type (deceased donor versus live donor) and recipient characteristics on the incidence of post-reperfusion syndrome in patients undergoing liver transplantation. As regards this temporally proximal outcome, these data indicate that recipient factors, particularly MELD score, may be more important than use of DD or LD graft.

A1361 Regulation of Tubular Potassium Transport During Experimental Sepsis

Michael Bucher, M.D., Frederike Turner, Christoph Raspé, M.D., Christoph Sauvant, Ph.D., Department of Anesthesiology and Operative Intensive Care, University Hospital Halle, Halle, Germany. In sepsis renal amount of ROMK1 is impaired by IL1β, TNFα and INFγ. JNK or p38 are induced by these cytokines which also diminish ROMK1. We investigated how JNK or p38 affect ROMK1 amount in LPS induced sepsis in vivo and in vitro. LPS increased cytokines and decreased ROMK1. Inhibition of MAPKs impaired amount of cytokines and decreased ROMK1. LPS did not affect JNK or p38 in renal tissue indicating ROMK1 regulation by MAPK dependent cytokine release in circulating macrophages. In cell culture cytokines decreased ROMK1 amount independently of JNK or p38. Inhibition of JNK or p38 decreases pro-inflammatory cytokines and increases renal ROMK1 in sepsis. This is not due to an effect in renal tissue but likely in macrophages. The cellular signaling has to be further investigated.

A1362 Thrombelastometric Detection of Clotting Factor XIII-Deficiency in Cardiac Surgery Patients

Christoph Raspé, M.D., Michael Bucher, Ph.D., Department of Anesthesiology, University of Halle, Halle, Germany. In summary “FXIII-TEM”-test does not seem to detect FXIII-deficient patients in cardiac surgery. Furthermore postoperative blood loss could not be predicted either by ROTEM nor by laboratory analysis of FXIII. In-vitro administration of FXIII appears to improve haemostasis.

A1363 Lipopolysaccharide Up-Regulates Alpha7 Acetylcholine Receptors: Stimulation With GTS-21 Mitigates Growth Arrest of Macrophages and Improves Survival In Burned Mice

Mohammed A. S. Khan, Ph.D., Mina Farkhondeh, B.S., Jennifer Crombie, B.S., Leslie Jacobson, Ph.D., Masao Kaneki, M.D., Ph.D., Jeevendra J. Martyn, M.D., F.R.C.A. Department of Anesthesia, Massachusetts General Hospital, Shriners Hospitals for Children, Boston, MA. Up-regulation of α7AcRhs by LPS and their stimulation with GTS-21 will not only protect macrophages from LPS-induced toxicity but also reduce mortality in burned patients.

A1364 Vascular Graft Infection and E-Test for Optimizing Empiric Antibiotic Therapy

Laurent Stecken, Sr., M.D., Aurélie San Miguel, M.D., Fatima Meali, M.D., Laetitia Orlontenghi, M.D., Alice Quinart, M.D., Francois Szark, Ph.D., Service d’anesthésie réanimation 1, Aquitaine Microbiologie, CHU Pellegrin, Bordeaux, France. In this observational study we try to assess the contribution of the E-test in early diagnosis of bacterial vascular graft infection (VGI). The reading profiles of global sensitivities to the antibiotics tested was carried out as early as 24 hours. Our study shows an interest of sonication for the extraction of bacteria associated with the biofilm and the E-test in support of VGI.
A090 Central Photoplethysmography Accurately Detects Respiratory Rate During Sleep
Richard J. Mellker, M.D., Ph.D., Donn M. Dennis, M.D., Neil R. Euliano, Ph.D., Mickey W. Stahl, M.S., Richard B. Berry, M.D., Anesthesiology, University of Florida, Gainesville, FL, Convergent Engineering, Gainesville, FL, Pulmonary, Critical Care and Sleep Medicine, University of Florida, Gainesville, FL. Respiratory rate data derived from central photoplethysmography measurements correlated well with conventional methods used for detection during sleep studies. Presently no single method is sufficiently reliable for accurate detection in non-intubated spontaneously breathing patients. Central photoplethysmography deserves further evaluation.

A091 Implications of Resolved Hypoxemia on the Utility of Desaturation Alerts Sent From an Anesthesia Decision Support System to Supervising Anesthesiologists
Richard Epstein, M.D., Franklin Dexter, M.D., Ph.D., Anesthesiology, Jefferson Medical College, Philadelphia, PA, University of Iowa, Iowa, IA. Low utility of sending threshold hypoxemia alerts automatically to supervising anesthesiologists should be expected, due to a high false alert rate. Results suggest that the principal research focus for physiologic alarms from AIMS should be on developing more sophisticated alerts and processes within rooms for the anesthesia care provider to initiate treatment promptly, to interpret and/or correct artifacts, and to make it easier to call for assistance via a rapid communication system.

A092 System for Standardization of Capnometry Algorithms
Joseph Orr, Ph.D., Christina Long, M.S., Lara M. Brewer, Ph.D., Anesthesiology, University of Utah, Salt Lake City, UT. We propose a method of standardizing capnometry algorithms using a standard set of capnographic waveforms that can be re-played using a CO2 waveform generator. We developed a high-fidelity simulator that physically creates a stream of gas containing CO2 concentrations that match that of previously recorded clinical data.

A093 Reliability of Masimo Rainbow Acoustic Monitoring in Patients Undergoing Elective Procedures Under General Anesthesia
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. The Masimo Respiratory Acoustic Monitor is an FDA-approved device for measuring respiratory rate. With IRB approval, we compared this monitor to respiratory inductance plethysmography during GA LMA, and for 30 minutes in the PACU using Bland Altman analysis. This analysis was also performed for capnometry using an Oridion Capnostream 20. Precision and bias were similar. RRA may provide equivalent accuracy to capnometry in monitoring patients in the perioperative period.

A094 Accuracy of Continuous Non-invasive Respiratory Rate Derived From Pulse Oximetry in the Post-Anesthesia Care Unit
Michael L. Mestek, Ph.D., Paul S. Addison, Ph.D., Anna-Maria Neitenbach, M.D., Sergio D. Bergese, M.D., Scott D. Kelley, M.D., Respiratory & Monitoring Solutions, Covidien, Boulder, CO, Anesthesiology & Neurological Surgery, Wexner Medical Center at The Ohio State University, Columbus, OH. Respiratory depression remains a clinically challenging issue in postoperative pain management. In this study, we have demonstrated the accuracy of a continuous non-invasive respiratory rate monitoring application in the postanesthesia care unit. This application may have utility in augmenting respiratory monitoring capabilities in this area of care.

A095 Detection of Opioid-Induced Respiratory Depression With Pulse Oximetry-Derived Respiratory Rate Monitoring
Scott Kelley, M.D., Anna-Maria Neitenbach, M.D., Anne R. Kinney, M.S., Michael L. Mestek, Ph.D., Respiratory & Monitoring Solutions, Covidien Respiratory & Monitoring Solutions, Boulder, CO. We tested the ability of a new pulse oximetry-based method of continuous respiratory rate monitoring to detect the onset of opioid-induced respiratory depression in volunteers. Compared to routine pulse oximetry, the respiratory rate monitoring was more effective to identify the onset of respiratory depression.

A278 Use Caution When Applying Magnets to Pacemakers or Defibrillators for Surgery
Peter Schulman, M.D., Stephan Panaro, M.D., Marc A. Rozner, M.D., Ph.D., Anesthesiology and Perioperative Medicine, Oregon Health & Science University, Portland, OR, Anesthesiology, Warren Alpert Medical School of Brown University, Providence, RI, Anesthesiology and Cardiology, University of Texas MD Anderson Cancer Center, Houston, TX. Both the American Society of Anesthesiologists and the Heart Rhythm Society recommend preoperative pacemaker or implanted defibrillator evaluation. Yet many practitioners completely forgo these preoperative checks and start a surgical case without much knowledge of the device or its functionality owing to inconvenience, as well as the assumption that magnet placement always confers safe care. We present 3 cases wherein the failure to obtain important information led to preventable adverse outcomes and patient injury, such as inappropriate shocks and the need for CPR.
Cerebral Desaturation Events During Shoulder Surgery in the Beach Chair Position: General vs. Regional Anesthesia

Glenn S. Murphy, M.D., Joseph Szokol, M.D., Michael Avram, Ph.D., Torin Shear, M.D., Anesthesiology, NorthShore University HealthSystem, Evanston, IL. Critical cerebral desaturation events (CDE) occurred in more than one-half of general anesthesia patients undergoing shoulder arthroscopy in the beach chair position. In contrast, CDE were absent in patients having the same procedure performed under regional anesthesia with sedation.

Surgical Home: Anesthesiologist-Directed Preoperative Triage Reduces Unnecessary Testing and Associated Economic Burden

Sharon Carrillo, M.D., M.S., Melody J. Ritter, M.D., James R. Douglas, M.D., Ph.D., Andre’s Rubio, B.A., Armin Schubert, M.D., M.B.A., Anesthesiology, Information Services, Ochsner Medical Center, New Orleans, LA. Anesthesiologist-directed preoperative clinics are a component of the “Surgical Home™” concept, a concept identified to create substantive savings in surgical health care. Our premise is that dedicated anesthesiologists likely have more insight into surgical stresses and test requirements than primary care physicians who, with surgeons, still predominantly “clear” most patients in U.S. clinical practice. Using an anesthesiologist-directed comprehensive preoperative triage for ordering tests and consults in total knee and total hip arthroplasty cases, the frequency of common tests was reduced with favorable impact on the associated economic burden.

Pattern Recognition Software-Assisted Analysis of Diagnostic Images for Identification of Implanted Medical Devices (IMDs): Technology Feasibility Study

Vicko Gluncic, M.D., Ph.D., Mario Moric, M.S., Greg Shakhnarovich, Ph.D., Sandra C. Toleikis, M.A., Srdan Kobsa, Ph.D., Sameer A. Ansari, M.D., Ph.D., Kenneth Tuman, M.D., Anesthesiology, Rush University Medical Center, Chicago, IL, Toyota Technological Institute at Chicago, Chicago, IL, Yale University School of Medicine, New Haven, CT, Radiology, Northwestern Memorial Hospital, Chicago, IL. IMD identification is critical for safe and efficient patient management upon admission and is emerging as a critical safety issue due to issues with medical record availability or reliable patient self-report. We developed pattern recognition algorithms capable of rapidly identifying IMDs in X-rays (XR) and tested them under various configurations. Testing showed high identification accuracy rates. Implementation of such tools should lead to improving safety and outcomes for patients with IMDs.

Using the AIRS Interface to Streamline Local and National Anesthesia Incident Reporting

Catherine L. Chen, M.D., M.P.H., Angela K. Lipshutz, M.D., M.P.H., Adam Jacobson, B.S., David Robinowitz, M.D., James Caldwell, M.B., Ch.B., Department of Anesthesia and Perioperative Care, University of California, San Francisco, San Francisco, CA. The Anesthesia Quality Institute (AQI) recently launched the Anesthesia Incident Reporting System (AIRS), the first nationwide system for collecting individual adverse events from anesthesia, pain management and perioperative care. However, direct reporting to a national site has potential problems. A local incident reporting system with programmed upload into the national reporting system is simple to set up. This system can be used to both meet the goals of AIRS and AQI while preserving local control of institution-specific errors and near misses.

Is It a Fair Game? Demographic Determinants of Medical Center SCIP Scores

David B. Glick, M.D., Samantha Neuwirth, B.A., Avery Tung, M.D., Anesthesia & Critical Care, University of Chicago, Chicago, IL. Our analysis shows that SCIP compliance has risen since 2006 and that hospitals with low SCIP ratings are likely to remain at the bottom and that heightened competition is correlated with lower SCIP scores.

Impact of an Intraoperative Diabetes Notification System on Perioperative Outcomes

Jesse M. Ehrenfeld, M.D., M.P.H., Kelsey L. McCartney, M.B.A., Jason Denton, B.S., Brian Rothman, M.D., Robert Peterfreund, M.D., Ph.D., Vanderbilt University, Nashville, TN, Massachusetts General Hospital, Boston, MA. We report preliminary results of a prospective multicenter trial of a perioperative glucose monitoring alert which revealed a reduction in 14-day hospital readmission rates among diabetic surgical patients.

Effects of Tidal Volume, Ventilation Rate and Oxygen Flow on Delivered FiO2 During Manual Ventilation With a Resuscitation Bag

Timothy P. Smith, Sr., M.D., David Maguire, M.D., Anesthesiology, Thomas Jefferson University Hospital, Philadelphia, PA, Thomas Jefferson University Hospital, Philadelphia, PA. The aim of this study was to explore the interaction between oxygen flow rate, tidal volume and respiratory rate as they impact the FiO2, during use of an adult resuscitation bag with oxygen reservoir. Many patients requiring manual ventilation are excessively ventilated by care providers, seen often in the clinical environment as well as during simulation exercises. Ventilating an artificial test lung using an Ambu SPUR II resuscitation bag we demonstrated the need to maintain high oxygen flows in the setting of high minute ventilation to avoid substantial decreases in delivered FiO2.

Lower Body Negative Pressure: Historical Perspective, Research Findings, and Clinical Applications

George J. Crystal, Ph.D., M. Ramez Salem, M.D., Anesthesiology, Advocate Illinois Masonic Medical Center, Chicago, IL. Lower body negative pressure (LBNP) is a technique that redistributes blood from the upper body to the dependent regions of the pelvis and legs, thus reducing central venous pressure (CVP) and venous return. The technique was first described in 1952 as an adjunct to drug-induced hypotensive anesthesia. In the mid-1960s, the use of LBNP was extended to study the cardiovascular responses to hemorrhage and orthostatic stress, especially that associated with the weightlessness of space flight. Subsequently, LBNP has been employed in myriad investigational studies and as a diagnostic tool to uncover cardiovascular and autonomic dysfunction.
A287 Rapid Sequence Induction/Intubation - To Ventilate or Not to Ventilate: A Historical Perspective

Juliana Clark-Wronski, B.M., M. Ramez Salem, M.D., George J. Crystal, Ph.D., Anesthesiology, Advocate Illinois Masonic Med Ctr, Chicago, IL. We examined the literature for the origin of the recommendation to omit manual ventilation during the rapid sequence induction intubation (RSII) technique. The technique was originally described by Snow and Nunn in 1959, who combined it with foot-down tilt, and by Sellick in 1961, who combined it with cricoid pressure. These investigators used manual ventilation prior to intubation. It was Wylie in 1963 and Stevens in 1964, who introduced the concept that the lungs must not be manually ventilated. Ever since, reviews and textbooks have perpetuated the avoidance of manual ventilation of the lungs. Current teaching has gone so far as to erroneously label the "original RSII technique" as the one in which manual ventilation is avoided, and the "modified RSII technique" as the one in which manual ventilation is permitted.

A288 A History in Teaching the Sellick Manuever (Cricoid Pressure): Distinguishing Between Man, Myth and Legend

Lauren Hoke, B.S., Joseph May, B.S., Yvon F Bryan, M.D., Anesthesiology, Wake Forest School of Medicine, Winston Salem, NC. The Sellick maneuver (cricoid pressure) has been historically described in textbooks and articles since 1961. Certain authors in the 1970s began to adapt the maneuver for different purposes or attempted to improve the maneuver from its original purpose. However, this has lead to discrepancies in teaching and accurately depicting the application of cricoid pressure.

A289 Horace Wells Memorials in the City of Hartford, Connecticut

Antonio Aponte-Feliciano, M.D., Sukumar P. Desai, M.D., Manisha S. Desai, M.D., Anesthesiology, University of Massachusetts Medical School, Worcester, MA, Brigham and Women Hospital, Boston, MA. Photographic demonstration of the memorials throughout the city of Hartford, Connecticut; dedicated to honor Horace Wells’ life and novel discovery.

A290 Arthur Läwen: A Surgeon Before His Time

Michael Goerig, M.D., M.S., Irmgard Blanc, M.D., M.B.A., Department of Anesthesia and Intensive Care, University Hospital Hamburg, Hamburg, Germany. The surgeon Arthur Läwen had an anesthetic faible. This resulted in outstanding contributions in the field of general as well as regional anesthetic methods. Even today these procedures are integral part of the anesthesiologist’s armament.

A291 Physiological Monitoring and Record-keeping in Anesthesia: An Unrecorded Contribution

Peter J. Featherstone, M.B., B.Ch., C. Neil Adams, M.B., B.Ch., Douglas R. Bacon, M.D., Department of Anaesthesi, Addenbrooke’s Hospital, Cambridge, Department of Anaesthetics, West Suffolk Hospital, Bury St Edmunds, United Kingdom, Department of Anesthesiology, Wayne State University, Detroit, MI. Monitoring of physiological parameters coupled with the maintenance of accurate and contemporaneous patient records are considered fundamental components of modern anesthetic practice. While those who introduced record-keeping and invented monitoring devices have received considerable attention from historians, those anaesthetists who rapidly adopted such techniques and attempted to disseminate their use among the wider professional community have received little recognition. This paper reviews the significant contribution of one such individual - Elmer Isaac McKesson.

A292 History of Intravenous Administration of Halogenated Inhalational Anesthetics

Pamela Zollinger, M.D., Raymond Roy, M.D., Ph.D., Anesthesiology, Wake Forest School of Medicine, Winston-Salem, NC. For more than 100 years anesthesiologists have tried to administer traditionally inhaled halogenated agents intravenously, usually by dissolving them in various lipid solutions. The potential advantages would be elimination of the vaporizer and more rapid changes in anesthetic depth.

A293 A Biographic Reminiscence: Heinrich Friedrich Wilhelm Braun - The Scientist Among the Pioneers of Regional Anesthesia Techniques

Michael Goerig, M.D., M.S., Irmgard Blanc, M.D., Ph.D., Alwin E. Goetz, M.D., Ph.D., Department of Anesthesia and Intensive Care, University Hospital Hamburg, Hamburg, Germany. Heinrich Braun, a surgeon from Leipzig, was a convinced promoter of all kind of regional as well as local anesthetic techniques. Involved with the development of new techniques of these pain alleviating procedures, Braun became a well respected personality in this respect worldwide.

PD06-3 CRITICAL CARE: TRANSPLANTATION

CC
10-11:30 a.m.
Room 101

A294 Urinary NGAL as Marker of Hepato-Renal Syndrome

Gebhard Wagener, M.D., Moury Minhas, B.S., Andrew Young, M.D., Anesthesiology, Columbia University, New York, NY. Urinary NGAL is a good marker of hepato-renal syndrome prior to liver transplantation.

A295 Intraoperative Changes in Serum Sodium During Liver Transplantation: Analysis of Outcomes

Jana Hudcova, M.D., Robin Rutherford, M.P.H., Iwona Bonney, Ph.D., Roman Schumm, M.D., Department of Surgical Critical Care, Lahey Clinic, Wilmington, MA, Tufts Medical Center, Boston, MA. In this retrospective analysis of 165 patients undergoing liver transplantation, the intraoperative serum sodium concentration universally increased. There is a significant impact on postoperative outcomes related to the extent of the serum sodium rise. Intraoperative serum sodium homeostasis may be an under-recognized target to improve outcomes.

A296 Predicting Need for Intraoperative Hemodialysis During Liver Transplantation in Patients With Renal Failure

Anahat Dhillon, M.D., Vatche Agopian, M.D., Abbas Rana, M.D., Huy Vo, B.S., Borin Hou, B.S., Ronald Basurtul, M.D., Surgery, Nursing, University of California Los Angeles, Los Angeles, CA. Intraoperative hemodialysis is a limited resource and its utility during liver transplantation is unclear. We showed a trend toward improved outcomes with planned use of intraoperative hemodialysis and identified several predictors for need for intraoperative hemodialysis.
A297 The Predictors for Continuous Renal Replacement Therapy in Liver Transplant Patients

Sungwon Na, M.D., Jeong Min Kim, M.D., Young Jun Oh, M.D., Anesthesiology and Pain Medicine, Yonsei University College of Medicine, Seoul, Republic of Korea. We retrospectively reviewed the data of 148 liver transplant patients and analyzed risk factors for postoperative renal replacement therapy. Hepatic encephalopathy, MELD score, graft from deceased donor, and high amount of postoperative bleeding were related to renal replacement.

A298 Perioperative Dynamics of Plasma Cyclic Guanosine Monophosphate Distribution During Liver Transplantation

Michael Sharghi, M.D., Dmitri Bezinover, M.D., Priti Dalal, M.B., B.S., Piotr Janicki, M.D., Anesthesiology, Penn State Milton S. Hershey Medical Center, Hershey, PA. The aim of our study was to analyze distribution of cGMP levels during orthotopic liver transplant during different stages of surgery. We performed this by obtaining blood samples from different sites at different time points throughout surgery. Our study showed that increased cGMP production significantly contributes to perioperative hemodynamic instability.

A299 Quantifying Physical and Biochemical Factors That Contribute to Primary Graft Dysfunction After Lung Transplantation

Julien Pottecher, M.D., Anne Claude Roche, M.D., Tristan Degot, M.D., Olivier Helms, M.D., Jean Gustave Hentz, M.D., Pierre Emmanuel Falcoz, M.D., Ph.D., Bernard Geny, M.D., Ph.D., Gilbert Massard, M.D., Ph.D., Romain Kessler, M.D., Ph.D., Annick Steib, M.D., Ph.D., Pôle d’Anesthésie-Réanimations Chirurgicales SAMU-SMUR, Hôpitaux Universitaires Service de Pneumologie, Hôpitaux Universitaires Service de Chirurgie Thoracique, Hôpitaux Universitaires Service d’Explorations Fonctionnelles, Hôpitaux Universitaires de Strasbourg, Strasbourg, France. Using transpulmonary thermodilution in patients undergoing lung transplantation, our study aimed at clarifying the pathophysiologic mechanisms leading to primary graft dysfunction (PGD). We demonstrated that an early, short-lived increase in pulmonary vascular permeability was followed by a subsequent increase in alveolar fluid clearance and could predict the occurrence of grade III PGD.

A300 No Relationship to the Administration of Aprotinin and Renal Failure in Patients Undergoing Liver Transplantation?

Rafael P. Leal-Villalpando, M.D., Diana Restrepo-Murillo, M.D., Luis Jauregui-Flores, M.D., Mario Vilatoba, M.D., Graciela Castro-Narro, M.D., Anesthesiology, Gastroentology, Instituto Nacional de la Nutrició Salvador Zubiran, Mexico City, Mexico. During liver transplantation the administration of aprotinin was not related to the development of acute renal failure. However, it showed a decrease in bleeding and requirement of packed red blood cells.
Disclosure information for all abstract authors can be found at www.asa-abstracts.com.
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