



# Society for Pediatric Anesthesia NEWSLETTER

Volume 10 Number 3

Summer 1997

## President's Message

By Mark A. Rockoff, M.D.  
Children's Hospital, Boston

**B**y the time you read this report, I hope most of you will have already made plans to attend the 11th SPA Annual Meeting in San Diego. Joe Tobin, M.D. (Program Chair) and the members of the Education Committee have arranged an outstanding program that is described elsewhere in this Newsletter. As usual, meals and refreshments are provided with your registration fee, including the always-popular evening reception that will be held this year at the beautiful San Diego Aerospace Museum in Balboa Park. (Complimentary bus service will be provided.) This meeting is the best deal around and provides a wonderful opportunity to hear about many new, interesting and controversial topics related to pediatric anesthesia, as well as meet old friends and



make some new ones. If you cannot attend, you can read about the meeting in our next Newsletter and in our official journal, *Anesthesia & Analgesia*. Incidentally, congratulations to Bill Greeley, M.D., SPA's Immediate Past-President, who has assumed the position as Pediatric Section Editor of *Anesthesia & Analgesia*. He has taken over for Paul Hickey, M.D. who held this position for the last ten years and did much to enhance the visibility of pediatric anesthesia in this journal and as a subspecialty within anesthesiology overall.

(Continued on page 2)

## Pediatric Anesthesia Fellowship Training: ACGME Update

By Gail E. Rasmussen, M.D.  
Vanderbilt Children's Hospital

The ACGME has now approved subspecialty training in Pediatric Anesthesiology. There are many considerations still to be worked out for criteria for training and credentialing. For instance scope of practice and criteria for accountability of practice in granting clinical privileges in pediatric anesthesia are under discussion. Certain pieces of information however, have been delineated including the fact that this training can only occur in an institution in which there is an ACGME accredited anesthesiology residency program or in an institution affiliated with a core program by a formal integration agreement.

(Continued on page 3)

## A Glance Inside

Editor's Corner .....	4	Continental Notes .....	14	SPA 11th Annual Meeting Program San Diego, California .....	18
Point / Counterpoint.....	4	Private Practice Perspectives .....	15	SPA 11th Annual Meeting Registration Form .....	22
Literature Reviews .....	8	New Members .....	15	Continuing Medical Education Needs Assessment .....	23
SPA / FAER Update .....	13	Fourth International Meeting on Pediatric Pain .....	16		

*The Society for Pediatric Anesthesia (SPA) publishes the SPA Newsletter three times a year. 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.*

**Editor:**

**Jayant K. Deshpande, M.D.**, Departments of Anesthesiology and Pediatrics, Vanderbilt Children's Hospital, T-0118 MCN, Nashville, TN 37232-2591

**Associate Editor:**

**Gail E. Rasmussen, M.D.**, Departments of Anesthesiology and Pediatrics, Vanderbilt Children's Hospital, T-0118 MCN, Nashville, TN 37232-2591

**Assistant Editors:**

**Rita Agarwal, M.D.**, Department of Anesthesiology, The Children's Hospital, 1056 E 19th Ave., Denver, CO 80218

**Karen S. Bender, M.D.**, 120 Stonepost Rd, Longwood, FL 32779

**Anne E. Dickison, M.D.**, Department of Anesthesiology, Dartmouth-Hitchcock Medical Center, 1 Medical Center Drive, Lebanon, NH 03756

**Lawrence H. Feld, M.D.**, Director - Pediatric Anesthesiology, California Pacific Medical Center, San Francisco, CA 94120

**Brian J. Gronert, M.D.**, Department of Anesthesiology, Children's Hospital of Pittsburgh, 3705 Fifth Ave. at DeSoto Street, Pittsburgh, PA 15213-2583

**Howard B. Gutstein, M.D.**, Section of Pediatric Anesthesia, Mott Children's Hospital, 1500 E. Medical Center Drive, Ann Arbor, MI 48109

**Zeev N. Kain, M.D.**, Department of Anesthesiology, Yale University School of Medicine, 333 Cedar St., P.O. Box 3333, New Haven, CT 06510

**Alan S. Klein, M.D.**, Pediatric Anesthesia Consultants, 818 E. 19th Ave., Denver, CO 80218

**Ronald O. Litman, D.O.**, Strong Memorial Hospital, 601 Elmwood Ave., Box 604, Rochester, NY 14642

**Thomas Mancuso, M.D.**, Egleston Hospital for Children, Dept. of Anesthesia, 1405 Clifton Rod. NE, Atlanta, GA 30322

**Francis X. McGowan, M.D.**, Dept. of Anesthesiology, Boston Children's Hospital, 300 Longwood Ave., Boston, MA 02115

**Thomas Vetter, M.D.**, Children's Hospital Medical Center of Akron, 1 Perkins Sq., Akron, OH 44308

**Mehernoor F. Watcha, M.D.**, Department of Anesthesia, University of Texas Southwestern Medical Center, 5323 Harry Hines Blvd., Dallas, TX 75235-9068

**SPA Headquarters**

Society for Pediatric Anesthesia  
1910 Byrd Ave., Suite 100 / P.O. Box 11086  
Richmond, VA 23230-1086;  
(804) 282-9780; Fax (804) 282-0090;  
Email: SocietyHQ@compuserve.com;  
Internet: <http://www.uams.edu/spa/spa.htm>

© 1997

President's Message

(continued from page 1)

A more extensive educational program is planned for February, 1998 at our 4th annual, three-day, mid-winter meeting held in conjunction with the Anesthesiology Section of the American Academy of Pediatrics. Under the leadership of Frank McGowan, M.D., Program Chair, there will be presentations of research abstracts and many "hands-on" workshops in addition to lectures and discussions. Once again we plan to have our interactive computer system available as a way of soliciting candid, but anonymous responses from the audience to important and controversial aspects of pediatric anesthesia practice. In addition, we are trying to arrange for presentation of a "live" anesthesia "crisis" through telecommunications from one of the nation's leading simulator centers. As has been true for our previous winter meetings, this should be a great opportunity to learn and have fun in a setting far removed from the snow in February.

The Society is also involved in many other activities. We are pleased to support the research of pediatric anesthesiologist, Neil Farber, M.D., PhD., through our collaboration with the Foundation for Anesthesia Education and Research and our annual SPA/FAER Research Award. Furthermore, we have been asked by the ASA to assist them in developing guidelines for Performance-Based Credentialing, as well as Practice Guidelines as they pertain to pediatric anesthesia. These are always controversial issues, but the Society is pleased to be able to work with our colleagues throughout anesthesia to try to improve the care children receive. As these develop, we will keep you informed.

In addition, we anticipate the Residency Review Committee (RRC) for Anesthesiology will soon be issuing instructions for programs that wish to become "approved" to offer advanced training in pediatric anesthesiology. As I noted in the previous Newsletter, Pediatric Anesthesiology was accepted by the Accreditation Council for Graduate Medical Education (ACGME) as a formal subspecialty within Anesthesiology, joining Critical Care Medicine and Pain Management in this regard, effective February, 1997. (It is also the 19th accredited Pediatric subspecialty.) In the meantime, SPA members may obtain, free-of-charge, a copy of SPA's 2nd Edition of the Directory of Programs in Pediatric Anesthesiology by contacting the Society's administrative headquarters in Richmond, Virginia.

Finally, your elected Officers and Directors always welcome volunteers who can offer their talents and time to the Society. Anyone interested should contact me or any other members of the Board before our next meeting in October. We would be delighted to get you involved - in fact, the Society depends on its membership to fulfill its mission. Someone once said that a democracy is not a spectator sport - you either take part or are taken apart. In these days of "managed care", the threats to medical practice and progress have never been greater, so your involvement is not just a good idea, it is crucial. I look forward to hearing from many of you and having this Society play an important role in shaping the future of pediatric anesthesia. ❖

Mark A. Rockoff, M.D.

The Pediatric Anesthesiology 1997 Syllabus is available for purchase from Society Headquarters for \$25.00, plus shipping. Call, write or fax your request to:

**SPA Headquarters**

1910 Byrd Ave., Suite 100 / P.O. Box 11086  
Richmond, VA 23230-1086  
(804) 282-9780; Fax (804) 282-0090  
SocietyHQ@compuserve.com

(continued from page 1)



Gail E. Rasmussen, M.D.

The training will be for a twelve month period after successful completion of an anesthesiology residency. The goals of training will be to not only provide an in depth clinical experience with preoperative, intraoperative and postoperative management of the pediatric patient, but to develop skills and judgement in clinical care, teaching, administration and research.

There are certain faculty qualifications and responsibilities that must be met for each program. There must be at least three faculty members who are equal to or greater than two full time equivalents. The program director must be board certified by the ABA and licensed to practice in the state where the program is located. The program will be set up and run according to the ACGME criteria established and similar to those already in operation, ie. Critical Care Medicine. There must be clear cut program goals and objectives and delineation of fellow duties, on call schedule and lines of supervision. There is no strict limit on fellow hours, but it is recommended that at least one full day out of every seven, be free from hospital or research duties. There must be fellow evaluations at least at the end of each six month period of training and opportunity for fellows to provide written, confidential evaluation of the program and faculty. The program must follow institutional and departmental policies and procedures. There must be adequate documentation of clinical experience and statistical compilation of cases and the program will come under evaluation by the Residency Review Committee (RRC) and the ACGME.

There are clearly outlined resources that must be available to the fellowship program. These include a sufficient volume of pediatric cases to provide a broad educational experience and a Pediatric and Neonatal Intensive Care Unit, an Emergency Department that is equipped to handle children of all ages, operating rooms that are designated for pediatric patient care and surgeons that have special pediatric training and/or experience in general surgery, otolaryngology, neurosurgery, GU, ophthalmology, orthopedics, and plastic surgery. There also must be clinical laboratories available and a conveniently located library and research space.

The clinical components and didactics of the program are outlined as follows:

#### *Clinical Components:*

- Preoperative assessment of pediatric patient
- CPR and advanced life support
- Airway management

- Mechanical ventilation
- Thermoregulation
- Monitoring and line placement (arterial and central venous catheters)
- Pharmacologic support of circulation
- Fluid and blood loss management and transfusion practices
- Elective and emergent case management; including neonatal surgical emergencies, cardiopulmonary bypass and transplantation
- Regional anesthetic techniques
- Sedation and anesthesia outside of the OR
- Pain management
- Consultation of medical and surgical patients
- Recognition of perioperative vital organ dysfunction
- Participation of care in the PICU and NICU
- Emergency transport of critically ill children
- Psychologic support of patients and their families

#### *Didactic Components:*

- CPR
- Pharmacokinetics and pharmacodynamics of drug delivery
- CV, respiratory, renal, hepatic and CNS physiology
- Metabolic and Endocrine effects of surgery
- Infectious disease pathophysiology and treatment
- Coagulation abnormalities and therapy
- Normal and abnormal physical and psychological development
- Trauma and burn management
- Congenital anomalies and developmental delay
- Use and toxicity of general and local anesthetics
- Pain management in all ages
- Ethical and legal aspects of patient care
- Transport of critically ill patients

A copy of the Pediatric Anesthesiology Fellowship Program requirements may be obtained by calling the ACGME Faxback number: 312-245-9174 (document #1042 for pediatric anesthesia)

A program application can be requested by writing the ACGME, 515 N. State Street, Suite 2000, Chicago, IL. 60610, or by calling the ACGME office at (312) 464-4645 / 4644. ❖

## Editor's Corner



By Jayant K. Deshpande, M.D.  
Vanderbilt Children's Hospital

This "between meetings" edition of the Newsletter offers us a chance to present articles of interest, in addition to the literature reviews by members of the Publications Committee. The Point/Counterpoint section in this issue addresses a topic that is debated in many pediatric operating rooms, among pediatric anesthesiologists and surgeons. Drs. Spurrier and Kurth have done an excellent job of highlighting the important issues that must be considered when planning an anesthetic for children. I would like to thank Tom Mancuso for coordinating this effort.

In this issue, we have included a section "Continental Notes" to provide a European perspective on the issues important to Pediatric Anesthesiologists. Dr. Lindahl was kind enough to send in the first contribution to this section. We hope to make this a regular column where other European colleagues contribute articles of interest to the SPA membership. Another column that appears in this issue is the "Private Practice Perspectives." In this first column, Karen Bender, a member of the Publications Committee, presents her thoughts on one of the challenges that faces all of us - keeping current with advances in our field. We welcome other members to submit articles for this section which will appear periodically throughout the year.

Finally, I would like to focus your attention on the excellent program for the SPA meeting in San Diego. Joe Tobin has done an excellent job of putting this meeting together. Hope to see you there! ❖

## Point / Counterpoint

### Anesthesia for Former Prematures Undergoing Inguinal Herniorrhaphy

Thomas J. Mancuso, M.D.  
Assistant Professor of Anesthesia  
and Pediatrics  
Emory University School of Medicine

It is difficult for me to evaluate the relative merits of regional versus general anesthesia for ex-prematures undergoing inguinal herniorrhaphies in an unbiased way since my personal practice is to use general anesthesia almost exclusively. Of course, it goes without saying that regional anesthesia/analgesia should be a part of the anesthetic for children who receive general anesthesia for herniorrhaphies. Dr. Kurth's comments regarding the advantages of general anesthesia ring true for me. I believe, as do the surgeons with whom I work regularly, that the surgery proceeds more quickly with an immobile operative field. Additionally, these are small patients, almost completely covered by the surgical drapes and I appreciate having a secure airway, especially as the procedure becomes more lengthy.

Despite my personal bias, Dr. Spurrier makes several points in favor of regional anesthesia. I think that the most compelling reason to use regional anesthesia for these children is to avoid instrumenting the airway in those children with particularly severe BPD. These ex-prematures, who have had prolonged ventilator courses may have subglottic stenosis in addition to disease of the pulmonary parenchyma and therefore are at risk for the development of post-intuba-



tion "croup" or upper airway obstruction in addition to exacerbating their chronic lung disease of infancy. With these children, the morbidity resulting from another intubation may outweigh any considerations which favor the use of general anesthesia and intubation. Other options for airway maintenance using general anesthesia such as laryngeal mask airways or face masks pose their own difficulties and the resolution of those difficulties often involves intubation. If a particular patient is best cared for without instrumenting the airway, regional anesthesia may be the best alternative.

I think that Dean Kurth sums up this difference of opinion very well in his remark that "No one anesthetic technique is best for all circumstances". The authors here provide us with an excellent review of the pertinent data and experience so that we may make more informed choices for our patients. ❖

Visit the SPA Website at:

<http://www.uams.edu/spa/spa.htm>

# Point / Counterpoint

## Regional Anesthesia is the Technique of Choice for Former Prematures Undergoing Inguinal Herniorrhaphy

Ellen A. Spurrier M.D.  
Assistant Professor of  
Anesthesiology and Pediatrics  
University of Maryland School  
of Medicine

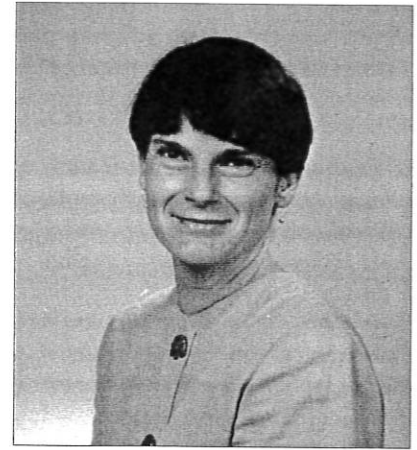
It has been recognized for at least 15 years that infants who were born prematurely have a higher incidence of postanesthetic complications than term infants of the same postnatal age undergoing the same surgical procedures. A substantial number of these infants undergo 'elective' anesthesia and surgery because of concern regarding incarceration and strangulation of inguinal hernias. Regional anesthesia has significant demonstrated and theoretical advantages over general anesthesia in the care of these high risk infants.

Postoperative apnea is the principle, but not sole postanesthetic complication in young former preterm babies. The incidence ranges from 2% in infants over 50 weeks PCA who have a hemoglobin greater than 10gm/dl to 40% in infants under 40 weeks PCA following general anesthesia. The incidence of apnea following regional anesthesia in this high risk population appears to be very low. In a prospective randomized study utilizing continuous pneumography, Welborn demonstrated significantly less apnea (0%) in infants who received unsupplemented spinal anesthesia as compared to general. Other authors have reported on larger series of spinal and caudal and lumbar epidural anesthetics in young premature babies who had standard apnea and bradycardia monitoring for 12 hours postoperatively. Although these series and several case reports describe apnea in some infants following regional anesthesia for hernia repair, all had mitigating factors such as administration of an opioid analgesic, hypothermia, significant anemia, very frequent preoperative and remote postoperative apnea or supplemental IV sedation.

Regional anesthesia provides an additional advantage over general anesthesia in that it obviates the need to intubate the trachea to assist or control ventilation. Although the incidence is declining, a significant number of former premature infants have bronchopulmonary dysplasia. BPD is characterized by bronchomalacia and bronchospasm which may lead to air trapping and high airway resistance during coughing and forceful exhalations associated with a tracheal tube. This scenario, which may be associated with prolonged emergence and punctuated by hemoglobin oxygen desaturations, can be avoided by use of regional anesthesia. The patient can be transferred promptly to the PACU at the conclusion of the surgery, usually more than compensating for the time spent to perform the regional technique.

The complication rate for regional anesthesia in infants is low. Healthy children under the age of 5 years exhibit no significant cardiovascular changes in response to T3-T4 sensory blockade. High spinal anesthesia has been reported in infants following standard local anesthetic doses when the buttocks are raised after injection of hyperbaric tetracaine and when caudal anesthesia is administered following dural puncture for spinal or attempted spinal anesthesia. There have been 2 case reports in which high spinal levels were achieved with standard doses of tetracaine without explanation. One infant tolerated a C5 motor blockade without intervention, another required ventilatory support but cardiovascular indices did not change.

Regional anesthetics provide advantages over general anesthesia with regard to postoperative pain management. Preemptive analgesia is theoretically beneficial in decreasing postoperative analgesic requirements which is desirable in a patient group with higher than average risk of respiratory depression after administration of opioids. Caudal anesthesia



with 0.375% Bupivacaine for hernia surgery provides analgesia well in to the postoperative period.

Regional anesthesia is fun. In my experience regional anesthesia is well received by families and other health care professionals. Parents are relieved to know that their baby won't have 'the breathing tube again'. The surgeons and OR nurses are as delighted as we are to see a cute infant sucking his pacifier while his hernias are being repaired. PACU nurses are happy to admit a comfortable, albeit hungry patient. The NICU staff is grateful to receive a patient whose respiratory status quo is maintained. Pediatric anesthesiologists are generally denied the satisfaction derived from a well executed spinal or epidural and the patient who arrives in the PACU awake and asking for their next meal.

We should seize the opportunity! ❖

### References

1. Steward DJ. Preterm Infants are More Prone to Complications Following Minor Surgery than are Term Infants. *Anesthesiology* 1982; 56:304-6.
2. Cote CJ, Zaslavsky A, Downes JJ, Kurth CD, Welborn LG, Warner LO, Malviya SV. Postoperative Apnea in Former Preterm Infants after Inguinal Herniorrhaphy. *Anesthesiology* 1995; 82:809-22.

(Continued on page 8)

---

## Point / Counterpoint

### General Anesthesia is the Best Method for Former Prematures Undergoing Inguinal Herniorrhaphy

C. Dean Kurth, M.D.

Department of Anesthesiology and  
Critical Care Medicine  
Children's Hospital of Philadelphia

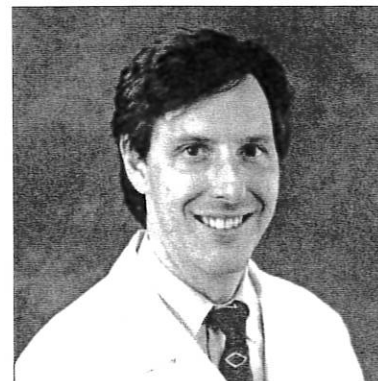
How do we select the best anesthetic technique for our patients? We select the one that offers the best combined anesthetic, surgical, and economic outcome. This obviously involves a complex analysis with many variables for which complete data rarely exists. Given this situation, we have to infer the best technique based on the limited published data and our personal experiences (anesthesia, surgical, and institutional). No one technique will be best in all circumstances. For example, the best anesthetic technique may vary from surgeon to surgeon depending on their skill. The best anesthetic technique may also vary between institutions for the same patient and surgeon, depending on economics. Overseas anesthesia is a good example of this. For inguinal hernia operations, the anesthetic technique may be general or regional anesthesia (spinal, epidural, or field block). My position is that general anesthesia is usually the best anesthetic technique for prematurely born infants undergoing hernia repairs. Before I present my argument, let's review the data on anesthesia for inguinal hernia repair in former premature infants.

In the anesthesia literature, Steward reported that prematurely born infants experienced a high rate of complications following hernia repair with general anesthesia, with postoperative apnea being the most common complication.<sup>1</sup> Subsequent studies observed the incidence of postoperative apnea varied mainly with postconceptual age (sum of gestational and postnatal ages): the incidence was upwards of 60% in <40 week postconceptual age infants and less than 10% in >50 weeks postconceptual age infants.<sup>2</sup> Postoperative apnea usually begins in the re-

covery room, although it can begin several hours later.<sup>3</sup> Airway obstruction plays an important role in postoperative apnea occurring in the recovery room<sup>4</sup>. In infants <45 weeks postconceptual age, apneic episodes can continue for days and require mechanical ventilation, whereas in older infants, the apneic episodes are usually self-limited and cease within 12 hours postoperatively.<sup>1,3</sup> Both anesthetic and surgical factors appear to contribute to the development of postoperative apnea. Surgical factors probably include the stress response from trauma and pain. The rationale for regional anesthesia is that it depresses the surgical stress and it lacks airway obstruction.

In the surgical literature, Rescorla, et al reported that the complication rate in prematurely born infants with inguinal hernias was significantly higher than that of the general pediatric population.<sup>5</sup> Incarceration was the most common surgical complication, not infrequently accompanied by bowel obstruction. The infants with incarcerated hernias experienced a high incidence of postoperative complications as well, including infection, hematoma, and recurrent hernias. Postoperative apnea was also mentioned as a complication. Because of the risk of waiting to repair the hernia electively, they recommended operating as soon as the infant was medically stable, and hospitalizing the infant overnight because of postoperative apnea.

Based on the anesthetic and surgical data, the question of best anesthetic technique revolves around the prematurely born infant 35-45 weeks postconceptual age with an asymptomatic hernia. This age infant has usually recovered from the diseases of prematurity and is now medically stable. They have a high risk of clinically significant postoperative apnea. The indication to operate is the risk of incarceration and associated complications, as well as the tendency



for the hernia to increase in size with time. Now for my argument that general anesthesia is usually the best technique.

*1. General anesthesia provides the greatest flexibility for the surgeon to achieve the best repair of the hernia (improved surgical outcome)*

From a technical standpoint, inguinal hernia repairs in prematurely born infants are often difficult, invariably increasing the operating time. The difficulty stems from the not-infrequent history of incarceration and resultant tissue edema; the occasional involvement of the gonads and bowel; and the small size of the inguinal region and tissue laxity of premature infants. The surgeon is therefore less able to predict beforehand how long it will take to repair the hernia. General anesthesia offers time flexibility, unlike spinal anesthesia. It is also easy to achieve excellent operating conditions with general anesthesia, as the patient is quiet, relaxed, and not moving.

Prematurely born infants also have a high incidence of giant hernias. These are technically difficult to repair and require time. Once again, general anesthesia affords the surgeon, irrespective of skill, state of the tissue in the inguinal region, and size of the hernia, the time flexibility and operating conditions to repair the hernia.

*2. Administration of caffeine with general anesthesia eliminates clinically significant postoperative apnea (improved anesthetic outcome)*

Methylxanthines such as theophylline and caffeine have been used for years to treat apnea of prematurity, as these drugs have been shown to decrease the

incidence of apnea, decrease the duration of apneic episodes, and prevent airway obstruction with the apnea. The dose of theophylline required to treat apnea is less than for asthma (1-2 mg/kg vs 5-6 mg/kg). Although controversial, methylxanthines appear to prevent apnea by blocking the action of adenosine, a inhibitory neuromodulator, on adrenergic receptors (A1) of respiratory neurons. The dose of methylxanthines to treat apnea does not inhibit phosphodiesterase in diaphragmatic muscle.

Methylxanthines has also been shown to prevent postoperative apnea following general anesthesia in prematurely born infants 35-45 weeks postconceptual age. In a blinded-placebo control study, Welborn, et al found that in infants who received caffeine (10 mg/kg IV) after induction of anesthesia, postoperative apnea and arterial desaturation were not observed, whereas in control infants (untreated), the incidence of postoperative apnea and desaturation was 81 % and 50%, respectively.<sup>6</sup> Further, no side effects were observed in the caffeine treated group. Caffeine has a long half-life (>24 hours) in young infants. Thus, a single dose of caffeine administered in the operating room effectively prevents apnea for when the infant is at risk.

3. *The effectiveness of regional anesthesia in preventing postoperative apnea remains inconclusive.*

There are two studies comparing the incidence of postoperative apnea following spinal and general anesthesia for hernia repairs in prematurely born infants.<sup>7,8</sup> No controlled studies exist for epidural anesthesia. Krane, et al found no difference in the incidence of postoperative apnea between general and spinal anesthesia.<sup>8</sup> Although the severity of arterial desaturation and bradycardia accompanying the apnea was less severe with spinal anesthesia, there was no clinical significance attached to this. Welborn, et al examined the incidence of postoperative apnea with spinal anesthesia, spinal anesthesia plus ketamine, and general inhalational anesthesia.<sup>7</sup> No postoperative apnea was observed in the spinal group, whereas the incidence was 31% in the general and 89% in the spinal/ketamine groups. Thus, if spinal an-

esthesia improves outcome, it must be a pure technique (no sedation); otherwise, it may worsen outcome.

4. *Regional anesthesia is technically difficult and not reliable in prematurely born infants*

Technical difficulties certainly exist with spinal and epidural anesthesia in small infants. Total spinal block, inadequate block, and inability to obtain a block, have all been reported in prematurely born infants presenting for hernia repairs. Webster, et al described their experience with spinal anesthesia in a reasonably large number of infants for hernia operations.<sup>9</sup> Spinal anesthesia alone was successful in only about 50% of the cases. Lumbar puncture was technically difficult in 21%. No block was obtained 6% of the time and a total spinal occurred in 4%. Inadequate block requiring general anesthesia occurred in 32%. In addition, apnea was observed in the operating room following spinal anesthesia, necessitating bag and mask ventilation. Thus, regional anesthesia can be technically difficult, it not infrequently fails necessitating general anesthesia, and it does not prevent apnea. Conversely, general anesthesia is not technically difficult and never fails for the competent anesthesiologist, and postoperative apnea can be prevented with administration of caffeine.

5. *The flexibility, technical ease, and reliability of general anesthesia makes it cost effective (improved economic outcome)*

To my knowledge, no data exists examining the economics of anesthesia/surgery for inguinal hernia repairs in prematurely born infants. So let's take the hypothetical. If the infant presents for surgery, the main economic factors include time in the operating room and hospital postoperatively. Anesthetic supply and drug differences between general and regional anesthesia will be negligible compared with time. Recommendations for postoperative monitoring and hospitalization of infants receiving regional and general anesthesia are the same, because neither technique offers sufficient protection against postoperative apnea to risk the consequences of not monitoring. At the present time, therefore, the cost differences boil down to time in the

operating room. Any delays resulting from anesthetic inadequacies will increase cost. The technical difficulty and unreliability of regional anesthesia will therefore increase its cost over general anesthesia.

## References

1. Steward DJ: Preterm Infants are More Prone to Complications Following Minor Surgery than are Term Infants. *Anesth* 56:304-306, 1982
2. Cote CJ, Zaslavsky A, Downes JJ, Kurth CD, Welborn LG, Warner LO, Malviya SV: Postoperative apnea in former preterm infants after inguinal herniorrhaphy. *Anesth* 82:809-822, 1995
3. Kurth CD, Spitzer AR, Broennle A.M., Downes JJ: Postoperative Apnea in Preterm Infants. *Anesth* 66:483-488, 1987
4. Kurth CD, LeBard SE: Association of Postoperative Apnea, Airway Obstruction, and Hypoxemia in former Premature Infants. *Anesth* 75:22-26, 1991
5. Rescorla FJ, Grosfeld JL: Inguinal Hernia Repair in the Perinatal Period and Early Infancy: Clinical Considerations. *J Ped Surg* 19, No. 6:832-837, 1984
6. Welborn LG, Hannallah RS, Fink R, Ruttimann UE, Ocks JM: High-dose Caffeine Suppresses Postoperative Apnea in Former Preterm Infants. *Anesth* 71:347-349, 1989
7. Welborn LG, Rice LJ, Hannallah RS, Broadman LK Ruttimann UE, Fink R: Postoperative Apnea in Former Preterm Infants: Prospective Comparison of Spinal and General Anesthesia. *Anesth* 72:838-842, 1990
8. Krane EJ, Haberkern CM, Jacobson LE: Postoperative Apnea, bradycardia and oxygen desaturation in formerly premature infants: Prospective Comparison of spinal and general anesthesia. *Anesthesia and Analgesia* 80:7-13, 1995
9. Webster C, McYishnie D, Kenyon F, Marshall G: Spinal anaesthesia for inguinal hernia repair in high-risk neonates. *Can J Anaesth* 38:281-286, 1991 ♦

(continued from page 5)

3. Welborn LG, Hannallah RS, Luban NL, Fink R, Ruttimann UK. Anemia and Postoperative Apnea in Former Preterm Infants. *Anesthesiology* 1991; 74:1003-6.
4. Welborn LG, Rice LJ, Hannallah RS, Broadman LM, Ruttiman UK, Fink R. Postoperative Apnea in Former Preterm Infants: Prospective Comparison of Spinal and General Anesthesia. *Anesthesiology* 1990; 72:838-42.
5. Gunter JB, Watcha MF, Forestner JE, Hirshberg GE, Dunn CM, Connor MT, Ternberg JL. Caudal Epidural Anesthesia in Conscious Premature and High Risk Infants. *Journal of Pediatric Surgery* 1991; 26:9-14.
6. Sartorelli KH, Abajian JC, Kreutz JM, Vane DW. Improved Outcome Utilizing Spinal Anesthesia in High-Risk Infants. *Journal of Pediatric Surgery* 1992; 27:1022-25.
7. Harnick EV, Hoy GR, Potolicchio S, Stewart DR, Siegelman RE. Spinal Anesthesia in Premature Infants Recovering from Respiratory Distress Syndrome. *Anesthesiology* 1986; 64:95-9.
8. Dohi S, Naito H, Takahashi T. Age-related Changes in Blood Pressure and Duration of Motor Block in Spinal Anesthesia. *Anesthesiology* 1979; 50:319-23.
9. Watcha MF, Thach BT, Gunter JB. Postoperative Apnea after Caudal Anesthesia in an Ex-premature Infant. *Anesthesiology* 1989; 71:613-15.
10. Cox RG, Goresky GV. Life-threatening Apnea Following Spinal Anesthesia in Former Premature Infants. *Anesthesiology* 1990; 73:345-7.
11. Wright TE, Orr RJ, Haberkern CM, Walbergh EJ. Complications during Spinal Anesthesia in Infants: High Spinal Blockade. *Anesthesiology* 1990; 73:1290-2.
12. Desparmet JF. Total Spinal Anesthesia After Caudal Anesthesia in an Infant. *Anesthesia and Analgesia* 1990; 70:665-7. ❖

## Literature Reviews

### Inhaled Nitric Oxide in Full-Term and Nearly Full-Term Infants with Hypoxic Respiratory Failure.

The Inhaled Nitric Oxide Group. *NEJM* 336: 597-604, 1997.

### Inhaled Nitric Oxide and Persistent Pulmonary Hypertension of the Newborn.

Roberts JD, Fineman JR, Morin FC, et al. *NEJM* 336: 605-610, 1997.

Reviewed by **Thomas A. Vetter, M.D.**  
*Children's Hospital, Akron*

Hypoxic respiratory failure in newborns born at or near term can be an extremely challenging clinical condition for the anesthesiologist involved in the perioperative management of such infants. Causes for such hypoxic respiratory failure include so-called primary persistent pulmonary hypertension, respiratory distress syndrome, meconium aspiration, sepsis or a congenital diaphragmatic hernia (CDH). These two complimentary studies examined the effectiveness of inhaled nitric oxide (also known as endothelium-derived relaxing factor) in improving oxygenation and reducing the need for extracorporeal membrane oxygenation (ECMO).

The Nitric Oxide Group studied a total of 235 infants who were at least 34 weeks gestation at birth and less than 14 days old at the time of enrollment. All were on assisted ventilation with an oxygenation index of 25 or higher (with the oxygenation index calculated as  $100 \times \text{FiO}_2 \times \text{mean airway pressure} / \text{postductal PaO}_2$ ). No infant with a CDH or congenital heart disease was enrolled. If clinically indicated, infants received bovine surfactant therapy and/or high frequency ventilation. Each infant received either nitric oxide at an initial inspired concentration of 20 ppm or 100% oxygen as the control treatment. Those infants who displayed a less than complete response to nitric oxide (defined as less than a 20 mm Hg increase in  $\text{PaO}_2$  after 30 minutes) were then placed on an inspired concentration of 80 ppm. Significantly fewer patients in the nitric oxide group went on to receive ECMO (39%

versus 54%,  $P=0.014$ ). However, eventual mortality rates were comparable (17% in control versus 14% in nitric oxide). Moreover, among the surviving infants, there were no differences between the groups with respect to length of hospitalization, number of days of respiratory support or incidence of bronchopulmonary dysplasia. Of note, 77% of those infants who were unresponsive to 20 ppm of nitric oxide were also so to 80 ppm.

While essentially similarly designed, the second study (Fineman, et al) focused on a subpopulation of infants with persistent pulmonary hypertension (PPH). A total of 58 full-term infants were enrolled and assigned to receive either 80 ppm of nitric oxide or nitrogen (as a control). On both a short-term and longer term basis, nitric oxide produced significantly greater increases in postductal  $\text{PaO}_2$ . Not surprisingly, ECMO was significantly less often required in those infants receiving nitric oxide (40% versus 70% in the control group,  $p=0.02$ ). This notwithstanding, eventual mortality rates were similar in the two groups. While no infants experienced hypotension while receiving nitric oxide, clinically insignificant increases in methemoglobin levels were universally observed. These authors concluded that inhaled nitric oxide improves oxygenation in patients with PPH and may reduce the need for more invasive treatments.

### Efficacy And Safety of Lidocaine-Prilocaine Cream For Pain During Circumcision.

Taddio A, Stevens B, Craig K, Rastogi P, Ben-David A, Mulligan P, Koren G. *NEJM* 336:1197-1202, 1997.

Reviewed by **Rita Agarwal, M.D.**  
*Denver Children's Hospital*

Neonatal circumcision that is carried out without analgesia has been shown to cause alterations in short term sleeping, feeding and crying patterns, however many physicians are still reluctant to administer analgesics. The authors of



## Literature Reviews cont. ...

this article wanted to investigate the efficacy and safety of 5% lidocaine - prilocaine cream (EMLA) in neonates undergoing circumcision because of its ease of administration.

Sixty healthy white males were randomly assigned to receive EMLA or placebo cream. Eight additional infants who were known to have had EMLA applied were included in the safety data. One ml (1 gm of the cream) was applied to the penis and left in place for 60-80 minutes. Circumcisions were performed by one of 3 study pediatricians. The procedure was standardized and divided into 13 observation periods. The infant's facial expressions were recorded during the procedure as was his heart rate and blood pressure. Blood samples were sent for up to 18 hours for methemoglobin, plasma lidocaine, prilocaine and o-toluidine levels. The infants were observed every 8 hours for adverse effects, up to 24 hours. The parents were also contacted 2 weeks later, and questioned about adverse effects.

There were no differences in demographics between groups. One infant in the EMLA group was excluded. The mean duration of circumcision was 9 minutes in both groups. The infants who had received EMLA had lower facial activity scores and spent less time crying during the procedure. Their heart rates did not increase as much as the infants in the control group. There were several stages of the circumcision, during which the facial activity scores were similar in both groups. These included: lysis of adhesions, pulling the skin through the clamp and tightening of the clamp. None of the neonates had clinical signs of methemoglobinemia. Sixty one percent of neonates in the study group had detectable levels of plasma lidocaine, and 55% detectable plasma prilocaine. The only adverse events consisted of mild edema in 1 infant who had received EMLA and a local infection in another that responded to topical antibiotics. The authors conclude that the application of

lidocaine-prilocaine cream is relatively easy and decreases the pain associated with circumcision.

**Comments:** A good article to copy and distribute to all physicians performing neonatal circumcisions. I'm sure by the time this review comes out, the AAP will have made their recommendations concerning circumcisions.

### **Morbidity and Mortality of Open Lung Biopsy in Children.**

Davies L, Dolgin S, Kattan M. *Pediatrics* 99: 660-664, 1997.

Reviewed by **Rita Agarwal, M.D.**

*Denver Children's Hospital*

This is a retrospective review of pediatric patients with diffuse pulmonary infiltrates with and without acute respiratory failure (ARF) who underwent open lung biopsy (OLB). There were 42 patients over a 10 year period that fit the criteria, twenty six of whom had ARF. Mean age was 6.6 years (range 2 months -20 years). Underlying conditions included: AIDS, congenital immunodeficiency, malignancy, and s/p liver transplantation. The incidence of serious complications was 51%, the majority of which occurred in the patients with ARF. The complications included: pneumothorax, bleeding, airway obstruction, empyema, lung collapse and intraoperative fluid overload. Twenty four percent of patients died within 30 days of their OLB, however these were all attributed to the underlying disease or progression of the respiratory failure.

**Comments:** This is a nice review of the complications that can occur after an open lung biopsy and helps emphasize the seriousness of the patient's underlying disease. A good article to hand to our friendly oncologist when they request "just a quick biopsy" on a sick patient with ARF.

### **Video-Assisted Thoracoscopic Surgery for Right Middle Lobectomy in Children.**

Gomola A, Gall O, Larroquet M, Constant I, Balquet P, Murat I. *Paediatric Anaesthesia* 7:215-220, 1997.

Reviewed by **Rita Agarwal, M.D.**

*Denver Children's Hospital*

The intra and post operative course of 20 patients was evaluated who had either video-assisted thoracoscopic surgery (VATS) or traditional thoracotomy with a muscle sparing incision for middle lobectomy. The mean age was 6.1 years for patients undergoing VATS, and 6.8 for those undergoing thoracotomy. Their underlying conditions included lobar emphysema, bronchiectasis and immotile cilia syndrome. The VATS patients had a longer intra-operative course (146 vs 100 minutes), but the same need for postoperative analgesics and the same incidence of respiratory complications.

**Comments:** This is an interesting follow-up to the study looking at open lung biopsy. Our surgeons are under more pressure from the medical doctors to use thoracoscopic techniques to "decrease post-operative pain and complications". We obviously need more studies examining the efficacy and benefits of this technique.

### **Major Limb Deformities As Complications Of Vascular Access In Neonates.**

Fullilove S, Fixsen J. *Paediatric Anaesthesia* 7: 247-250, 1997.

Reviewed by **Rita Agarwal, M.D.**

*Denver Children's Hospital*

This is a scary series of 4 neonates who developed major orthopedic complications as a result of either intravenous extravasation or radial artery thrombosis. The first baby had complete growth arrest of the lower tibial epiphysis after extravasation of calcium containing solution in his right ankle. The second developed a full thickness burn as a result of extravasation of TPN solution on the

(Continued on page10)

# Literature Reviews cont. ...

(Continued from page 9)

dorsum of his foot. Contractures and a varus deformity of his foot resulted. The third child sustained damage to his tibial growth plate and the fourth child had ischemic necrosis of all her fingers, radial deviation of her wrist and delayed growth of the forearm after radial artery occlusion from an arterial catheter.

**Comments:** this is an important complication of "routine" procedures that we all need to keep in mind.

## Mild Perioperative Hypothermia.

Sessler DL. *NEJM* 336:1730-1737, 1997.

Reviewed by **Rita Agarwal, M.D.**  
*Denver Children's Hospital*

This is an excellent review, explaining the importance of thermoregulation, the reasons that thermoregulation is impaired in anesthetized patients and the consequences of hypothermia. Even mild hypothermia has been shown to increase the incidence of cardiac events, coagulopathy, surgical wound infections and hospitalization.

**Comments:** Copy this article for all your colleagues and residents. It is succinct and to the point.

## Use of Neonatal Intensive Care Unit As A Safe Place for Neonatal Surgery.

Gavilanes AWD, Heineman E, Herpers M, Blanco C. *Arch Dis Child* 76:F51-F53, 1997.

Reviewed by **Zeev N. Kain, M.D.**  
*Yale University School of Medicine*

This study was conducted in Great Britain and was aimed to evaluate the advantages, disadvantages, and short term morbidity and mortality of major surgical interventions performed in a neonatal intensive care unit (NICU). The authors performed a retrospective case review of 45 neonates operated in the NICU. Postconceptional age at time of surgery ranged from 26 to 47 weeks and the presurgical weight ranged from 550 to 4370 grams. The indications for surgery were: ligation of patent ductus arte-

rius (n=16); VP shunt for hydrocephalus (n=14); repair of congenital diaphragmatic hernia (n=2); open lung biopsy (n=1); and exploratory laparotomies (n=12). When the patient was not mechanically ventilated preoperatively, endotracheal intubation was performed by the neonatologist. Monitoring of the patient included: pulse oximetry; blood pressure monitoring, and EKG. Induction of anesthesia was obtained using intravenous fentanyl and paralysis was obtained using intravenous pancuronium or vecuronium. Titration of anesthetics, fluid, and blood replacement were indicated by the neonatologist and the anesthesiologist.

No local or systemic infection associated with surgery was seen within the first 72 hours postoperatively. The overall perioperative mortality of 6.7% (n=3) and was attributed to pre-existing conditions or to causes not directly related to the surgical procedure or NICU. The authors concluded that the neonatal intensive care unit is a safe place in which to perform surgical procedures, even on extremely sick and unstable infants.

**Comments:** It may be that with the current economic climate in the United States, NICU surgery will become widespread.

## Apnea After Immunization of Preterm Infants.

Sanchez PJ, Laptook AR, Fisher L, Sumner J, Risser RC, Perlman JM. *J Pediatr* 130:746-51, 1977.

Reviewed by **Zeev N. Kain, M.D.**  
*Yale University School of Medicine*

The aim of this preliminary study was to determine the frequency of apnea (a respiratory pause of 20 seconds), among preterm infants after immunization with DTP or HibC vaccine in a neonatal intensive care (NICU). Following the occurrence of apnea in two preterm infants following immunization, a prospective study of 97 preterm infants younger than 37 weeks of gestation who were immunized was conducted. The authors found that 12% of the infants ex-

perienced a recurrence of apnea, and 11% had at least a 50% increase in the number of apneic and bradycardic episodes in the 72 hours after immunization. This occurred primarily among smaller preterm infant who were immunized at a lower weight ( $p=0.01$ ), had experienced more severe apnea of prematurity ( $p=0.01$ ), and had chronic lung disease ( $p=0.03$ ). The authors recommend further studies to establish this association between immunization of preterm infants and apnea.

**Comments:** It should also be noted that it is possible that some infants who experienced apnea after their immunization would have had similar episodes even if not immunized. The lack of a control group in this study makes this distinction impossible to assess. The pediatric anesthesiologist should be aware of these data when anesthetizing a premature infant.

## Airway Muscle In Preterm Infants: Changes During Development.

Sward-Comunelli SL, Mabry SM, Truong WE, Thibeault DW. *J Pediatr* 130:570-6, 1977.

Reviewed by **Zeev N. Kain, M.D.**  
*Yale University School of Medicine*

The purpose of this study was to quantitate airway muscle changes in infants born at 23 to 41 weeks' gestation and to compare the changes with those in infants with chronic lung disease. The authors studied 55 human lungs of infants who died of various diseases within 72 hours of birth. All the lungs were perfused via the trachea and pulmonary artery in a standardized protocol. The authors found that muscle was present at 23 weeks' gestation at all levels of the conducting airways. The 25-week gestation infants had a quantity of airway muscle relative to airway circumference similar to that of term infants. Interestingly, preterm infants with chronic lung disease who were aged 9 to 29 days had relatively increased airway muscle in airways that were greater than 1500mm in circumference.

## Literature Reviews cont. ...

**Comments:** The practicing anesthesiologist should be aware that bronchospasm in premature infants is possible within the first days of life.

### **The Ouchless Place: No Pain, Children's Gain.**

Schechter NL, Blankson V, Pachter LM, Sullivan CM, Costa L *Pediatrics* 1997; 99:890-894.

Reviewed by **Mehernoor Watcha, M.D.**  
*Univ. of Texas Southwestern, Dallas*

This report describes how pain in children was controlled at a community-based teaching hospital using simple methods such as protocols for the uniform management of postoperative pain management and sedation. Continuous morphine infusion in younger children and IV-PCA for children >7 years were used. Sedation protocols with fentanyl and midazolam were also described. Pain assessment was determined using a visual analog scale (VAS) in children above 8 years and the Wong-Baker faces scale for children 3 - 7 years. A specific effort was made to reduce needle pain by the liberal application of EMLA cream on patients requiring scheduled blood work and limiting additional blood work to patients with a changed clinical condition. Finally, parents were empowered to take an active role in the child's care. However, a number of problems continued to occur, including situations where laboratory technicians ignored the site of EMLA cream and drew blood from other veins.

**Comments:** This article describes a systematic approach across disciplines and nursing staffs to reduce children's pain in hospital. Much of the variability in the previous system was eliminated, but a careful oversight was essential to ensure pain relief. This approach avoided the use of expensive pain services or highly technical methods of providing care and emphasizes the need to establish pleasant environments for children, parents and staff. The authors and this institution need to be congratulated on their efforts.

### **Comparison of continuous epidural infusion of fentanyl and bupivacaine with intermittent epidural administration of morphine for postoperative pain management in children.**

Kart T, Walther-Larsen S, Svejborg TF, Feilberg V, Eriksen K, Rasmussen M *Acta Anaesthesiol Scand* 41:461-465, 1997.

Reviewed by **Mehernoor Watcha, M.D.**  
*Univ. of Texas Southwestern, Dallas*

In a double-blind, randomized, double-dummy study, 40 children undergoing major abdominal or genitourinary surgery had a lumbar epidural catheter placed after induction of anaesthesia. Patients received either 30 µg/kg epidural morphine Q 8 hr, or continuous infusion of fentanyl 2 µg/ml and bupivacaine 0.1% at an initial rate of .25 ml/kg/h in the postoperative period. Supplemental IV morphine 50 µg/kg was administered as required for breakthrough pain. Significantly better pain relief was obtained with the fentanyl/bupivacaine regimen. Sedation, vomiting and pruritus occurred in both groups without any respiratory depression or motor blockade.

**Comments:** The authors' conclusion that a continuous epidural infusion of fentanyl/bupivacaine was superior to intermittent epidural morphine at fixed intervals may be explained by the use of bupivacaine in only 1 group. However, there was a tendency for an increased incidence of side effects of emesis and pruritus with morphine. Individualization of epidural infusion rates is essential as some patients may prefer to tolerate a higher degree of pain rather than have limb weakness.

### **Pulse Oximetry as a Fifth Pediatric Vital Sign.**

Mower WR, Sachs C, Nicklin EL, Baraff LJ. *Pediatrics* 1997; 99 (5):681-686.

Reviewed by **Mehernoor Watcha, M.D.**  
*Univ. of Texas Southwestern, Dallas*

To determine the utility of routine pulse oximetry in an emergency department, children undergoing triage were prospectively studied and 305 had a pulse

oximetry value of <95%. Physicians ordered 81 additional diagnostic tests and 39 additional therapies in 95 out of the 305 children who had pulse oximeter readings <95%. Admission plans for 5 out of 1822 patients with SaO<sub>2</sub> values >95% and for 5 out of 305 children with SaO<sub>2</sub> values <95% were changed.

**Comments:** This E.R. study, like previous studies of anesthetized patients, demonstrates that the clinical detection of mild hypoxemia is difficult. The respiratory rate of moderately hypoxemic children in this study were indistinguishable from other children. Thus the routine use of pulse oximetry measurements may result in significant changes in medical therapy in an emergency department.

### **Inclusion of pethidine in lidocaine for infiltration improves analgesia following tonsillectomy in children.**

Elhakim M, Abdul Salam AY, Eid A, Kaschef N, Mostafa BE. *Acta Anaesthesiol Scand* 1997; 41: 214-217.  
Reviewed by **Mehernoor Watcha, M.D.**  
*Univ. of Texas Southwestern, Dallas*

Eighty children undergoing tonsillectomy with a standardized anaesthetic received peritonsillar infiltration of 3 ml of 2% lidocaine on each side plus 1 ml of meperidine or saline. Pain, behavior assessments at 1, 3, 6, and 12 hrs by the patients and the nurse, showed that patients in the meperidine group had lower pain scores than the control group and better swallowing. Supplemental analgesia was required less frequently in the meperidine group.

**Comments:** Meperidine has a local anesthetic action and in this study the effect of combining a small dose of meperidine with lidocaine for tonsillar infiltration demonstrated superior analgesia.

(Continued on page 12)

# Literature Reviews cont. ...

(Continued from page 11)

## **Pediatric Emergency Department Analgesic Practice.**

Friedland, et al. *Ped Emerg Care* 13:103,1997.

Reviewed by **Ronald S. Litman, D.O.**  
*Univ. of Rochester Medical Center*

The authors performed a retrospective chart review of all cases of sickle cell vasoocclusive crises (VOC), leg fractures, and second degree burns to determine patterns of analgesia usage in the ED of Cincinnati Children's Hospital during 1994. While analgesia use for VOC was 100%, it was a disappointing 31% for fractures and 26% for burns.

Mean times to first analgesic doses were 52 min for VOC, 86 min for fractures and 29 min for burns. Documentation of response to analgesics was inadequate for fractures (19%), and burns (29%) but better for VOC (88%).

**Comments:** In the ED of Cincinnati Children's in 1994, pain was obviously not considered a "vital sign" as evidenced by their data. Rather than dwelling on this sad reality, the authors do an excellent job of discussing the positive changes that resulted from their results, all of which are applicable at any other institution:

- 1) recognize pain on arrival
- 2) optimize initial analgesia doses
- 3) shorten time to first analgesia
- 4) document response to analgesia
- 5) consider continuing analgesia after discharge.

## **Alfentanil As Procedural Pain Relief In Newborn Infants.**

Saarenmaa E, et al: *Arch Dis Child.* 1997;75:F103-F107.

Reviewed by **Ronald S. Litman, D.O.**  
*Univ. of Rochester Medical Center*

The authors performed a randomized, double-blind, crossover trial of either placebo, 10 mcg/kg, or 20 mcg/kg alfentanil, 2 min prior to tracheal suctioning and assessed efficacy by means of a behavioral/pain score. The population consisted of 10 infants (me-

dian wt 1440 g and gestational age 32 wks) who were being mechanically ventilated in the NICU. Only the higher dose of alfentanil proved effective in attenuating the increase in heart rate, normalizing the pain score, and decreasing plasma epinephrine levels when compared to placebo. However, 5 infants demonstrated chest wall rigidity after this higher dose as compared with 2 who received the lower dose and 2 who received placebo. This rigidity was noted before tracheal suctioning.

**Comments:** Hopefully, because of studies such as this, sooner or later analgesia and sedation will become standard of care during painful procedures in the NICU. Non-intubated infants will pose more of a challenge. The really interesting study will be that showing differences in outcome, not merely "surrogate" outcomes such as these. As we have done in the oncology clinic and GI suites, pediatric anesthesiologists should play an active role in encouraging the use of analgesics and sedatives in the NICU during painful medical procedures.

## **Efficacy And Safety Of Lidocaine-prilocaine Cream For Pain During Circumcision.**

Taddio A, et al: *New Engl J Med.* 1997;336:1197-1201.

Reviewed by **Ronald S. Litman, D.O.**  
*Univ. of Rochester Medical Center*

In an Astra-sponsored study, the authors randomized 68 full-term male neonates to receive either 1 gram of EMLA cream or placebo applied under an occlusive dressing for 60-80 min before circumcision using a Gomco clamp. Infants in the EMLA group had significantly less behavioral (facial activity and time spent crying) and physiologic (heart rate) indicators of pain during the procedure. Infants who received EMLA had extremely low levels of plasma lidocaine and prilocaine and no evidence of methemoglobinemia following the procedure.

**Comments:** As a member of The Rochester Independent Mohel Society (TRIMS) I was particularly interested in the results of this study - especially the data on lack of toxicity. But even though EMLA cream is better than placebo, it is not better than a penile nerve block and will not prevent pain from crushing the foreskin by the forceps or clamp.

However, the authors are correct when they discuss that it is an acceptable substitute for a sugar-water nipple when the practitioner is not skilled in such blocks. I hope this study puts an end to the fear of using EMLA in full-term neonates.

## **Masseter Muscle Rigidity And Nondepolarizing Neuromuscular Blocking Agents.**

Albrecht A, et al: *Mayo Clin Proc.* 1997;72:329-332.

Reviewed by **Ronald S. Litman, D.O.**  
*Univ. of Rochester Medical Center*

The authors describe 4 patients who demonstrated apparent masseter muscle rigidity following administration of nondepolarizing NMBs without succinylcholine. The initial case was reported to the MHAUS hot-line and the additional 3 were found during a review of the North American MH Registry. The agents involved included vecuronium, mivacurium, and atracurium. None of the patients developed additional signs of MH, but one patient (11 yrs) had baseline elevated CK 2 yrs after the event and another (22 yrs) had a positive halothane contracture test 6 weeks after the event.

**Comments:** Just when you thought you knew it all comes this interesting series of cases. Due to the retrospective nature of the reports and data collection, I wonder about the true nature and severity of the MMR - but interesting, nonetheless.

## Literature Reviews cont. ...

### Postoperative Cerebral Edema Occurring In Children With Slit Ventricles.

Eldredge EA, et al: *Pediatrics*. 1997;99:625-630.

Reviewed by **Ronald S. Litman, D.O.**  
*Univ. of Rochester Medical Center*

This report describes 2 children, both with VP shunts and "slit ventricles", who developed postoperative cerebral edema (one fatal) after elective orthopedic procedures. Both patients had developed hyponatremia in the postoperative period which was thought to be a precipitating factor. Slit-ventricle syndrome, seen in children with VP shunts, is attributed to chronic overdrainage of CSF. These patients apparently have decreased intracranial compliance. The authors speculate that postoperative hyponatremia (which would have been easily tolerated in normal patients) caused a significant increase in ICP resulting in adverse sequelae in these two children.

**Comments:** As a result of this report, I am now more apt to review the CT or MRI scans of children with VP shunts presenting for elective surgery and I am more careful about preventing hyponatremia in the perioperative period. The authors provide an excellent discussion of slit-ventricle syndrome and postoperative hyponatremia.

### Intravenous Methohexital For Brief Sedation Of Pediatric Oncology Outpatients: Physiologic And Behavioral Responses.

Freyer DR, et al: *Pediatrics* 1997;99:38.

Reviewed by **Ronald S. Litman, D.O.**  
*Univ. of Rochester Medical Center*

The authors (pediatric intensivists) describe their experience using IV methohexital for sedation during 233 painful procedures in 76 pediatric oncology patients. They administered an initial bolus of 1 mg/kg and then titrated additional amounts as needed. The mean dose required was 4.6 mg/kg with an mean procedure duration of 8 min. The mean time to return to baseline alertness was 22 min. Mild to moderate stridor

was noted during 6 procedures - all easily managed by airway positioning. Two events of transient airway obstruction were noted.

**Comments:** Though there are many studies which examine the efficacy of various different agents for sedation and analgesia during painful medical procedures, I contend that it is not the nature of the agent that is important, but rather the sedationer. There is no substitute for knowledge of the effects of a drug and the skills to deal with complications. In our institution, we make no attempt to limit choice of drugs to non-anesthesiologists, but rather we make every attempt to make ourselves available for either the sedation itself, or teaching non-anesthesiologists principles of drug usage and airway techniques. In spite of this seemingly self-destructive philosophy, over the past 2 years the requests for our services for sedations has greatly increased. ❖

### Society Ties & Totes

Lovely ties and bags featuring the SPA logo in full color are available for sale from SPA headquarters. All profits support the Society's activities. They make great gifts for all occasions

Yes, Please send me

\_\_\_\_\_ Ties @ \$25 = \_\_\_\_\_  
\_\_\_\_\_ Bags @ \$25 = \_\_\_\_\_

Shipping: US & Canada \$ 3.50  
Overseas \$ 5.75  
Total Amount \$ \_\_\_\_\_

\_\_\_\_\_  
Name

\_\_\_\_\_  
Address

\_\_\_\_\_  
City

\_\_\_\_\_  
State Zip

\_\_\_\_\_  
Phone

or fax your order to  
(804) 282-0090

## SPA / FAER Update

### SPA/FAER New Investigator Award

Congratulations to Dr. Neil Farber, who has been awarded the SPA/FAER New Investigator Research Award for a second year. His project is on "The Role of Nitric Oxide in Modulating Volatile Anesthetic-Induced Actions on Intracerebral Microvessels".

### Research Deadlines

**December 1, 1997 is the deadline for the following awards:**

**Research Fellowship:** For residents who will spend 1-2 years engaged in full-time (75%) anesthesia research under the sponsorship of an established investigator.

**New Investigator Award:** Awards are intended for anesthesiologists on the verge of becoming independent investigators. Although applicants must have an experienced investigator as an adviser, the project should be planned and conducted primarily by the applicant.

**Educational Research Grants:** Grants are intended to support research in anesthesia education, and proposals may include the design and evaluation of specific educational techniques and curricula, development of instruments for the prediction and evaluation of outcomes, or other original and creative investigations which have an impact on the quality of anesthesia education and care.

Application Guidelines are available by contacting Dr. Alan Sessler, Executive Director, FAER, Charlton Building, Mayo Clinic, 200 First Street SW, Rochester, MN 55905 or on the Internet at [<http://www.asahq.org/FAER/homepage.html>]. For questions call (507) 266-6866.

---

# Continental Notes

## Narrow Gets Wider

*Sten Lindahl, M.D. Ph.D  
Professor and Chairman  
Department of Anesthesia  
Karolinska Institute  
Stockholm, Sweden*

In times of reducing financial resources, new ways of doing old things are keys to survival, and creativity/imagination are important ingredients. Economics becomes a dominating force and takes over, for a while, from the power of knowledge. At least in Sweden there has been, and still is, a real threat to established subspecialties, which run the risk of either being weakened and alienated by or assimilated into surgical departments. On the other hand, times of economic depression demand changes which, in turn, offer new possibilities. We must be brave enough to challenge our own systems and sometimes ask uncomfortable questions.

Has the movement of Anesthesia and Intensive Care come to an end as far as subspecialisation is concerned? Are we at the crossroads where decisions regarding new directions have to be made? Certainly, the deepened knowledge, insight and competence gained through subspecialisation have had important impacts on the development of our specialty. Two immediate questions raised by this issue are 1) how many sub-areas are optimal, and 2) can we open up sub-areas into the general field of anesthesia without losing depth of knowledge? According to the holistic dogma, the whole is always more than the sum! Today, we need the whole; and there are, from the horizons I see, some important facts that support an increased move towards generalization.

- Anesthesiology deals with Operating Room Medicine, Intensive Medicine and Peri-Operative Medicine, including acute and chronic pain analyses and treatments. All are important fields in modern medicine. Yet, the positioning of anesthesiology within

medical school curricula is weak. In how many countries is the examination in anesthesiology equivalent to that in surgery or internal medicine? This is an area we need to develop and strengthen, and for success in this we need to be united.

- How do you define anesthesia research today? Surely, it is not the comparison of drug A versus drug B; it is in the basics of applied neurobiology, respiratory physiology, circulatory physiology, psychology and so on, that we formulate our problems and ask principle investigators. Are we capable of handling basic methodologies in molecular cytogenetics and cell biology? Nowadays, these methods and others are readily available. They do not respect borders between specialties. They do not identify anesthesia research. Anesthesia research is identified by the questions we raise and the competence we show in answering them. Anesthesia research is therefore better armed and equipped with a greater potential when we stick together as a whole rather than support the splitting and dilution of intellectual and financial resources.
- What about clinical anesthesia and intensive care with regard to subspecialization? First, it must be emphasized that the feature of subspecialisation must remain, though a continued branching into smaller sub-areas has to be stopped. So, how do we solve the dilemma of maintaining depth of knowledge and generalization at the same time? If 70% of the current sub-specialized staff is positioned for long time periods within the subspecialty, this will allow the other 30% the favor of rotation. Sticking out my neck a bit further, I also dare to say that there is more that unites the pediatric anesthesiologist with "other anesthesiologists" than with pediatric



surgeons and pediatricians, and there is more that links the pediatric intensivist with general intensive care than with pediatrics, with regard to organization, leadership and knowledge of how to support failing vital functions.

### In Summary

Anesthesia is mainly involved in:

1. Peri Operative Medicine (POM), which incorporates risk estimation prior to surgery as well as pain-clinic activities;
2. Operative Pain Medicine (OPM), with evaluations and diagnoses of dynamic events and their immediate treatment;
3. Intensive Medicine (IM) with support of failing vital functions.

If there were a way to bring different anesthesiologists together for risk evaluations, a most experienced group of anesthesiologists would, in collaboration, create an important competence center (POM) covering all subspecialties. With the same reasoning, operative medicine (OPM) and intensive medicine (IM) will certainly benefit from a rotation of personnel with a consequent broadening of experience. In Figure 1, POM is carried out in ENT, General, as well as, Pediatric anesthesia, and so is OPM and IM. Our level of knowledge would gain if POM, OPM and IM were the parts that constituted the theoretical scope of our specialty, where responsibilities for education, research and development in general were kept together irrespective of sub-specialties. Clinically, the different sub-areas had their flow of

# Private Practice Perspectives

## Help, I'm in Private Practice and I Can't Keep Up!

When I left the Johns Hopkins Department of Anesthesiology and Critical Care Medicine, I had very little idea what was ahead for me in private practice.

Sure, I knew that taking care of patients, listening to the fears of families and ignoring or responding to requests from surgeons were universal and after having spent ten years in two residencies and a short stay on fac-

ulty, I thought I was ready for the new challenges that awaited me I knew that the pace of the private practice O.R. would be hectic, but I was not prepared for the isolation. Isolation from the cutting edge innovations in medicine.

Going into private practice initially gave me the platform to share new ideas and procedures with my group and other colleagues. But after awhile I found myself lacking the skills of those more recently trained (e.g. transesophageal echo). I had gained much wisdom but worried about falling behind. Granted, there were not any radical breakthroughs in Anesthesiology, but I began to feel that I was no longer at the forefront of my specialty. My feelings at the end of the day were isolation, fatigue, and frustration. How could I keep up with all the information that kept coming in the mail by way of so many different medical journals, information bulletins, newsletters, newspapers, etc., and then sort out that which was useful for my practice. Hence, the need for the Society for Pediatric Anesthesia, the most meaningful organization in which I participate. Once I became involved in the meetings and began receiving the newsletters, there were instant benefits.

What benefits do I experience? First and foremost is the rapid availability of the very latest advancements in the field in a concise and well organized fashion. With new information getting out to so many Anesthesiologists caring for

children, the quality of care can only improve, making our sub-specialty, our profession, our Society, a more highly recognized component of any hospital setting. Second, are the friendships and fellowships I have developed through the

years and the opportunities to meet other professionals in my field. At the twice yearly gatherings, the opportunity for comradery is wonder-

ful. Renewing old ties never gets dull and new faces become familiar very quickly. I find it much more rewarding to travel to a conference when my specialty is the only agenda, not just an afterthought late in the afternoon on the last day of a major convention where every other aspect of anesthesia is presented. The lingering sense of being part of something greater makes it easier to face the daily challenges and frustrations.

The third benefit is the positive relationship between academic and private practice physicians fostered by the organization. Rather than practicing in isolation in an atmosphere of institutional inbreeding, new and different ways of caring for patients are quickly shared. The opportunity to disseminate information and discuss problems that need investigation will help those in both venues and the positive relationship between the two worlds can only advance Pediatric Anesthesia and benefit all concerned it should be nurtured at every opportunity.

Thanks to the Society for Pediatric Anesthesia, I no longer feel alone in the wilderness. I feel a part of a great and dedicated organization with heart and soul. What a wonderful feeling! ❖

*Note:* Karen S. Bender M.D. is a partner in Anesthesiologists of Central Florida and is Chief of Pediatric Anesthesia at the Arnold Palmer Hospital for Women and Children in Orlando, Florida. Responses can be sent to Dr. Bender at [KBZig@aol.com].

KNOWLEDGE

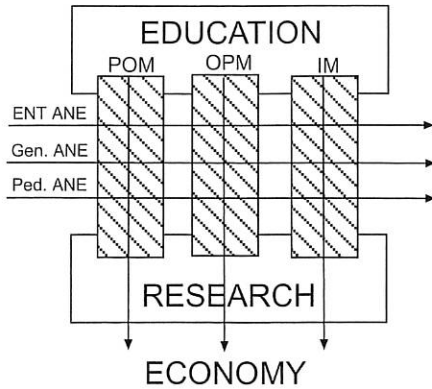


Figure 1

activities along the horizontal axis also satisfying economics (Figure 1).

The total resources at a major hospital can, in such an organization, be used smarter so that we at the same time can improve the level of knowledge. Personnel from various units will be interchangeable, making scheduling and on-call-activities easier and more cost effective. It would also be much smoother to work out similar treatment strategies and guidelines for trauma care, emergency and disaster medicine. ❖

## New Members

**Audrey S. Alleyne, MD**  
Decatur, GA

**Joseph E. Arrowsmith, MD**  
Durham, NC

**Rachel C. Bennett, Vet MB**  
Davis, CA

**David J. Bernard, MD**  
Phoenix, AZ

**Joy X. Cai, MD**  
Chicago, IL

**Allen Carignan, MD**  
Lebanon, NH

**Asim F. Choudhri, BS**  
New York, NY

**Maria E. Colmenares, MD**  
Bogota, Colombia

**Luis F. Cordero, MD**  
San Juan, PR

(Continued on page 23)

# Fourth International Symposium on Pediatric Pain

(Helsinki, Finland)

By Rita Agarwal, M.D.  
The Children's Hospital, Denver

The Fourth International Symposium on Pediatric Pain was held in Helsinki, Finland on June 29-July 4, 1997. The Program was organized by the Special Interest Group-Pain in Childhood of the International Association for the Study of Pain (IAP). **Dr. Eva-Lisa Maunuskela** is the president of the Special Interest Group (SIG), and she, the Scientific Committee and Local Organizing Committee put on an excellent diverse and interesting program. Almost 300 people attended from all over the world, including Europe, South America, Russia, North America, the Middle East, Australia and New Zealand. The Local Organizing Committee did a wonderful job of providing a variety of locations for the meeting and the various banquets and ceremonies.

The meeting started with optional Workshops on the treatment of chronic and acute pain using psychological strategies on June 29 and June 30. The workshop was organized by **Brenda Bursch, Gary Walco, and Lonnie Zeltzer**.

An Education Day was held on Tuesday July 1, 1997. **Professor Anthony Dickenson** from University College, London started this session with a review of the developmental physiology of pain. **Dr. Ruth Grunau**, British Columbia's Children Hospital, Vancouver, discussed current assessment tools in neonates and infants including Neonatal Facial Coding System, CRIES and NIPS, **Dr. Evelyne Pichard-Leandri**, Institut Gustave Roussy, Villejuif, France presented general pain assessment for all children and recently developed scales to use in handicapped children. There was then a choice between: Pediatric Pain Management - Pharmacological Approaches (**Drs. Gunnar Olsson**, St. Gorans Hospital, Stockholm Sweden, **Tuula Manner**,

Turku University Central Hospital, Finland and **Isabelle Murat**, Hopital d'enfants Armand Trousseau, Paris) and Pediatric Pain Management - Psychological Approaches (**Drs. Brenda Bursch**, UCLA School of Medicine, **Gary Walco**, Tomorrows Children's Institute, Hackensack, and **Lonnie Zeltzer**, University of California). In the afternoon there was a choice between Procedural Pain (**Drs. Neil Schechter**, St. Francis Hospital Medical Center, Hartford, **Jutta Pouttu**, The Hospital for Children and Adolescents, Helsinki and **David Cohen**, The Children's Hospital of Philadelphia) and Chronic Recurrent Pain (**Drs. Charles Berde**, Children's Hospital of Boston and **Leora Kuttner**, University of British Columbia). The final plenary session of the day was a fascinating discussion on the epidemiology of pain by **Dr. Patrick McGrath**, Dalhousie University, Halifax, Canada. In particular he presented the difficulties associated with determining the incidence of chronic and acute pain, the pitfalls of using adult derived definitions (i.e. for migraine headaches) and the importance of continuing to try to determine the prevalence of common pain syndromes and pain associated with specific diseases (HIV, sickle cell etc.)

That evening there was an Opening Ceremony presented by **Dr. Maunuskela** at The University of Helsinki. There was traditional Finnish Folk Dancing performed. This was followed by a Welcome Reception at the Helsinki City Hall, with a welcome speech by the Mayor of Helsinki.

The Scientific Meeting started on Wednesday July 2. In the morning there was a choice between Pain in Palliative Care (**Drs. Stephen Liben**, McGill University, Montreal, **Brenda Eng**, Hospice for Children, Vancouver, and **Ann Goldman**, Children NHS Trust, London) and Transmission of Pain and The Developing Nervous System (**Drs. Anthony**

**Dickenson, Frances Abbott**, McGill University and **Gordon Barr**, Hunter College of the City University of New York). The last session was on Chronic Non-Malignant Pain. **Dr. Gary Lewin Max-Delbruck** Center for Molecular Medicine, Berlin, discussed the role of nerve growth factor (NGF) in the developing nervous system. **Dr. Maria Fitzgerald**, University College, London, presented evidence from the lab showing that in neonatal rats, the area of a wound becomes hyperinnervated and remains that way long after the wound heals. This effect is only seen when the wound is inflicted within a few days of birth. **Dr. Grunau** finished the session by reviewing the literature regarding the long term of consequences early pain experiences.

There was a SIG business meeting, then a boat trip through the island archipelagos to a lovely town called Porvoo. The excursion included dinner at beautiful Haikko Manor, a mansion that has been converted to a hotel and spa.

Thursday July 3rd started with the presentation of the Astra Young Investigator Award to **Dr. Klaus Olkkola** from the University of Helsinki, Finland, who will continue his research on the pharmacology of analgesics in children. **Dr. Audun Stubhaug**, University of Oslo, Norway presented the Rationale for Clinical Trials. **Dr. Peter Jansson**, Department of Clinical Quality Assurance, Astra AB, Sweden, discussed GCP Standards and Ethical Problems in Clinical Trials in Pediatric Research. Professor **Pauli Ylitalo** University of Tampere, Finland, gave a lecture on Publications Bias in Clinical Trials. There is a bias in not publishing studies with negative outcomes, and also a bias towards studies favoring a "new" drug or treatment. These bias may have a significant impact on patient therapy. A session on Pharmacology of Analgesics in Children followed. **Dr. Klaus Olkkola** reviewed aspects of pharmacokinetics and pharmacodynamics in



children. **Dr. Anne Lynn**, Children's Hospital Medical Center, Seattle gave a lecture entitled Clinical Pharmacology of Opioid Analgesics in Children. There were 2 sessions to choose from: Clinical Pharmacology of Analgesics in Children - Alternative Administration Routes For Pediatric Pain Therapy (**Drs. David Cohen**, Philadelphia, **Daniel Annequin**, Hopital Armand Trousseau, Paris, **Gerri Frager**, Grace Health Centre, Halifax, Canada) and Evaluation and Management of Pain in Infants (**Drs. Bonnie Stevens**, University of Toronto, **Ruth Guinsberg**, Escola Paulista de Medicina, Sao Paulo, Brazil, **Fran Porter**, Washington University School of Medicine, St. Louis). The final session of the day was Serious Adverse Effects of Efficient Pain Therapy By **Dr. Charles Berde**. He discussed side effects and incidences in a variety of drugs, but also

newer developments in trying to produce drugs with less side effects.

There was a banquet at Hotel Kalstajorppa with entertainment was provided by several local acts, including a group of children ballroom dancing and a singing anesthesiologist.

The final day of the meeting started with a session on Headaches In Children (**Drs. Minna Aromaa**, University of Turku, Finland, **Liisa Metsähonkala**, Turku University Central Hospital, **Bo Larsson**, Uppsala, Sweden and **Raymund Pothmann**, Hospital Oberhausen, Germany). Poster Sessions followed and covered such areas as Pain Assessment, Cancer Pain, Neonatal Pain, Procedural and Postoperative Pain, Evaluation of Quality and Interventions, Pharmacologic Approaches, Non-Pharmacologic Approaches and Animal Studies.

In afternoon there was a choice: Pain Management in the Pediatric ICU (**Drs. Allen Finley**, Dalhousie University, **Joseph Tobias**, University of Missouri, and **Sunny Anand**, Egelston Children's Hospital, Atlanta) and Development of a Core Curriculum For Pain in Children (**Drs. Phillipe Poulain**, Institut Gustave Roussy, Villejuif and **David Cohen**, CHOP). The final session was a lively and vocal debate between **Drs. Patrick McGrath and Sunny Anand** on "This house believes that the treatment of pain in children should be based on self-reporting of pain". Their seconds were **Drs Neil McIntosh and Huda Abu-Saad**. The final outcome was essentially a draw. The Meeting then adjourned until the year 2000 in London, England. ❖

# Call for Papers

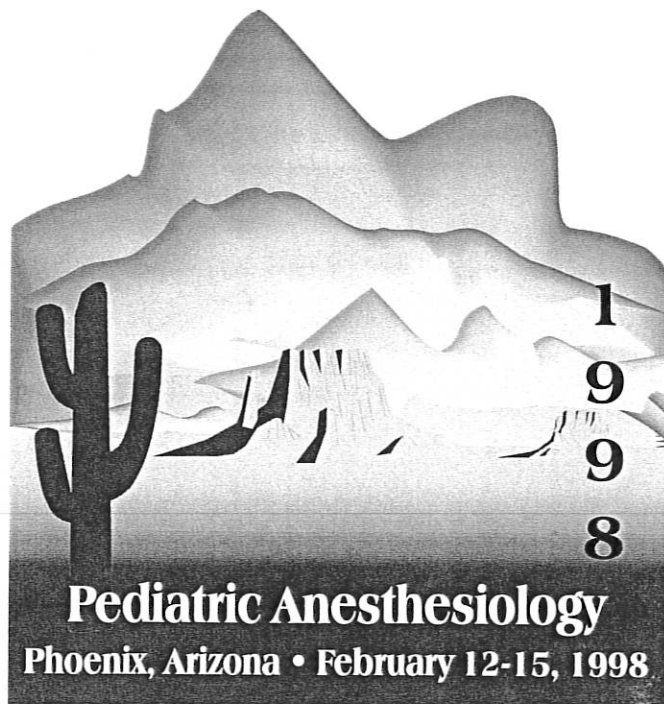
**Abstract Deadline:  
November 24, 1997**

**Society for Pediatric Anesthesia**

1910 Byrd Ave., Ste. 100, P.O. Box 11086,  
Richmond, Va. 23230-1086

Phone (804) 282-9780 • Fax (804) 282-0090

SocietyHQ@compuserve.com



**Pointe Hilton at Squaw Peak  
Phoenix, AZ**

**11TH ANNUAL MEETING**  
OF THE  
**SOCIETY FOR**  
**PEDIATRIC ANESTHESIA**

**Society for Pediatric Anesthesia**



**October 17, 1997**

**Hyatt Regency**  
**San Diego, California**

Joseph R. Tobin, M.D.  
Program Chair

Lynn D. Martin, M.D.  
Co-Chair

A Conference Sponsored by the Society for Pediatric Anesthesia  
and the Society for Education in Anesthesia

# SPA 11th Annual Meeting Program Description & Objectives

## San Diego, California

### General Objectives

As we enter our second decade as a society, the SPA continues to grow, and we dedicate our efforts to providing state-of-the-art educational venues for our membership. Based on membership feedback and comments from our most recent programs we have designed this year's program. Evaluations returned have most frequently requested presentations on pain management, and we have selected the morning subprogram to address this. Following lunch we have elected to continue and expand upon the pro/con debate format. With increasing attention regarding glucose administration, we will focus on perioperative glucose homeostasis and whether glucose should be routinely administered to children during surgery. We will conclude the program with two divergent presentations: speaking (politically) on behalf of the children, and challenges in caring for other patients who don't communicate well-veterinary anesthetic management. These presentations promise to be educational and entertaining. Following the academic program, please join us for your Society business meeting and evening gala event.

*Joseph R. Tobin, M.D.*  
*Lynn D. Martin, M.D.*

### Pediatric Pain

**Developmental Physiology of Pain Pathways:** To update attendees regarding newer understanding in the development of nociceptive and antinociceptive pathways and neuropharmacology involved.

**Advances in Pain Research:** Exciting new advances in pain research occurring now are translating into therapeutic options and trials in children. This lecture will address broad new research findings.

**Clinician's View of Advances in Pain Management:** New discoveries require astute management to translate into patient care. Practical application and clinical implications of new advances will be discussed.

**Cancer Pain Consultation:** Anesthesiologists are being more frequently requested to assist in "out of the operating room" care. Cancer pain management is an area where our technical expertise is increasingly being requested.

### Glucose Homeostasis

**Physiologic Implications for Clinical Practice:** Understanding physiologic principles and perturbations of glucose metabolism and utilization should help clinicians in deciding when to use glucose in the perioperative period.

**Controversy:** Glucose administration (pro/con): To foster an exchange of ideas on the merits/detriments of routine glucose use during surgery for children.

**Effective Advocacy on Behalf of Children:** Pediatric anesthesiologists share a unique perspective in the care of children. This presentation will introduce mechanisms by which to become a more effective advocate for children.

**The Practice of Exotic Anesthesia:** Children and animals have difficulty communicating their needs and present unique challenges to anesthesiologists. Creative solutions to challenges in veterinary anesthesia may provide paradigms and solutions to challenges with children.

## SPA Buffet Reception at the Aerospace Museum

Members should plan on making their participation complete at the Society for Pediatric Anesthesia 11th Annual Meeting by attending the highly popular SPA Annual Meeting Buffet Reception. The reception will be held from 7:00 - 10:00pm at the Aerospace Museum. The cost of this event is included in the SPA Annual Meeting Registration fee. Tickets for spouses or guests may be purchased in advance at the cost of \$50.00 per person. Please check the appropriate box on the registration form and include the proper remittance with your registration fee. Shuttle buses will provide roundtrip transportation from the Hyatt Regency San Diego.

The 1996 Buffet Reception at the New Orleans Museum of Art was heavily attended. Early registration for this year's event is encouraged.

# SPA 11th Annual Meeting Program

## San Diego, California

### MORNING SESSION

7:00am - 4:00pm  
REGISTRATION

7:00am - 7:45am  
CONTINENTAL BREAKFAST

7:45am - 8:00am  
Introductory Comments and Welcome  
Drs. Mark Rockoff and Joe Tobin

8:00am - 10:00am  
**Pediatric Pain - What's new in basic sciences?**  
Moderator: Anne M. Lynn, M.D.

8:00am - 8:50am  
*Developmental Physiology of Pain Pathways*  
Maria Fitzgerald, M.D.

8:50am - 9:40am  
*Advances in Pain Research*  
Chuck Berde, M.D., Ph.D.

9:40am - 10:00am  
Questions and Discussion

10:00am - 10:30am  
COFFEE BREAK

10:30am - 12 noon  
**Pediatric Pain - Clinical Advances and Pearls**  
Moderator: Allison K. Ross, M.D.

10:30am - 11:05am  
*A Clinician's View of Advances in Knowledge of Pain Mechanisms: Implications for Pain Management*  
Michael Cousins, A.M., MBBS, M.D.

11:05am - 11:40am  
*Cancer Pain Consultation in Pediatric Anesthesia*  
Steven J. Weisman, M.D.

11:40am - 12 noon  
Questions and Discussion

12 noon - 1:30pm  
LUNCHEON

### AFTERNOON SESSION

1:30pm - 2:45pm  
**Practical Update: Glucose Homeostasis**  
Moderator: David J. Steward, M.B.

1:30pm - 2:00pm  
*Perioperative Glucose Homeostasis - Physiological Implications for Clinical Practice*  
Albert Aynsley-Green, D.Phil., MBBS

2:00pm - 2:15pm  
*Pro: Glucose administration*  
Lynne G. Maxwell, M.D.

2:15pm - 2:30pm  
*Con: Glucose administration*  
George A. Gregory, M.D.

2:30pm - 2:45pm  
Questions and Discussion

2:45pm - 3:15pm  
COFFEE BREAK

3:15pm - 3:50pm  
**Effective Advocacy for Children - the Whys and Hows of Political Activism**  
Bob Hertzka, M.D.

3:50pm - 4:30pm  
**The Practice of Exotic Anesthesia**  
Pat Morris, DVM, San Diego Zoo

4:30pm - 5:00pm  
Business Meeting

7:00pm - 10:00pm  
SPA BUFFET RECEPTION  
*San Diego Aerospace Museum*

# SPA 11th Annual Meeting Faculty San Diego, California

**Albert Aynsley-Green, D.Phil., MBBS**

Professor  
Nuffield Professor of Child Health  
Institute of Child Health  
Great Ormond St.  
Hospital for Children  
London, UK

**Charles B. Berde, Ph.D., M.D.**

Associate Professor  
Department of Anesthesiology  
Children's Hospital  
Boston, Massachusetts

**Michael J. Cousins, A.M., MBBS, M.D.**

Professor and Head  
Department of Anaesthesia &  
Pain Management  
University of Sydney  
Royal North Shore Hospital  
St. Leonards, NSW, Australia

**Maria Fitzgerald, M.D.**

Professor  
Department of Anatomy &  
Developmental Biology  
University College London  
London, UK

**George A. Gregory, M.D.**

Professor  
Department of Anesthesiology  
Univ. of CA School of Medicine  
San Francisco, California

**Bob Hertzka, M.D.**

Pediatric Anesthesiologists  
San Diego, California

**Anne M. Lynn, M.D.**

Associate Professor  
Department of Anesthesiology  
Children's Hospital and Medical Center  
Seattle, Washington

**Lynne G. Maxwell, M.D.**

Associate Professor  
Department of Anesthesiology /  
Critical Care Medicine  
Johns Hopkins Hospital  
Baltimore, Maryland

**Pat Morris, DVM**

Veterinarian  
San Diego Zoo  
San Diego, California

**Allison Ross, M.D.**

Assistant Professor  
Department of Anesthesiology  
Duke University  
Durham, North Carolina

**David J. Steward, M.B.**

Chairman  
Department of Anesthesiology  
Children's Hospital of Los Angeles  
Los Angeles, California

**Steven J. Weisman, M.D.**

Associate Professor  
Department of Anesthesiology  
Yale Univ. School of Medicine  
New Haven, Connecticut



# Continuing Medical Education Needs Assessment

The Society asks that you give consideration to topics you would like to have addressed in future educational offerings.

1. What topics would you like to see addressed at future annual/winter meetings?

- |          |          |
|----------|----------|
| 1. _____ | 4. _____ |
| 2. _____ | 5. _____ |
| 3. _____ | 6. _____ |

2. Do you like workshops at the winter meeting?

<b>Very Much</b>	-	-	-	<b>Not at All</b>
1	2	3	4	5

3. If you like workshops, which topic would you like to see included:

- |          |          |
|----------|----------|
| 1. _____ | 4. _____ |
| 2. _____ | 5. _____ |
| 3. _____ | 6. _____ |

4. a. Would you be interested in separate workshops during the year?

<b>Very Much</b>	-	-	-	<b>Not at All</b>
1	2	3	4	5

b. Would you like the meeting to be co-sponsored with another organization (i.e., critical care, neurology, etc.)?

<b>Very Much</b>	-	-	-	<b>Not at All</b>
1	2	3	4	5

5. Additional comments and suggestions: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Mail / Fax to:

SPA, P.O. Box 11086, Richmond, VA 23230-1086  
 phone (804) 282-9780 / fax (804) 282-0090

## New Members

(continued from page 15)

**Daniel E. De Jesus, MD**  
*Albany, NY*

**Barbara M. Dilos, DO**  
*Whitestone, NY*

**John F. Donovan, MD**  
*San Francisco, CA*

**Robert S. Dorian, MD**  
*Livingston, NJ*

**Nancy E. Duckles, MD**  
*Knoxville, TN*

**Sophie Gagnon, MD**  
*Ste. Foy, PQ, Canada*

**Renny Griffith, MD**  
*Washington, DC*

**Greg Gottlieb, MD**  
*Seattle, WA*

**Gligor Gucev, MD**  
*Skopje, Macedonia*

**W. D.H. Helfferich, MD**  
*Amsterdam, The Netherlands*

**Sonja Hinder, MD**  
*Muenster Nrw, Germany*

**Olaf A. Holoyda, MD**  
*Sacramento, CA*

**Aristides Koutrouvelis, MD**  
*Pearland, TX*

**Igor Kravchenko, MD**  
*Skokie, IL*

**Marcella J. Lanzinger, MD**  
*Durham, NC*

**Carlos A. Lecca, MD**  
*Granite City, IL*

**Eric M. Lewandowski, MD**  
*Houston, TX*

**Michael A. Lyew, MD**  
*Macon, GA*

**Elizabeth A. Martinez, MD**  
*Baltimore, MD*

**Raul A. Masing, MD**  
*Garnerville, NY*

**Timo J. Miettinen, MD**  
*Turku, Finland*

**Iqbal M. Mirza, MD**  
*Hillsborough, CA*

**K. Annette Mizuguchi, MD**  
*New York, NY*

**Susan R. Moeller, MD**  
*Cincinnati, OH*

**Rajendran G. Nair, MD**  
*Franklin, TN*

**Miho Nakano, MD**  
*Nagasaki, Japan*

**Ichiro Otsu, MD, PHD**  
*New York, NY*

**John J. Picard, MD**  
*London, England*

**Michael A. Pilla, MD**  
*Winthrop, MA*

**Tadina N. Polanco, MD**  
*Albany, NY*

**Mark D. Reusche, MD**  
*Draper, UT*

**Michael J. Reynolds, MD**  
*Potomac, MD*

**Rick A. Rolain, MD**  
*Chesapeake, VA*

**Anamika Roy, MD**  
*Woodmere, NY*

**Yevgeniy Shustorovich, MD**  
*Menands, NY*

**Jacques Somma, MD**  
*Mountain View, CA*

**Kristin A. Sun, MD**  
*Boston, MA*

**Marina I. Svyatets, MD**  
*Brooklyn, NY*

**Lynn E. Thompson, DDS**  
*Loma Linda, CA*

**Dean C. Walund, MD**  
*Bellevue, WA*

**Hiroyuki Yamada, MD**  
*Nagasaki, Japan*

---

## Society for Pediatric Anesthesia



1910 Byrd Ave., Suite 100  
P.O. Box 11086  
Richmond, VA 23230-1086

Non-Profit Org.  
U.S. Postage  
**PAID**  
Permit No. 956  
Richmond, VA

---

The Society for Pediatric Anesthesia (SPA) was founded in 1987 to promote quality perioperative care for infants and children. Membership in SPA has grown steadily to more than 4000 members. Membership consists of community-based and academic physicians who have an interest in pediatric anesthesia, as well as resident and affiliate members. The goals of SPA include:

1. To advance the practice of pediatric anesthesia through new knowledge
2. To provide educational programs on clinical, scientific, and political issues that are important to pediatric anesthesia practice
3. To promote scientific research in pediatric anesthesia and related disciplines
4. To provide a forum for exchange of ideas and knowledge among practitioners of pediatric anesthesia
5. To support the goals of the American Society of Anesthesiologists and the American Academy of Pediatrics

---

### Officers

#### President

**Mark A. Rockoff, MD**  
*Chair, Executive Committee*  
Boston Children's Hospital  
Boston, MA

#### Vice President

**Steven C. Hall, MD**  
*Chair, Education Committee*  
Children's Memorial Hospital  
Chicago, IL

#### Secretary

**Peter J. Davis, MD**  
*Chair, Membership Committee*  
Children's Hospital of Pittsburgh  
Pittsburgh, PA

#### Treasurer

**Anne M. Lynn, MD**  
*Chair, Finance Committee*  
Children's Hospital  
Seattle, WA

#### Immediate Past President

**William J. Greeley, MD**  
*Chair, Nominations Committee*  
Children's Hospital of  
Philadelphia  
Philadelphia, PA

---

### Board of Directors

**J. Michael Badgwell, MD**  
*Chair, Government Affairs  
Committee*  
Children's Hospital at Texas Tech  
University Health Sciences  
Center  
Lubbock, TX

**Ann G. Bailey, MD**  
University of North Carolina  
Hospitals  
Chapel Hill, NC

**Raeford E. Brown, Jr., MD**  
*Chair, Communications  
Committee*  
Arkansas Children's Hospital  
Little Rock, AR

**Jayant K. Deshpande, MD**  
*Chair, Publications Committee*  
Vanderbilt University Medical  
Center  
Nashville, TN

**Lynda J. Means, MD**  
*Chair, AAP, Anesthesia Section*  
Riley Children's Hospital  
Indianapolis, IN

**David G. Nichols, MD**  
*Chair, Research Committee*  
Johns Hopkins Hospital  
Baltimore, MD

**Peter T. Rothstein, MD**  
Babies and Children's Hospital  
Columbia-Presbyterian Medical  
Center  
New York, NY

**James Viney, MD**  
*Chair, Bylaws Committee*  
Primary Children's Medical  
Center  
Salt Lake City, UT

---

### Program Chairs

**Joseph R. Tobin, MD**  
*Annual Meeting*  
Bowman Gray School of  
Medicine  
Winston-Salem, NC

**Francis X. McGowan, Jr., MD**  
*Winter Meeting*  
Boston Children's Hospital  
Boston, MA