



# Society for Pediatric Anesthesia NEWSLETTER

Volume 9 Number 1

Winter-Spring, 1996

## President's Message

By William J. Greeley, M.D.

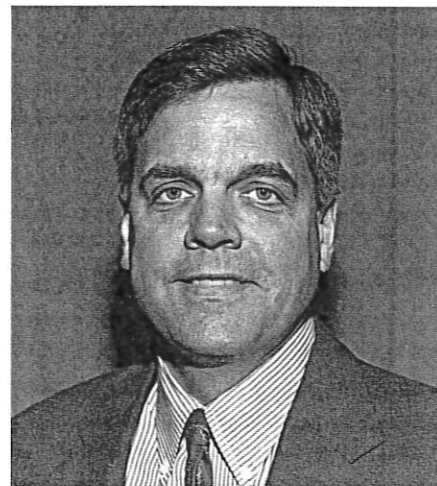
The most recent activity to report to you is our SPA Ninth Annual Meeting last October in Atlanta, Georgia. From my perspective, this meeting was enormously successful. There were more than 450 members in attendance for what proved to be a very stimulating program.

In looking at future meetings and meeting sites, the Committee on Education has prepared an outstanding program for our Second Winter Meeting in Tampa, Florida, in February 1996. We hope to improve upon the recent success of our first Winter Meeting in Phoenix, Arizona.

Looking down the road, our Third Winter Meeting in 1997 will be during President's Weekend at the Hyatt Hill Country Resort in San Antonio, Texas. This promises to be an enjoyable resort setting for our membership and families.

Looking beyond San Antonio, I have requested our Committee on Education and representatives from the American Academy of Pediatrics (AAP) Section on Anesthesiology to explore the possibility of associating our Winter Meeting with an AAP meeting in 1998. Clearly, as one looks to the future of health care delivery, integrated delivery systems appear to be the model. I feel that it is especially important that we as a society collaborate with our colleagues, not only in surgery but in pediatrics. Therefore, we will further explore our association with the AAP.

Because of the added responsibility of putting on two meetings a year and with our intent to push leadership into the membership, the SPA Board of Directors has recommended that Joseph R. Tobin, M.D., Bermuda Run, North Carolina, be the 1996 SPA Winter Meeting Program Chair and Francis X. McGowan, Jr., M.D.,



William J. Greeley, M.D.

Boston, Massachusetts, serve as Program Chair for the 1997 Winter Meeting. This important educational activity of our society will still have the oversight of SPA

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## Annual Meeting Report:

### 450 Attend Ninth Annual Meeting

By Francis X. McGowan, Jr., M.D.,  
and Peter J. Davis, M.D.

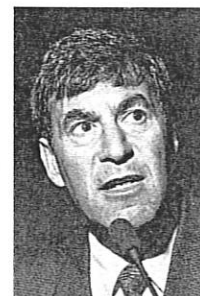
SPA's Ninth Annual Meeting took place at the Atlanta Marriott Marquis on October 20, 1995. An audience of more than 450 heard presentations on pharmacology and drug delivery methods in pediatric anesthesia; blood coagulation, antifibrinolytic therapies and artificial blood substitutes; the controversy of sedation of pediatric patients by anesthesiologists versus nonanesthesiologists; and an update on managed care. The day was capped off by an evening reception at the Carter Presidential Center.

#### Morning Sessions

The first morning session, moderated by **George A. Gregory, M.D.**, Professor of Anesthesia and Pediatrics, University of California, San Francisco, California, concerned the pharmacologic basis of pediatric anesthesia practice. **Mervyn Maze, M.D.**, Professor of Anesthesia, Stanford University Medical Center, Stanford, California, outlined the potential for new drug development using state-of-the-art biochemistry and molecular biology techniques. Using alpha-2-adrenergic agonists as an example, Dr. Maze noted that new drug development had progressed from hit-or-miss screening of



George A. Gregory,  
M.D.



Mervyn Maze, M.D.

large libraries of chemical compounds to attempts at rational chemical design based upon knowledge of receptor subtypes,

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# Annual Meeting Report

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The Society for Pediatric Anesthesia (SPA) publishes the SPA Newsletter twice a year: the Winter-Spring issue and the Summer-Fall issue. The information presented in the SPA Newsletter has been obtained by the Editors. Validity of opinions presented, drug dosages, accuracy and completeness of content are not guaranteed by SPA.

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structure-activity relationships and increasingly detailed knowledge of the chemical composition and three-dimensional structure of the site of action.

According to Dr. Maze, other newer techniques that one is likely to see with increasing frequency include use of anti-sense DNA oligonucleotides to decrease production of a target protein, gene knock-out to eliminate a particular protein altogether and gene transfer to replace a missing or defective component or increase the expression of a desired protein. Dr. Maze clearly demonstrated how many of these techniques had advanced the design of alpha-2 agonists for anesthesia.

Dennis M. Fisher, M.D., Professor of Anesthesia and Pediatrics, University of California, San Francisco, California, discussed the relevance of pharmacokinetic studies to clinical practice. Dr. Fisher emphasized that the pharmacokinetic studies most likely to be relevant are hypothesis-driven, have an appropriate control group and also have a pharmacodynamic component. At best, pharmacokinetic studies can provide new insight into the behavior and clinical uses of a drug, or they can resolve an important clinical dilemma (e.g., the role of active morphine metabolites to increase "sensitivity" and duration of effect in patients with renal failure).

In other situations, differences in the rate of equilibration between plasma and effect sites (keo) must be understood (e.g., morphine versus fentanyl) and interpreted in light of pharmacokinetic factors such as dose-peak plasma concentration and the magnitude of the rapid initial redistribution phase.

Dr. Fisher also pointed out that new concepts do arise in this occasionally dry and dusty field. One of the most useful concepts has been the "context-sensitive half-time," which is the time necessary for plasma concentration to decrease by 50 percent in the setting of that particular infusion regimen (or repeated bolus administration). Blood levels may fall rapidly after termination of short-duration infusions (especially of lipid-soluble

drugs) due to rapid redistribution, whereas elimination is the major factor affecting plasma concentration after more prolonged infusions.

The use of these issues to inform clinical drug administration and total intravenous anesthesia (TIVA) were the subjects of a presentation by Peter S.A. Glass, M.B., Associate Professor of Anesthesia, Duke University Medical Center, Durham, North Carolina. He noted that the  $t_{1/2}$  keo (the time for 50 percent equilibration into the effect compartment) was an important factor governing the timing of drug administration. For example, the  $t_{1/2}$  keo for fentanyl is 4.7 minutes; thiopental, 1.5 minutes; alfentanil, 0.9 minutes; and midazolam, 4 minutes.

As noted by Dr. Glass, giving fentanyl concurrently with thiopental for rapid sequence induction would therefore make little sense. Similarly, one needs to wait more than four minutes to observe the effect of an initial dose of midazolam before giving a second dose. Because most drugs used in anesthesia have a significant redistribution component, Dr. Glass suggested that the optimal infusion method to maintain a target plasma concentration includes: 1) a bolus dose (drug choice based upon desired time to peak effect and keo and the drug dose based upon volume of distribution at time of equilibration into the effect compartment, expressed as percent of  $V_d$  at steady state); 2) a constant infusion to replace drug lost to terminal elimination; and 3) an exponentially declining infusion component to replace drug lost to peripheral tissues (redistribution).



Dennis M. Fisher,  
M.D.



Peter S.A. Glass,  
M.B.

Dr. Glass emphasized the importance of the context-sensitive half-time. For example, the time required for a 50-percent fall in fentanyl concentration is approximately 20 minutes after a one-hour infusion, but increases to 170 minutes after four hours of administration. Although classical elimination half-life may not differ significantly between adult and pediatric patients, there can be large differences in the context-sensitive half-times. Dr. Glass also provided several schemes for TIVA using midazolam or propofol for hypnosis and various narcotics or ketamine for analgesia.

The clinical use of opioids in pediatric patients was the subject of a talk by **Peter J. Davis, M.D.**, Associate Professor of Anesthesia and Pediatrics, University of Pittsburgh Medical School and Children's Hospital, Pittsburgh, Pennsylvania. Dr. Davis summarized important age-related differences in protein binding, fluid compartments, organ blood flow, and hepatic and renal clearance as well as the effects of disease states (e.g., liver and renal failure) on the pharmacokinetics and dynamics of opioids in infants and children. For example, he noted that both protein binding and clearance can be extremely variable in premature and full-term infants and are not necessarily predictable from one opioid to another.

In general, in older infants, volumes of distribution for the opioids decrease with age while clearance increases. However, the variability in these parameters is large, with infants and small children having the largest variability. Dr. Davis suggested

that it is the large variability in the pharmacokinetic parameters that makes the administration of opioids challenging to clinicians. In the future, remifentanyl may have a place in pediatric anesthesia. Remifentanyl, which has nonorgan-based elimination (plasma and tissue), consequently displays less variability and elimination that is largely context-insensitive.

#### Afternoon Sessions

As is the custom of past meetings, the afternoon sessions were devoted to clinical problems in pediatric anesthesia. The first session of the afternoon was on blood conservation and substitution. This session was moderated by **Francis X. McGowan, Jr., M.D.**, Assistant Professor of Anesthesia, Harvard Medical School and Boston Children's Hospital, Boston, Massachusetts. The first speaker in this session was **Sten G.E. Lindahl, M.D.**, Professor of Anesthesia, Karolinska Hospital, Stockholm, Sweden. Dr. Lindahl discussed the principles of hemodilution.

In Dr. Lindahl's discussion, the indications, contraindications and physiologic consequences of hemodilution in pediatric patients were reviewed. Of interest was the observation that, in pediatric patients undergoing acute normovolemic hemodilution, the patients' cardiac output, central venous pressure and left atrial pressure all increased while the systemic vascular resistance decreased. Dr. Lindahl noted that these cardiovascular changes appear to be mediated through changes in vascular nitric oxide synthesis.

Dr. Lindahl also addressed the issue of

how safe or how low a hemoglobin level is acceptable and/or safe for the pediatric patient undergoing acute normovolemic hemodilution. In studies evaluating oxygen demand and oxygen delivery, at different hemoglobin levels, Dr. Lindahl pointed out that it appears that the heart is the limiting organ that sets the threshold for an appropriate hemoglobin level during acute normovolemic hemodilution. Using oxygen demand and oxygen supply data, Dr. Lindahl suggested that hematocrits of approximately 20 percent or a hemoglobin level around 7.5 mg/dl appear to be the critical limiting value. Dr. Lindahl also emphasized that in performing acute normovolemic hemodilution, the anesthesiologist must be extremely careful regarding patient monitoring and suggested echocardiography, arterial blood gases and mixed venous blood gas as possible monitoring guides.

**Aaron L. Zuckerberg, M.D.**, Assistant Professor of Pediatrics, Anesthesiology and Critical Care Medicine, Johns Hopkins University School of Medicine and Sinai Hospital, Baltimore, Maryland, presented information on prohemostatic agents. In his presentation, Dr. Zuckerberg addressed the issue of hemostatic and fibrinolytic pathways and also addressed the mechanisms by which the prohemostatic agents, aprotinin, desmopressin (DDAVP), epsilon amino-caproic acid (EACA) and tranexamic acid affect the hemostatic and fibrinolytic pathways.

Dr. Zuckerberg emphasized throughout the course of his presentation that there were compelling data for the efficacy of these agents in minimizing perioperative blood loss and transfusion requirements of adult cardiac surgical patients. However, as for pediatric patients, it appears that controversy regarding risk, benefits and costs remains.

The last speaker of the blood conservation and blood substitution session was **Bruce J. Leone, M.D.**, Associate Professor of Anesthesiology and Assistant Professor of Medicine, Duke University  
*(Continued on page 4)*



*Peter J. Davis,  
M.D.*



*Francis X.  
McGowan, Jr., M.D.*



*Sten G.E. Lindahl,  
M.D.*



*Aaron L.  
Zuckerberg, M.D.*



# Annual Meeting Report

(Continued from page 3)

Medical Center, Durham, North Carolina. Although the nation's blood supply is the safest it has ever been, there still exist nonetheless, certain risks, namely the risk of hepatitis C, which is approximated at 1:300,000 and acquired immunodeficiency syndrome, which is approximated at 1:40,000 to 1:1 million. Consequently, the need for developing an artificial blood product is important.

Dr. Leone discussed the role and limitations of perfluorocarbons and stroma-free hemoglobin as possible blood substitutes for the future. In Dr. Leone's discussion of perfluorocarbons, he went through the history of their development and noted that presently these third-generation fluorocarbons are undergoing clinical trials. He noted that perfluorocarbons work by increasing the solubility of oxygen in the plasma compartment, and they do so as a linear function of oxygen tension. Therefore, increasing oxygen carrying capacity requires a higher arterial oxygen tension to enhance the transport of oxygen to the periphery.

Dr. Leone noted that perfluorocarbons offer the novel possibility of internal hyperbaric oxygen, that is, delivery of supranormal amounts of oxygen via diffusion to the tissues via the dissolved oxygen component of the plasma. He also elaborated on the properties of hemoglobin-based oxygen carriers or stroma-free hemoglobin. Given that hemoglobin becomes nephrotoxic when its tetrameric form is broken down into dimers, the development of a suitable stroma-free hemoglobin molecule depends on the

development of a stable and functional tetrameric form. Dr. Leone discussed chemical and genetic approaches that develop and produce stable stroma-free hemoglobin.

The second session of the afternoon involved controversies in pediatric anesthesia. This session was moderated by **Harry G.G. Kingston, M.B.**, Professor of Anesthesia, Oregon Health Sciences University, Portland, Oregon. The controversy centered on who should perform sedation for pediatric patients outside of the operating room. **Charles J. Coté, M.D.**, Professor of Anesthesia and Pediatrics, Northwestern University Medical School and Children's Memorial Hospital, Chicago, Illinois, discussed the reasons why sedation should be performed by anesthesiologists, while **Richard M. Ruddy, M.D.**, Director of Emergency Medicine, Children's Hospital and Medical Center, Cincinnati, Ohio, took the view that sedation in the pediatric patient can be performed by the nonanesthesiologist.

In his presentation, Dr. Coté noted that sedation guidelines were developed by the American Academy of Pediatrics (AAP) specifically because of the high incidence of pediatric patients who have suffered permanent neurologic injury or death following sedation by nonanesthesiologists. In addition, Dr. Coté went through the history of the development of the guidelines promulgated by AAP. Dr. Coté emphasized that it is important for institutions to agree upon sedation guidelines and definitions and that the

guidelines should not be subverted by any individual pediatric subspecialty.

Dr. Ruddy's presentation of sedation of the pediatric patient by the nonanesthesiologist expressed similar views as Dr. Coté's. Dr. Ruddy emphasized the need, especially in pediatric emergency rooms, for nonanesthesiologists to administer sedation to pediatric patients. He agreed that guidelines did need to be established for the nonanesthesiologist and that, in fact, education and training of residents and fellows were extremely important in ensuring patient safety.

In his presentation, Dr. Ruddy emphasized that nonanesthesiologists are actively conducting clinical research in areas of pediatric sedation. He also emphasized that it is important for each institution to establish guidelines for the sedation of children and that minimum standards would include the adaptation of the AAP guidelines from the Committee on Drugs in the June, 1992 issue of *Pediatrics*.

The last session of the afternoon program included managed care issues and was titled "Who Are the Managers?" The session was moderated by **William J. Greeley, M.D.**, Associate Professor of Anesthesia and Pediatrics, Duke University School of Medicine, Durham, North Carolina. The discussants for this session were **Bertram E. Walls, M.D.**, Century American Insurance Company, Durham, North Carolina, and **Scott D. Augustine, M.D.**, Augustine Medical Inc., Eden Prairie, Minnesota.

The key point from both of these



Bruce J. Leone,  
M.D.



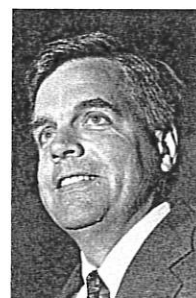
Harry G.G.  
Kingston, M.B.



Charles J. Coté,  
M.D.



Richard M. Ruddy,  
M.D.



William J. Greeley,  
M.D.



Bertram E. Walls,  
M.D.



speakers was that physicians must be involved in the medical management issues that are now upon us. Dr. Walls noted that health care delivery systems have been undergoing and continue to undergo rapid and revolutionary changes in the 1990s. In the 1970s, it was the decade of the hospitals; in the 1980s, it was the decade of the health maintenance organization; and in the 1990s, it is the decade of organized doctors.

Today's market forces in health care have combined with legislation to retard the growth of the health care industry. The shift has been from fee-for-service reimbursement to a service for fee, or capitated model. This has transformed physician offices, hospitals and clinics to cost centers as opposed to revenue centers. In the 1990s, the payers for health care are demanding improved access and better outcomes for less dollars.

Dr. Walls emphasized that in order to survive, physicians must continue to organize themselves into large groups and networks to achieve economies of scale and negotiating levels necessary to preserve and enhance their practices. Dr. Walls emphasized that it was very clear that failure to participate in some type of organized network will lead most physicians to economic and professional doom.

Dr. Augustine also presented the managed care issue from the perspective of the doctor as "general contractor." Dr. Augustine noted that change in health care is inevitable, however, change need not be viewed as bad but rather as an opportunity. In the present health care system,

physicians have no financial risk in the decisions that they make. Although physicians account for only 10 percent of the health care revenue dollars, their decisions have a 10-fold amplification factor, and the cost of this amplification factor is absorbed by third-party payers.

Dr. Augustine noted that one model of the future of health care was a system that forces the physician and patient to be decision-makers and, thus, take the financial responsibility for the decisions. This proposal lets the decision-makers share in the rewards of efficiency and, conversely, penalizes them for inefficiency. For example, the proposal would financially tie patients to health care decisions and require physicians to take financial responsibility for each health care event.

In his discussions, Dr. Augustine suggested that the medical industry should use the construction industry as a model for health care financial responsibilities and reimbursements. The general contractor is the party responsible for managing the costs of the whole project, and the physician should assume the role of the general contractor. In this model, physicians would be responsible for managing all of the costs of each health care event. They could then "subcontract" to other nonphysician services and health care providers. In this system, the doctor as the general contractor is reimbursed for the total cost of the patient's care by the insurance or government agency and, in turn, then pays the subcontractors at their predetermined prices for their services.

In this model of the physician as general contractor, health care management proposals are designed to bring efficiency to the U.S. health care system and create financial incentives. At the same time, the "physician as contractor" system creates direct economic relationships between the purchasers of health care, i.e., the patients, payers and providers.

Dr. Augustine further noted that although the need for efficiency may be new to the health care industry, the rest of the business world has wrestled with

issues of efficiency for decades. In a world where change is constant and health care change is now upon us, Dr. Augustine noted that the fundamental driver of efficiency in industry as well as in health care is free enterprise and competition.

Dr. Augustine concluded his comments by noting that, in the history of humankind, government, bureaucracy and regulations have never created efficiency. Thus, it is the responsibility of physicians to become involved in the management of health care. Physicians must have a financial stake in any type of managed health care delivery system.

The SPA Ninth Annual Meeting closed with the presidential address regarding business issues. SPA President William J. Greeley, M.D., Durham, North Carolina, noted that the membership of SPA continues to grow, and at present, there are more than 1,600 members. The Committee on Membership continues to update SPA's membership directory, and every two years there will be a new directory published and distributed. In addition to membership growth, the financial aspects of SPA continue to grow as well. At present, SPA has at least one year's operating expenses in reserve. The organization is as fiscally sound as it has ever been.

The Committee on Education continues to do an outstanding job in presenting both the annual one-day meeting before the American Society of Anesthesiologists Annual Meeting as well as the three-day SPA Winter Meeting held during the Presidents' Weekend in February. As in the past, the 1996 Winter Meeting will be held in conjunction with the meeting of the American Academy of Pediatrics Section on Anesthesiology. The meeting will be held February 15-18 in Tampa, Florida. In 1997, the SPA Winter Meeting will be held in San Antonio, Texas, again, over Presidents' Weekend.

In keeping with the scholarly goals of the society, SPA has now entered into a formal agreement with the International Anesthesia Research Society (IARS) and

*(Continued on page 14)*



Scott D. Augustine,  
M.D.

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# Pediatric Anesthesiology 1996

## February 15-18, 1996

### Hyatt Regency Westshore

### Tampa, Florida

The Second Annual Winter Meeting of the Society for Pediatric Anesthesia (SPA) and the American Academy of Pediatrics-Section on Anesthesiology will take place at the Hyatt Regency Westshore in Tampa, Florida, from Thursday to Sunday, February 15-18, 1996. The initial program last year was extremely well-received by the more than 300 attendees who also had significant input into the format and content of this upcoming meeting.

This year's program features plenary sessions on trauma in children, advances in pediatrics of importance to the pediatric anesthesiologist and pediatric acquired immunodeficiency syndrome (AIDS). The very popular computerized real-time display of audience responses will be used throughout the session, including an anesthesia practice trend survey and a Grand Rounds case presentation. Other topics include an anesthesia practice update, contracted care and use of the Internet. Oral and poster presentations of clinical and laboratory work will be another feature and will include a moderated poster-discussion session centered around clinical themes.

The Hyatt Regency Westshore is a luxury hotel located amid a nature preserve on Old Tampa Bay. Numerous recreational activities are nearby, including beaches, golf, tennis, sailing, fishing, Busch Gardens and the Florida Aquarium. Orlando and Walt Disney World are about 75 minutes away. The social program includes a welcome reception and a wine and cheese reception, plus an evening dinner cruise on Tampa Bay.

For a full meeting program and more information, contact: Pediatric Anesthesiology 1996, 1910 Byrd Ave., Suite 100, P.O. Box 11086, Richmond, VA 23230-1086; telephone: (804) 282-0062; fax: (804) 282-0090.

### *Meeting Schedule:*

#### **Thursday, February 15, 1996**

- 1 - 5 p.m. SPA and AAP Committee Meetings
- 3 - 5:30 p.m. Registration
- 6 - 8 p.m. Welcome Reception

#### **Friday, February 16, 1996**

- 7 - 7:50 a.m. Continental Breakfast with Exhibitors
- 7:50 - 8 a.m. Welcome
- 8 - 10:15 a.m. **Trauma in Children:** Prehospital and E.R. Care; O.R. Care — The Surgeon's Perspective; O.R. Care — The Anesthesiologist's Perspective; ICU Care and Outcome
- 10:45 a.m. - 12:45 p.m. **Oral Abstract Presentation**
- 12:45 - 2 p.m. Lunch with Exhibitors and Scientific Posters
- 2 - 4 p.m. **Session A: Oral Abstracts**  
**Session B: Parallel Workshop Sessions (50 minutes each):**  
1) Laryngeal Mask Airways and Lightwands; 2) Fiberoptic Techniques; 3) Common Regional Anesthesia Techniques; 4) Advanced Regional Anesthesia Techniques; 5) Organization of a Pain Treatment Service; 6) ICU Care (Ventilators, CPR, Intraosseous Infusions); 7) Echocardiography

- 4 - 5 p.m. **Anesthesia Practice Trend Survey**  
(using real-time computerized response collection)
- 5 - 5:30 p.m. **AAP Business Meeting**
- 5:30 - 7 p.m. **Wine and Cheese Reception**

### Saturday, February 17, 1996

- 7:30 - 9 a.m. Breakfast with the Scientific Posters
- 9 - 10 a.m. **Parallel Sessions:**  
**Session A: Poster Discussion on Clinical Themes:** Pain Control, Drugs in Anesthesia Practice; other interesting clinical reports  
**Session B: Parallel Workshops**  
(see Friday's schedule)
- 10 - 10:30 a.m. **Award Presentations:** SPA/FAER Research Grant Award, AAP Resident Research Competition, SPA Young Investigator Awards, AAP Robert M. Smith Award
- 11 a.m. - 1 p.m. **Advances in Pediatrics/Anesthesia**  
(coordinated presentations by pediatricians and anesthesiologists on cystic fibrosis and asthma; sickle cell anemia; role of echocardiography in the O.R.)
- 1 - 2 p.m. Exhibits, Posters, SPA/AAP Board Luncheon Meetings
- 2 p.m. Adjourn for the day
- 6:30 p.m. **Dinner Cruise** (ticket required)

### Sunday, February 18, 1996

- 7 - 8 a.m. Breakfast and Committee Meetings
- 8 - 9 a.m. **Grand Rounds Presentations**  
(with audience participation and computerized interactive responses)
- 9 - 10 a.m. **Pediatric AIDS Update**
- 10:30 a.m. - noon **Anesthesia Practice Update:** Managing Rapid Change; Contracted Care; Effect of Subspecialist Practice; the Internet and other applications for pediatric anesthesiologists
- noon - 12:30 p.m. **Future Concerns of Pediatric Anesthesiologists:** Accreditation of Training Programs, Board Certification, Journal Affiliation
- 12:30 p.m. Adjournment



# Out and About at ASA Annual Meeting

By Stephen Rimar, M.D., Zeev N. Kain, M.D., Anne E. Dickison, M.D., and Steven C. Hall, M.D.

During the 1995 American Society of Anesthesiologists (ASA) Annual Meeting last October in Atlanta, Georgia, there were several poster presentations and scientific papers of interest to the pediatric anesthesiologist. Abstracts published in the September supplement of the journal *Anesthesiology* are indicated by their numbers in parentheses.

"Pediatric Anesthesia Perioperative Sedation: Complications" began with the presentation of three posters exploring the use of fentanyl Oralet<sup>®</sup> for preoperative sedation in children. **Richard H. Epstein, M.D.**, (A-1179) from Jefferson Medical College, Philadelphia, Pennsylvania, reported that the high incidence of preoperative vomiting with fentanyl Oralet<sup>®</sup> led them to discontinue its use in their practice.

**Richard M. Dsida, M.D.**, (A-1180) of Children's Memorial Hospital, Chicago, Illinois, presented a double-blinded comparison of the fentanyl Oralet<sup>®</sup> with intravenous fentanyl for tonsillectomy. The study's preliminary results suggest that Oralet<sup>®</sup> is equal in efficacy to fentanyl for postoperative pain. Unlike the previous report, these investigators found no difference in preoperative nausea and vomiting.

**Joanne E. Shay, M.D.**, and co-investigators (A-1181) from Children's National Medical Center, Washington, D.C., found that a dose of 5-10 µg/kg was an effective, safe premedication for pediatric tonsillectomy patients. The discussion that followed centered on the popularity of the Oralet<sup>®</sup> form of premedication, but there was disagreement about the value of the fentanyl Oralet<sup>®</sup>. The discussion panel suggested that the vehicle was excellent, but fentanyl was perhaps not the best drug delivered by this route.

The next posters addressed the safety and use of sedation in children. **Ronald S.**

**Litman, D.O.**, (A-1182) from the University of Rochester, Rochester, New York, presented a study that examined the levels of consciousness and ventilatory parameters in children during sedation with oral midazolam and increasing concentrations of nitrous oxide. The investigators concluded that a combination of oral midazolam (0.5 mg/kg) and inhaled nitrous oxide (up to 60 percent) did not cause upper airway obstruction. However, the use of nitrous oxide above 15 percent resulted in deep sedation. These authors, as well as the panel in the discussion that followed, suggested that using nitrous oxide in concentrations above 15 percent in combination with oral midazolam requires the personnel and monitoring during deep sedation as stated in the American Academy of Pediatrics guidelines.

**Charles J. Coté, M.D.**, (A-1183) of Children's Memorial Hospital, Chicago, Illinois, then presented a review of adverse drug reports submitted to the Food and Drug Administration (FDA) and anecdotal cases from a survey. He concluded that the adverse events were attributed primarily to drug overdose and inadequate monitoring during or subsequent to the procedure, lack of skills on the part of the persons administering the drugs or premature discharge. These events occurred despite monitoring guidelines.

**Marc Dubreuil, M.D.**, (A-1184) of Bordeaux University, Bordeaux, France, presented the results of a study that examined oxygen desaturation in children during gastrointestinal endoscopy. The investigators found that general anesthesia, compared to conscious sedation, helped in reducing dysrhythmias and maintaining adequate SpO<sub>2</sub> during gastrointestinal endoscopy in infants and children less than 6 years old.

In a lively discussion that followed these presentations, several participants discussed the need to monitor all patients after receiving premedication. The panel concluded that there was a difference between light sedation and the intent to

obtain. Additional concerns from the audience were that guidelines that are too detailed would cause noncompliance and a return altogether to the use of a papoose board by nonanesthesiologists who sedate children.

**Juan Damiani-Rivera, M.D.**, (A-1185) of Harvard Medical School, Boston, Massachusetts, presented a preliminary study examining the safety of routine use of cuffed endotracheal tubes in anesthetized children. In a small group of patients, the author concluded that these tubes can be used routinely without significant complications. **Amanda Griffiths, F.R.C.A.**, (A-1186) from Cook-Fort Worth Children's Medical Center, Fort Worth, Texas, studied the minimum alveolar concentration of desflurane for tracheal extubation in deeply anesthetized children. Her results show that the trachea can be successfully extubated at 8.5 percent (approximately 1 MAC) of desflurane.

**Etsuro K. Motoyama, M.D.**, (A-1187) of Children's Hospital, Pittsburgh, Pennsylvania, described a study of inspiratory muscle incoordination and upper airway obstruction in children during inhalation anesthesia. His results indicate that upper airway obstruction occurs commonly during induction of halothane and sevoflurane anesthesia in children, as evidenced by significant increases in labored breathing index and thoracoabdominal incoordination. The relaxation of the upper airway inspiratory muscles such as the genioglossus and geniohyoid muscles at relatively light levels of anesthesia can result in a collapse of the pharyngeal airway, leading to upper airway obstruction.

Finally, **Jeremy M. Geiduschek, M.D.**, (A-1188) of Children's Hospital and Medical Center, Seattle, Washington, presented preliminary results of the pediatric perioperative cardiac arrest registry of ASA. Initial review of this registry indicates that ASA physical status 1 and physical status 2 children under 2 years of age represent a potential source of perioperative complications despite ap-

appropriate monitoring. This is in contrast to a recent publication in which respiratory events were relatively infrequent.

Improving pediatric postoperative care in a variety of clinical situations was highlighted in the scientific papers session. **Aaron L. Zuckerberg, M.D.**, (A-1138) from Sinai Hospital, Baltimore, Maryland, and colleagues hypothesized that lidocaine blood levels would be higher in sickle cell vaso-occlusive crisis compared to children with hemoglobin A not in crisis. The authors placed epidural catheters in 18 children for pain management, 11 patients with hemoglobin SS (hgbSS) and seven children with normal hemoglobin (hgbAA). The epidural catheters were initially injected with a bolus of 0.25 percent bupivacaine; one to two hours later, a continuous infusion of lidocaine 1.5 mg/kg/hr was begun. Plasma for lidocaine levels was sampled every eight hours until the infusion was terminated.

Lidocaine levels were significantly greater in the hgbSS patients ( $3.3 \pm 1.2$  mg/L) than in children with hgbAA ( $1.4 \pm 0.4$  mg/L) ( $p < 0.001$ ). No child with hgbAA had lidocaine levels  $> 5.0$  mg/L; however, three children with hgbSS did. The authors suggested there is need for routine plasma surveillance in patients in sickle cell vaso-occlusive crisis who receive continuous lidocaine infusions.

In a related investigation, **Dr. Zuckerberg** et al. (A-1140) suggested that continuous epidural analgesia would improve oxygenation in sickle-cell patients with acute chest syndrome and would prevent the need for exchange transfusion. Ten patients with hgbSS, with documented acute chest syndrome, had epidural and arterial catheters inserted because of hypoxemia and/or a new infiltrate on the chest X-ray. Epidural catheters were initially injected with 0.6 ml/kg of 0.25 percent bupivacaine. Catheter position (T5-T10) was confirmed radiographically. One hour later, a continuous infusion of lidocaine 1.5 mg/kg/hr and either fentanyl (1  $\mu$ g/kg/hr) or hydro-morphone (2  $\mu$ g/kg/hr) was begun.

It was demonstrated that oxygenation ( $\text{PaO}_2/\text{FiO}_2$ ) increased from  $323 \pm 164$  (range 192-715) to  $458 \pm 192$  (range 262-930) after epidural analgesia was initiated ( $p < 0.001$ ). No patient required exchange transfusion. The authors concluded that epidural analgesia improves the pulmonary insufficiency associated with acute chest syndrome and averted the need for exchange transfusion.

The use of EMLA<sup>®</sup> (eutectic mixture of local anesthetics) was evaluated by investigators from The Netherlands. In a randomized, double-blinded study, **Frederique Hofstede, M.D.**, et al. (A-1139) from Juliana Children's Hospital, The Hague, The Netherlands, studied the efficacy of EMLA cream administered pre- and postoperatively and compared it to placebo cream with a caudal block for children undergoing circumcision under general anesthesia. Sixty boys were randomized into four groups: 1) pre- and postoperative EMLA on the foreskin, 2) preoperative EMLA and postoperative placebo cream, 3) preoperative placebo cream and postoperative EMLA and 4) pre- and postoperative placebo cream with a single shot caudal block with 0.5 ml/kg of 0.25 percent bupivacaine.

Compared to the regional anesthesia group, the pre- and postoperative EMLA group showed no differences in pain scores during and after surgery. Also, pain treatment at home did not differ between groups. The authors suggested that EMLA applied to the foreskin in combination with general anesthesia is as effective as the standard anesthetic technique using a caudal block.

Several studies regarding epidural analgesia in infants and children were presented during this session. **Jane Peutrell, M.B.**, and colleagues (A-1143) at the Royal Hospital for Sick Children, Bristol, England, measured plasma concentrations of total and free bupivacaine after institution of lumbar epidural infusions in infants. Eight children (aged 18-48 weeks) were studied. After induction of general anesthesia, the authors inserted a lumbar

epidural catheter and injected bupivacaine 1.25 mg/kg (0.25 percent or 0.5 percent). Later a continuous infusion of 0.25 percent bupivacaine 0.375 mg/kg/hr was begun to provide postoperative pain relief. Total infusion time ranged from four to 44 hours.

The authors demonstrated that an infusion rate of bupivacaine 0.375 mg/kg/hr was associated with plasma concentrations  $< 2$   $\mu$ g/ml in most babies. One baby, however, showed clear evidence of accumulation of bupivacaine and had a concentration  $> 2$  m/ml at 32 hours. **Charles B. Berde, M.D.**, Boston, Massachusetts, who was present during the discussion, suggested that a dose of bupivacaine 0.375 mg/kg/hr is too high in the very young infant, and a dose of 0.2-0.3 mg/kg/hr should not be exceeded.

**Sibylle Kozek-Langenecker, M.D.**, et al. (A-1144) from the University of Vienna, Vienna, Austria, evaluated the use of isoproterenol as a marker for inadvertent systemic administration in patients undergoing epidural anesthesia. Subjects were randomized to receive intravenously 0.25 percent bupivacaine (0.1 ml/kg) with either placebo, isoproterenol 0.05 mg/kg, isoproterenol 0.075 mg/kg or isoproterenol 0.1 mg/kg. All patients received general anesthesia by inhalation induction with halothane/nitrous oxide/oxygen and maintenance with halothane.

The investigators found that all test doses resulted in increases in maximal heart rate as compared with controls. However, significant suppression of isoproterenol-induced hemodynamic changes by halothane was documented. The criterion of an increase of 10 beats per minute was achieved in 95 percent of patients in the 0.05 mg/kg isoproterenol group and in 98 percent with the higher isoproterenol doses. Arrhythmias occurred only in two patients in the 0.075 mg/kg isoproterenol group.

It was concluded that isoproterenol is a reliable indicator of intravascular injection in conscious as well as in halothane

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anesthetized children. Dr. Berde commented that it is important to realize that isoproterenol is not FDA-approved for epidural administration, and at the current time, there is no data about its neurotoxic effects.

**Rebecca Lowery, M.D.**, and **Julia Greenspun, M.D.**, (A-1141) of Children's National Medical Center, Washington, D.C., attempted to determine if dermatomal temperature changes reflect analgesic levels in children. Thirty-four outpatient children were randomized into two groups. All received halothane/nitrous oxide/oxygen anesthesia. Nineteen study patients received adjuvant caudal anesthetics with 1 ml/kg 0.25 percent bupivacaine after induction. Fifteen control patients received narcotics at the anesthesiologist's discretion. Skin temperature probes were placed on the left side at L5, L3, T12, T10 and T6 dermatomes. Sensory levels were determined by grimace or movement responses to an electrical stimulus at the end of the procedure.

Temperature/time trends were significantly different between the caudal and control groups at L5, L3, T10 and T6. Sensory levels for patients having received caudal blocks ranged from T8 to T4. The authors suggested that central blockade in children leads to significant cutaneous warming approximating the analgesic level, a pattern unlike that found in adults. Also, it was suggested that the study needs to be expanded to determine if the T<sub>max</sub> dermatomal level correlates with the analgesic level.

In a retrospective chart review, **Yuan-Chi Lin, M.D.**, et al. (A-1142) of Stanford University School of Medicine, Stanford, California, compared postoperative outcomes among PDA ligation patients given single bupivacaine injection caudally with and without morphine versus continuous epidural infusion with both medications. The authors found that postoperative analgesia with continuous epidural infusion of low dose bupivacaine and morphine produced less occurrence of postoperative emesis, earlier PO intake and shorter

intensive care unit and hospital stays compared with single injection caudal technique.

Improving the care for children undergoing spinal fusion surgery was highlighted in two studies. **Brendan O'Hare, M.B.**, and colleagues (A-1146) examined whether total patient-controlled analgesia (PCA)/morphine consumption would be decreased in pediatric scoliosis surgical patients receiving intrathecal morphine (20 µg/kg) as compared to a control group. The investigators demonstrated that intrathecal morphine reduced the initial 24-hour PCA morphine consumption by greater than 50 percent. Average 24-hour VAS scores at rest and after coughing also were significantly lower in the intrathecal group.

The authors concluded that intrathecal morphine is an effective pain management modality for pediatric scoliosis surgical patients provided that appropriate monitoring and vigilance is maintained for the initial 24 hours postoperatively.

**Mary Theroux, M.D.**, et al. (A-1149) from the Alfred I. duPont Institute, Wilmington, Delaware, examined the difference in estimated blood loss between patients who received DDAVP and patients who received placebo during spinal fusion for neuromuscular scoliosis. In a randomized, double-blinded study, 21 patients received either an infusion of DDAVP 0.3 µg/kg in 100 ml normal saline or placebo of 100 ml normal saline. Although factor VIII C levels were significantly raised in patients who received DDAVP, estimated blood loss was similar in both groups. The authors do not support the use of DDAVP to reduce blood loss in children with neuromuscular scoliosis undergoing spinal fusion.

In a large observational study, **Vincent Kopp, M.D.**, et al. (A-1147) of the University of North Carolina School of Medicine, Chapel Hill, North Carolina, examined if the Mallampati airway classification is a good predictor for difficult intubations in children. Using a four-grade modification of Mallampati's original

scale, five pediatric anesthesiologists recorded the airway class of 476 infants and children undergoing procedures requiring endotracheal intubation. Using combined class 3/4 airways and grade 3/4/5 laryngoscopy view to confirm difficult intubation, the predictive sensitivity was only 0.162 for all ages. Using combined class 1/2 airways with grade 1/2 view to postulate easy intubation, predictive specificity was 0.935 for all ages. Sixteen of the 476 intubations (3.4 percent) required ≥3 attempts, representing the occurrence of difficult intubations, a rate similar to the 1 percent to 18 percent reported for adults. The authors concluded that the Mallampati airway classification applied to children is very insensitive as a predictor of difficult intubations.

To determine predictors for preoperative anxiety, **Zeev N. Kain, M.D.**, and colleagues (A-1148) at Yale University School of Medicine, New Haven, Connecticut, conducted a cross-sectional study in a children's hospital operating room (O.R.). Evaluations were made of 163 children and their parents at the preoperative holding area and upon separation to the O.R. Predictors for preoperative anxiety were examined using univariate and multivariate techniques. A stepwise multiple regression model revealed that the age of child, maternal anxiety, temperament of the child (activity) and quality of previous medical encounters were independent predictors for the observed anxiety of the child in the preoperative holding area. A similar model predicting the child's behavior upon separation to the O.R. revealed that the temperament of the child (activity) (0.005), the child's previous hospitalization (p=0.02), enrollment of the child in day-care (p=0.001), premedication (p=0.02) and timing of the preparation program (p=0.01) were independent predictors of children's anxiety response.

In a related investigation, **Dr. Kain** and colleagues (A-1145) examined if parental presence during induction of general anesthesia was an effective preop-



erative behavioral intervention. Eighty-four children were randomly assigned to a "parent-present" or "parent-absent" group. Using multiple behavioral and physiological measures of anxiety, the effect of the intervention on the children and their parents was assessed. When the parent-present group was compared to the control parent-absent group, there were no significant differences in any of the behavioral or physiological measures of anxiety tested during induction of anesthesia.

Using the child's serum cortisol concentrations as the outcome, parental presence, the child's age and baseline temperament, and trait anxiety of the parent were identified as predictors of the child's anxiety during induction. Multivariate analysis demonstrated that three groups showed diminished cortisol concentrations with parental presence: children more than 4 years of age ( $p=0.02$ ) as well as those who had a parent with a low trait anxiety ( $p=0.04$ ) or children who had a low baseline level of activity as assessed by temperament ( $p=0.03$ ). In contrast, children less than 4 years old had increased serum cortisol concentrations if their parent was present ( $p=0.04$ ). Both investigations were supported by a grant provided by SPA and the Foundation for Anesthesia Education and Research.

In a study comparing echocardiographically derived indices of myocardial performance during step-wise inhalation induction with sevoflurane and halothane in 20 children, **Robert S. Holzman, M.D.**, and collaborators (A-1169) at Children's Hospital, Boston, Massachusetts, found that with vital signs remaining stable in both study groups throughout the induction period and no difference in left ventricular end-diastolic dimension (LVEDD), load-dependent values of left ventricular shortening fraction (LVSF) and velocity of ventricular circumferential fiber shortening corrected for heart rate (VCF<sub>C</sub>) were better preserved with sevoflurane. In addition, preload-independent measures of the fractional shortening-end-systolic wall stress (FS-ESS<sub>m</sub>)

relationship remained within normal range with sevoflurane inductions and fell below normal range with halothane.

While three patients experienced nonclinically significant ventricular ectopy and one some mild coughing during induction with halothane, no sevoflurane patients experienced any ectopy or airway irritability. Dr. Holzman and colleagues found less direct myocardial depression during deep inhalation induction of anesthesia with sevoflurane compared to halothane; they concluded that while sevoflurane and halothane inductions were accepted equally by patients, the lower arrhythmogenic potential and preservation of myocardial performance with sevoflurane will make it an attractive alternative for inhalation induction of anesthesia in children.

**Constance S. Houck, M.D.**, and colleagues (A-1126) at Children's Hospital, Boston, Massachusetts, investigated the pharmacokinetics of a single dose of 35 mg/kg of rectal acetaminophen in 18 children between 1 and 10 years of age. They found that this higher dose led to serum concentrations within the therapeutic range for antipyresis (10-20  $\mu\text{g/ml}$ ) in all of the patients studied, but absorption was slow and erratic. Sixty-seven percent of the study patients had serum concentrations within the therapeutic range within 60 minutes and 89 percent within 120 minutes.

Half-life was 180 minutes, approximately 50 percent longer than that achieved with oral administration, suggesting that subsequent dosing should not occur in less than six to eight hours. The mean maximal serum concentration was 31.0  $\mu\text{g/ml}$ ; well below the 150  $\mu\text{g/ml}$  that is considered hepatotoxic. Further studies are in progress to compare the analgesic effectiveness of this dose versus the standard rectal acetaminophen dose.

The American Academy of Pediatrics Section on Anesthesiology Breakfast Panel discussed current concepts in pediatric anesthesia among "private" practitioners. The panel included moderator

**Aubrey Maze, M.B.**, Phoenix, Arizona, and three panelists, all of whom are private practitioners. With a focus on the politicoeconomic milieu and the cost-effectiveness of various techniques, each panel member addressed one of the three areas of anesthesia: induction, maintenance and recovery.

**Robert M. Spear, M.D.**, San Diego, California, after acknowledging that muscle relaxants were not indicated for every intubation and discussing propofol inductions and modifications of the propofol induction for the child with head trauma, directed much of his talk to rapid sequence induction, favoring a combination of propofol 4 mg/kg and alfentanil 30-50  $\mu\text{g/kg}$ , or propofol plus rocuronium 0.8 mg/kg.

**Samuel E. Kleinman, M.D.**, described his private practice situation in El Paso, Texas, where there are no hospital-based anesthesia services, so anesthetics in the four hospitals and two day-surgery facilities are done by request only. He noted that few of the locations had conditions permissive for premedication and that the variability in quality of the associated post-anesthesia care units (PACUs) influenced the practitioner's choice of techniques to those that promoted the shortest and most stable of recovery periods. A survey of practitioners identified that a halothane induction followed by an isoflurane maintenance was the number one choice of techniques, but the insoluble agent desflurane had a great advantage in promoting rapid room turnover and stability in recovery, especially for ex-premies. For the rapid sequence induction, Dr. Kleinman favored propofol 2-3 mg/kg, alfentanil 10-20  $\mu\text{g/kg}$ , and mivacurium 0.3 mg/kg, then maintenance with desflurane and nitrous oxide, and supplementation with regional or local anesthetics.

Panelist **John E. Forestner, M.D.**, Fort Worth, Texas, was also an advocate of desflurane with its smooth and impressively rapid recovery. However, though it has been convincingly demonstrated that

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awakening is much quicker with desflurane in comparison to halothane, PACU discharge times have not changed. Dr. Forestner pointed out that this is a "systems" problem (the system does not get the awake patient out of the system) so that a change in intraoperative techniques and choice of drugs is not currently reflected in PACU discharge times. He quoted Dennis Fisher, M.D., in describing awakening times, vomiting rates, etc. as "surrogate end points" in outcomes studies.

Dr. Forestner indicated that, in his institution, a rapid sequence induction cocktail with propofol, alfentanil, lidocaine and glycopyrrolate would cost the hospital \$23.49 and the patient \$57.95. In the relative cost comparison of 1 liter flows at 1 MAC, isoflurane was 20.9 more expensive and desflurane 41.8 times more expensive than halothane, unless a closed system were employed. Since nausea and vomiting are among the biggest factors in delaying discharge, Dr. Forestner favored minimizing narcotics and using more non-steroidal anti-inflammatory drugs and regional blocks for the relief of postoperative pain. If vomiting occurs, he used metoclopramide for the initial rescue and then ondansetron for the refractory. It was his observation that approximately 15 percent of patients who had had an oral midazolam premedication and then a halothane anesthetic seemed to become agitated and disoriented in the PACU. Dr. Forestner noted that flumazenil was somewhat helpful in decreasing this agitation.

The ASA Panel on Pediatric Anesthesia on October 23, 1995, was titled "Rational New Uses of Drugs in Pediatric Anesthesia" and was moderated by **Steven C. Hall, M.D.**, Children's Memorial Hospital and Northwestern University Medical Center, Chicago, Illinois. This panel was especially timely because of the introduction of new drugs and new drug modalities and also because of the re-evaluation of old "standards" based on cost-containment pressures within institutions. The panel consisted of five

senior, internationally respected leaders in pediatric anesthesia who all have significant clinical and research interests in the topics presented.

**Jerrold Lerman, M.D.**, at the Hospital for Sick Children, Toronto, Ontario, Canada, led off the panel with his comments on "Halothane: Is It Still the 'Gold Standard'?" Dr. Lerman developed an evaluation of halothane and the other newer volatile agents, as well as propofol, in which both clinical characteristics of the drugs and their costs were compared. He presented an interesting comparison of costs, noting that comparisons come to different conclusions for the volatile agents versus propofol depending on the fresh gas flows used with the volatile agents. The issue of speed of recovery and the need to include this in a cost analysis was also addressed.

**Raafat S. Hannallah, M.D.**, Children's National Medical Center, Washington, D.C., followed with a re-evaluation of premedication in children. Dr. Hannallah noted that 15 percent to 20 percent of children may be uncooperative during induction without premedication. Although there has been a trend in recent years away from the use of premedication, Dr. Hannallah presented several reasonable alternative regimens and suggested appropriate parameters for their use.

**D. Ryan Cook, M.D.**, Children's Hospital, Pittsburgh, Pennsylvania, started his talk with a colorful disclaimer of drug companies and others who have supported his work in the past. Dr. Cook then discussed the range of muscle relaxants currently available, with a focus on comparing succinylcholine and rocuronium. Noting that 40 percent of pediatric patients who receive neuromuscular blockers only need the blocker for intubation, Dr. Cook developed an analysis of the two drugs based on their clinical profile, their potential complications, cost and a proposed method of estimating costs of rare complications. In his customary unassuming style, he presented his views and conclusions about the use of succinyl-

choline versus rocuronium.

**Charles J. Coté, M.D.**, Children's Memorial Hospital, Chicago, Illinois, presented some of his recent work in the area of sedation and its implications for anesthesiologists' involvement. This is an area in which Dr. Coté is particularly knowledgeable; he presented adverse drug reports from the Food and Drug Administration and other sources as the foundation for some of his comments. Recurring sources of complications with sedation provided a basis for analysis of systematically changing protocols and approaches to sedation. Dr. Coté suggested that anesthesiologists increase their involvement in sedation practices, not only to increase patient safety but also as a potential revenue source.

**Frederic A. Berry, M.D.**, University of Virginia, Charlottesville, Virginia, finished the formal lectures with a discussion of the need for pediatric anesthesiologists versus general practitioners to be involved in patient care, primarily on neonates and infants. Citing the few studies available in the literature, Dr. Berry talked about the desirability of experienced providers and some of the economic and political constraints involved. This talk was the appropriate springboard for the question-and-answer session that followed.

Audience participation came from pediatric specialists and generalists alike. Areas pertinent to all of the different talks were discussed. Some spirited discussion did ensue, but civility was maintained as a variety of viewpoints were discussed. Many clinical experiences, observations and suggestions were also shared. The goal of this panel was to demonstrate the variety of practice and possibilities in areas unique to pediatric anesthesiology. The audience and speakers combined to make it a challenging and worthwhile afternoon. □

# President's Message

(Continued from page 1)

Vice-President Mark A. Rockoff, M.D., Boston, Massachusetts.

The SPA Board of Directors has issued a request to the Accreditation Council for Graduate Medical Education (ACGME) for accreditation of fellowship programs in pediatric anesthesiology. In response, the ACGME requested that the Residency Review Committee (RRC) for Anesthesiology review the request. This review will take place in April. The SPA Board of Directors has established four specific strategies to address this review by the RRC. The Board of Directors further wants to make it clear that we are not seeking subspecialty certification for pediatric anesthesiology nor is this an attempt to restrict practice.

Our membership growth is thriving, currently at 1,639 members. Earlier this year, you were sent a membership directory, which we intend to update and send out every other year. The Committee on Publications continues to do a great job under the leadership of Peter J. Davis, M.D., Pittsburgh, Pennsylvania, producing a high-quality newsletter, which is evident by this current publication.

Our Committee on Research has recommended continued support of the joint grant sponsored by SPA and the Foundation for Anesthesia Education and Research (FAER). In addition, the Board of Directors has accepted a recommendation from the Committee on Research that monetary awards for the top resident and junior faculty abstracts be presented at our Winter Meeting. Another research initiative undertaken by the committee is its proposal for a multi-institutional study of anesthetic outcomes in children. The issues to be studied, methodology and funding are to be determined under the direction of David G. Nichols, M.D., Baltimore, Maryland.

Through the leadership of Raeford E. Brown, M.D., Little Rock, Arkansas, I anticipate that SPA will communicate by e-mail in the near future. Dr. Brown is also working on the development of a World Wide Web page on the Internet for SPA.

One of the missions of our society is to support innovation and new knowledge in pediatric anesthesia. As you know, SPA has pursued a joint venture for journal affiliation to foster pediatric anesthesia research. I am pleased to announce that we have reached a joint publishing agreement with the journal *ANESTHESIA & ANALGESIA* and the International Anesthesia Research Society (IARS). The benefits to our society are the nomination of a section editor for pediatric anesthesia,

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***...the Committee on Long-Range Planning for SPA decided on five objectives for our society. It is worth noting that these five objectives (independent meeting, journal affiliation, financial solvency, increased membership and further promotion of research through grants) have all been accomplished.***

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increased exposure of our society to the reading membership of *ANESTHESIA & ANALGESIA* (circulation: 27,000), increased resident membership in our society and an opportunity for an annual review article on a topic in pediatric anesthesia. This publishing agreement will take effect at the first of the year, so look in the January issue of *ANESTHESIA & ANALGESIA* for the announcement of our incorporation. We think this is a very significant step forward for our society,

and I personally thank the SPA Board of Directors for their initiative in this regard.

When you receive your dues statement, there will be a number of new options available. The options are: 1) active SPA membership only/no journal (\$100), as in the past; 2) SPA membership plus the journal *ANESTHESIA & ANALGESIA*, plus membership in IARS (\$200); 3) SPA membership plus the journal and IARS membership, plus SAMBA and/or Society of Cardiovascular Anesthesiologists (SCA) membership [please call the IARS office at (216) 642-1124 for discount dues rate].

For your information, 60 percent of SPA members also belong to the IARS and receive *ANESTHESIA & ANALGESIA*. The remaining members of our society have no other subspecialty affiliation, except a small number who belong to SCA or the Society for Ambulatory Anesthesia (SAMBA) in addition to SPA and IARS. Since *ANESTHESIA & ANALGESIA* is now an affiliated journal of SPA, I would encourage all members who have not received the journal in the past to consider SPA membership and the journal *ANESTHESIA & ANALGESIA* at the rate of \$200.

SPA is seeking new members to be involved in its committees. If any member has particular interest in serving on a certain committee, please correspond with the appropriate committee chair or myself. These committees will be restructured at the Winter Meeting in February 1996 in Tampa, Florida.

Finally, I would like to conclude noting that the Committee on Long-Range Planning for SPA met two years ago and decided on five objectives for our society. It is worth noting that these five objectives (independent meeting, journal affiliation, financial solvency, increased membership and further promotion of research through grants) have all been accomplished. My thanks and appreciation to your Board of Directors on a job well done. □



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## Update on RBRVS: The Resource-Based Relative Value Scale

By Raeford E. Brown, Jr., M.D.

The Health Care Financing Administration (HCFA), at the direction of Congress, devised the Resource-Based Relative Value Scale (RBRVS) to deal with reimbursement of physicians and other health care providers for the care of Medicare patients. This system addresses the care of adult patients and is not in step with the advances in the care of children in the past 25 years.

As a part of the routine five-year evaluation of the RBRVS, Congress mandated a revision of the system to provide specific relative value units relating to the anesthetic management of infants and children. Members of SPA and other groups of pediatric anesthesiologists are working to ensure that these revisions are complete, accurate and consistent with current standards of care.

In response to a call for comments published in the December 1994 *Federal Register*, a letter to HCFA was drafted and

circulated to SPA Executive Committee members. This letter identified problems with the current system as well as proposed solutions. Problems included medical procedures for which no CPT code exists, and medical procedures that are coded under the present system but are grossly undervalued. It is strongly recommended that age-specific codes should be created in order to recognize the difficulties inherent in the management of pediatric patients. In addition, it has been suggested that new relative value units should be created for procedures that are specific to infants and children.

These suggestions and others were passed from HCFA to the American Medical Association/Specialty Society Relative Value Update Committee (RUC). This committee is charged with reviewing all proposed changes to the RBRVS. We are currently awaiting the comments of this committee. A successful outcome at this



Raeford E. Brown, Jr., M.D.

point would require pediatric anesthesiologists to provide detailed documentation of the needs for an overhaul of the current system as it pertains to pediatric patients. □

## Annual Meeting Report

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the journal *ANESTHESIA & ANALGESIA*. Dr. Greeley noted that the journal *ANESTHESIA & ANALGESIA* will become the official journal of SPA and SPA will have representation on its editorial board. With this affiliation, there also will be the immediate effect of 2,200 additional anesthesiology residents who will become members of SPA.

Of note is that for residents to join SPA, it will now cost \$60; however, with this fee, residents will also be members of the Society of Cardiovascular Anesthesiologists, the Society for Ambulatory Anesthesia and IARS.

Following the SPA business meeting was a buffet reception held at the Carter Presidential Center that was a tremendous success. SPA wishes again to thank members of Emory University Department of Anesthesia and Egleston Children's Hospital for making arrangements for a delightful reception. The members of SPA would also like to thank Theresa Mancuso and Alexandra Brosius for their hospitality, graciousness and watchful eyes (i.e., expert ticket-taking) at the reception. □

### E-mail Address Online

Members may send letters and inquiries to the SPA Office at the following e-mail address:

[spa@ASAhq.org](mailto:spa@ASAhq.org)

Mark Your Calendar:

## Plan to Attend SPA's Annual Meeting in New Orleans

The SPA 10th Annual Meeting will take place on October 18, 1996, in New Orleans, Louisiana. As usual, this will be on the Friday just prior to the start of the American Society of Anesthesiologists Annual Meeting on October 19-23.

The morning scientific session will address "Developmental Physiology in Pediatric Anesthesia." Topics to be covered during this session include "The Developing Heart" and "Development of Respiratory Control." The morning session will conclude with advances in technology/support topics, "New Methods of Cardiovascular Support" and "New Methods of Respiratory Support."

Following lunch, one afternoon session will be devoted to a "Practical Update" including talks on "Postoperative Nausea and Vomiting (PONV): Physi-

ology" and a pro versus con discussion on the PONV controversy on prophylaxis.

The second portion of the afternoon will address "Contemporary Management Issues" on such topics as "Effective Perioperative Management of Decreasing Resources," "Academics with For-Profit Management: Implications for Subspecialties" and "Information and Informatics: Implications for Pediatric Anesthesia." The afternoon meeting session will conclude with an Honorary Lecture on the 10th anniversary of SPA and the SPA business meeting during which new officers and directors will be elected. Following the business meeting will be the always popular evening buffet reception. While all details will be available in spring, 1996, you should mark your calendar now to attend this educational experience. □

### FAER and SPA Award Research Starter Grant

By Robert T. Wilder, M.D., Ph.D.

A \$25,000 starter grant from SPA and the Foundation for Anesthesia Education and Research (FAER) was awarded recently to Robert T. Wilder, M.D., Ph.D., Assistant Professor of Anesthesia at Harvard Medical School, Boston, Massachusetts, for his study on "Mechanisms of Tachyphylaxis to Local Anesthetics."

We have developed a rat model for tachyphylaxis to local anesthetics using repeated sciatic nerve blocks. Motor and sensory tachyphylaxis consistently develops over two to three blocks. The development of tachyphylaxis is proportional to the degree of thermal hyperalgesia developed from thermal sensory testing. Tachyphylaxis can be prevented by systemic administration of medications that prevent hyperalgesia: NMDA antagonists and nitric oxide synthase inhibitors. This grant will extend this work to determine the molecular sites of tachyphylaxis. We will place subarachnoid catheters to allow administration of medications to the spinal cord and compare dose response curves generated by spinal and systemic administration. We will test the inhibitory medications mentioned above as well as arginine that is hypothesized to increase tachyphylaxis. Additionally, we will examine the role of protein kinase C in tachyphylaxis. This should clarify the molecular mechanisms of tachyphylaxis to local anesthetics and provide treatment strategies for this clinical problem. □



New Orleans, with its historical points of interest and architecture such as in Jackson Square, will serve as host city for the SPA 10th Annual Meeting on October 19, 1996.

## Society for Pediatric Anesthesia



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## ACGME Update: Ensuring Advancement and Training of Generalists and Subspecialists

SPA has submitted an application to the Residency Review Committee (RRC) for Anesthesiology of the Accreditation Council for Graduate Medical Education (ACGME) for approval of fellowship training programs in pediatric anesthesiology. This was done in conjunction with the leadership of the American Academy of Pediatrics Section on Anesthesiology, the American Society of Anesthesiologists (ASA) Committee on Pediatric Anesthesia and an informal study group of pediatric anesthesiologists who have been discussing issues of pediatric anesthesia for many years. The intent of the pediatric fellowships is to provide training for pediatric fellows that is accredited by the national organization responsible for all anesthesiology and other residency and fellowship programs.

Anesthesiology currently has only two accredited fellowship programs: critical care medicine and pain management. However, there are 18 other pediatric subspecialties that offer

ACGME-approved fellowships, including many in medical areas such as cardiology, neonatology, neurology, etc.; surgical areas such as general surgery, neurosurgery, orthopedics, urology, otolaryngology, etc.; and others, including pathology, radiology and psychiatry. Pediatric anesthesiology seeks to be the 19th ACGME-recognized fellowship.

*Note that this request to have training programs accredited by the ACGME is not a request to have subspecialty certification offered by the American Board of Anesthesiology. Accreditation is important for many reasons, including the ability to assure advancement in pediatric anesthesia care and the training of generalists and subspecialists in the provision of anesthesia and perioperative care for pediatric patients.*

The application must be reviewed by members of the RRC and the ACGME. This process will take many months, and SPA will keep its members informed of progress in this area.

□