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CLINICAL SCIENCE

◆ ◆ ◆ **Measuring Childbirth Outcomes Using Administrative and Birth Certificate Data**
 *L. G. Glance, S. Hasley, J. C. Glantz, T. P. Stevens, E. Faden, M. A. Kreso, S. G. Pyne, R. N. Wissler, J. Fichter, M. S. Gloff, A. W. Dick*238

Administrative data can be used to calculate hospital-level risk-adjusted maternal, newborn, and composite maternal–newborn performance. Maternal and newborn hospital performance were poorly correlated, suggesting that composite performance measures must also report underlying maternal and newborn performance separately.

Propofol Sedation Alters Perceptual and Cognitive Functions in Healthy Volunteers as Revealed by Functional Magnetic Resonance Imaging

W. L. Gross, K. K. Lauer, X. Liu, C. J. Roberts, S. Liu, S. Gollapudy, J. R. Binder, S.-J. Li, A. G. Hudetz254

During propofol sedation, activation on functional magnetic resonance imaging in higher cognitive areas, such as semantic and phonologic processing, is abolished with deep sedation and only partially suppressed with light sedation. Activation related to lower sensory processing continues with deep and light sedation.

◆ **Point of Care Ultrasound to Identify Diaphragmatic Dysfunction after Thoracic Surgery**

S. Spadaro, S. Grasso, M. Dres, A. Fogagnolo, F. Dalla Corte, N. Tamburini, P. Maniscalco, G. Cavallesco, V. Alvisi, T. Stripoli, E. De Camillis, R. Ragazzi, C. A. Volta.....266

Point of care ultrasound can be used to detect diaphragmatic dysfunction after thoracic surgery. Diaphragmatic dysfunction may be associated with postoperative pulmonary complications.


◆ **Discharge Readiness after Propofol with or without Dexmedetomidine for Colonoscopy: A Randomized Controlled Trial**

L. U. Edokpolo, D. J. Mastriano, J. Serafin, J. C. Weedon, M. T. Siddiqui, D. P. Dimaculangan279

One hundred and one patients were randomly assigned to propofol alone or propofol combined with low-dose dexmedetomidine for outpatient colonoscopies, both groups targeting a Bispectral Index of 60. Adding dexmedetomidine provoked hypotension and prolonged recovery.


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ON THE COVER: The number of pregnancy-related deaths and severe maternal complications continues to rise in the United States, and the quality of obstetrical care across U.S. hospitals is uneven. Providing hospitals with performance feedback may help reduce the rates of severe complications in mothers and their newborns. In this issue of ANESTHESIOLOGY, Glance *et al.* use linked administrative data and birth certificate data from California to develop composite measures of maternal and newborn outcomes for individual hospitals. In an accompanying Editorial View, Mhyre and Bateman discuss this promising quality measure that has the potential to hold hospitals and clinical teams accountable to achieve the outcomes that every family desires—a healthy mother and newborn. Cover illustration: S. M. Jarret, M.F.A., C.M.I./J. P. Rathmell.

- Glance *et al.*: Measuring Childbirth Outcomes Using Administrative and Birth Certificate Data, p. 238
- Mhyre and Bateman: Measuring What Matters to Moms Most, p. 223

BASIC SCIENCE

Toxicologic and Inhibitory Receptor Actions of the Etomidate Analog ABP-700 and Its Metabolite CPM-Acid

B. I. Valk, M. McGrath, D. Lehoux, B. Zerler, J. J. A. Marota, D. E. Raines.....287

Toxicologic studies in dogs using supratherapeutic ABP-700 doses caused involuntary muscle movements and seizures, but these were temporally and electroencephalographically distinct, suggesting different underlying mechanisms. Events occurred at ABP-700 and metabolite concentrations one and two orders of magnitude higher, respectively, than those found in humans. Electrophysiologic studies of the principal metabolite of ABP-700 in oocyte-expressed γ -aminobutyric acid type A receptors showed inhibition at the high supratherapeutic concentrations achieved in the dogs, and such inhibition may explain seizure activity. Proepileptiform effects of ABP-700 in dogs may not be relevant to humans at therapeutic doses.

Hepatitis C Contamination of Medication Vials Accessed with Sterile Needles and Syringes

J. M. van Vlymen, J. Magnus, M. Jaeger, S. Breton, N. G. Taylor, R. Phelan, S. M. Sagan.....305

When a medication vial diaphragm is contaminated with hepatitis C virus, the contents of the vial can become contaminated with subsequent access with a clean syringe, and the viral content is sufficient to infect cells in culture. Hepatitis C virus remains infectious in contaminated medications for several days. Cleaning the vial surface with 70% isopropyl alcohol does not eliminate the risk of vial contamination with hepatitis C virus.

Critical Care Medicine

CLINICAL SCIENCE

Pre-admission Statin Use and 90-day Mortality in the Critically Ill: A Retrospective Association Study

T. K. Oh, I.-A. Song, J. H. Lee, C. Lim, Y.-T. Jeon, H.-J. Bae, Y. H. Jo, H.-J. Jee.....315

Single-center retrospective data suggest that preadmission statin use may be associated with decreased 90-day mortality among some intensive care unit patients. Specific statin agents and noncardiovascular mortality may demonstrate a stronger signal for further study.

Prophylactic Haloperidol Effects on Long-term Quality of Life in Critically Ill Patients at High Risk for Delirium: Results of the REDUCE Study

P. J. T. Rood, M. Zegers, A. J. C. Slooter, A. Beishuizen, K. S. Simons, P. H. J. van der Voort, M. C. E. van der Woude, P. E. Spronk, J. G. van der Hoeven, P. Pickkers, M. van den Boogaard.....328

Prophylactic haloperidol does not affect long-term outcome of critically ill patients at high risk for delirium. Every additional day of sedation-induced coma is associated with further decline of long-term physical and mental function.

BASIC SCIENCE

Short-term Physiologic Consequences of Regional Pulmonary Vascular Occlusion in Pigs

T. Langer, V. Castagna, S. Brusatori, A. Santini, T. Mauri, A. Zanella, A. Pesenti.....336

Data from anesthetized pigs (uninjured lungs) indicate that the perfusion is redistributed as suspected. Similarly, ventilation is redistributed from nonperfused to perfused lung tissue. This limits the increase in dead space and is accompanied by less density in the occluded lung.

Lung Pharmacokinetics of Tobramycin by Intravenous and Nebulized Dosing in a Mechanically Ventilated Healthy Ovine Model

J. A. Dhanani, S. Diab, J. Chaudhary, J. Cohen, S. L. Parker, S. C. Wallis, C. Boidin, A. Barnett, M. Chew, J. A. Roberts, J. F. Fraser.....344

In a mechanically ventilated healthy large animal model, nebulized tobramycin produced higher peak lung interstitial space fluid concentrations, as well as higher initial epithelial lining fluid concentrations, with lower plasma concentrations than were observed after intravenous administration due to more extensive lung penetration.

Pain Medicine

CLINICAL SCIENCE

Dextromethorphan Analgesia in a Human Experimental Model of Hyperalgesia



E. Martin, C. Narjoz, X. Declèves, L. Labat, C. Lambert, M.-A. Lorient, G. Ducheix, C. Dualé, B. Pereira, G. Pickering.....356

Using the freeze-injury pain model in a randomized, double-blind, placebo-controlled crossover trial of 30-mg doses of oral dextromethorphan in 20 male volunteers, dextromethorphan was antihyperalgesic and reversed peripheral and central neuronal sensitization. Because dextromethorphan had no intrinsic antinociceptive effect in acute pain on healthy skin, *N*-methyl-D-aspartate receptors may need to be sensitized by pain for dextromethorphan to be effective.

Impact of an Opioid Safety Initiative on Patients Undergoing Total Knee Arthroplasty: A Time Series Analysis



Q. Chen, H.-L. Hsia, R. Overman, W. Bryan, M. Pepin, E. R. Mariano, S. C. Mudumbai, T. Buchheit, V. Krishnamoorthy, C. B. Good, M. A. Brookhart, K. Raghunathan.....369

The authors evaluated the effects of a Veterans Administration national Opioid Safety Initiative using interrupted time series analysis to compare trends before and after starting the initiative. There was a trivial increase in pain scores, and a substantial reduction in patients with chronic preoperative and postoperative opioid prescriptions.

BASIC SCIENCE

- ◆ **Cross-talk between Human Spinal Cord μ -opioid Receptor 1Y Isoform and Gastrin-releasing Peptide Receptor Mediates Opioid-induced Scratching Behavior**
X.-Y. Liu, Y. Ginosar, J. Yazdi, A. Hincker, Z.-F. Chen.....381

Human spinal cord tissue expresses the 1Y isoform of the μ -opioid receptor, and that isoform functionally interacts with the gastrin releasing peptide receptor to cause cellular calcium influx. Blocking interactions between the 1Y isoform and the gastrin releasing peptide receptor does not reduce opioid analgesia. Eliminating interactions between the 1Y isoform and the gastrin releasing peptide receptor or reducing 1Y isoform activation may reduce opioid-induced pruritis.

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ORIGINAL INVESTIGATION IN EDUCATION

- ◆ **Anesthesiology Resident Night Float Duty Alters Sleep Patterns: An Observational Study**
L. K. Dunn, A. M. Kleiman, K. T. Forkin, A. J. Bechtel, S. R. Collins, J. F. Potter, C. J. Kaperak, S. Tsang, J. L. Huffmyer, E. C. Nemergut.....401

In anesthesiology residents conducting six consecutive nights of clinical care, three nights of recovery did not appear to restore normal sleep architecture, raising questions about this practice.

CLINICAL FOCUS REVIEW

- ◆ **Adjunctive Corticosteroid Treatment in Septic Shock**
J. Cohen, B. Venkatesh410

Two recent randomized controlled trials have provided new data to inform opinion on the use of corticosteroids in septic shock. This article discusses the background and rationale for corticosteroid use, compares the findings and methodologies of the new trials, and provides suggestions for practice.

REVIEW ARTICLE

- Impact of the World Health Organization Surgical Safety Checklist on Patient Safety**
A. S. Haugen, N. Sevdalis, E. Sjøfteland420

Surgical safety checklists are reported to reduce complications and mortality. Checklists should address critical and basic routines in anesthesia and surgery, so clinicians may focus on solving critical problems.

- ◆ **Failure to Rescue as a Surgical Quality Indicator: Current Concepts and Future Directions for Improving Surgical Outcomes**
J. I. Portuondo, S. R. Shah, H. Singh, N. N. Massarweh.....426

This review discusses the utility of failure to rescue as a surgical quality measure as well as potential underlying mechanisms by which it occurs.

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