Society for Pediatric Anesthesia
education • research • patient care

SPA NEWS

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In this issue:

www.pedsanesthesia.org

Congratulations to the 2008 and 2009 Robert M. Smith Award Winners, Dr. Ryan Cook (2009) and Dr. Fritz Berry (2008). Pictured here with their wives and the past AAP liaison are the recipients of the coveted award for excellence in pediatric anesthesia as recognized by the American Academy of Pediatrics. From left to right are Sandy Cook, Dr. D. Ryan Cook, Dr. Joseph Cravero, Dr. Frederic "Fritz" Berry, and Suzanne Berry.

Board to vote on bylaws changes at Annual Meeting in October

As per the SPA Bylaws, Article XX-Amendments to Bylaws: "The Bylaws may be altered, amended or repealed and new Bylaws may be adopted by a majority of all the members of the Board of Directors at any regular meeting or at any special meeting, if at least ten days' written notice is give of intention to alter, amend or repeal or to adopt new Bylaws at such meeting."

The Board of Directors is considering amendments to the following: Article II-Mission Statement; Article VI, Section 6.3 – Board of Directors, Composition; and Article VIII-Committees, Additions of Section 8.9.10 – Committee on Safety and Quality and Section 8.9.11 – Pediatric Anesthesia Program Directors.

You can review the proposed amended Bylaws by going to the SPA website at www.pedsanesthesia.org.

We ask that any comments be made prior to the next Board of Directors Meeting, Thursday, October 13, 2009 and made directly to Randall P. Flick, MD, MPH, FAAP, Chair, SPA Bylaws Committee at flick.randall@mayo.edu.

Dr. Flick will advise the Board of any comments from the Membership prior to adopting these amendments.

Members can comment online at www.pedsanesthesia.org.

PRESIDENT'S MESSAGE

Joseph R. Tobin, MD, FAAP, FCCM
Wake Forest University
School of Medicine
Winston-Salem, NC

I know summer is a busy time for all of us attempting to achieve life balance and enjoying family time while pediatric surgery cases increase on a predictable cycle. I hope you are achieving some life and career goals and having a little fun while you are working so hard!

The Society has been very busy over the past many months. We have been planning the educational programs for the 2009 annual meeting in New Orleans, and the 2010 spring meeting in San Antonio. Both programs have shaped up very well. I want to thank all involved and each of our members who have provided ideas or feedback from previous venues. The ACCME requires active feedback and planning based upon feedback for continued accreditation of organizations planning CME events. Also, for your colleagues who don't practice pediatric anesthesia as often as our membership, please make them aware of the newest of our offerings, the Fundamentals in Pediatric Anesthesia Course which is specifically designed for the general anesthesiologist and others to stay current on principles and practice of pediatric anesthesia. Take a look at the program brochure at our website www.pedsanesthesia.org.

The Board of Directors, the Executive Committee, and the CCAS have been conducting monthly teleconference calls to continue to address Society initiatives. We have begun plans for hosting two more international meetings. The first is in 2010 in San Diego and Steve Stayer and Andrew Davidson are the program directors. We will be hosting the pediatric society from New Zealand and Australia (SPANZA) and have opportunities to learn from our southern hemisphere colleagues. The next proposed international meeting is for 2012 and Dr. Martin and the education committee are developing this program for the International Assembly of Pediatric Anesthesia for October 10-12, 2012 in Washington, D.C.

Financially, the SPA continues on firm ground. Although we have experienced our share of losses in the recent volatile market, we are pleased by the performance of our financial advisors and we are very grateful to benefactors to the society, as well as the growing membership which now exceeds 2000 active members. The Board is committed to being prudent fiscal stewards of our finances as we continue to expand our missions.

Over the past few months, I've received only a few inquiries regarding a position statement regarding anesthetic exposure in infants. Inquiries have come from members rather than news organizations. The ASA was in contact with us should there have been a groundswell of interest, but there has not been a large public interest noted. The US FDA is moving forward with its support of prospective studies to provide us with more information, and SPA has been supportive of its membership involved with these upcoming trials.

These past many months have been challenging and very rewarding for me personally. I have now successfully survived my first year as an academic department Chair, while maintaining a leadership role in SPA and the Malignant Hyperthermia Association of the United States (MHAUS). There is never sufficient time to do all that we would like to do, but I am committed to moving SPA forward with increasing involvement as the advocate of children in the perioperative period, and to become a more effective international citizen with our sister organizations on behalf of children everywhere. We invite your involvement and efforts in SPA, and please share your successes - local, regional or international with our membership. Dr. Ross is always looking for great content for the newsletter. Her email address is ROSS0016@mc.duke.edu.

FROM THE EDITOR

As you will see, this newsletter is packed full of reviews of our last meeting, just in time to get ready for the next. During the meeting in Jacksonville, there was discussion by the Board of Directors as to how they identify the SPA leaders of tomorrow.

One such way has been to follow the SPA members who volunteer for the various committees and show their dedication to the Society by contributing their time or their area of expertise. Such commitment helps to determine if an individual may be a valuable Board member or potential officer.

These decisions are not taken lightly by the Board or by the future officer as the commitment is 10-12 years once the first step is taken. Most Executive Board members have served as Committee Chairs, Board of Directors, and Program Chairs for SPA meetings. These commitments are in addition to the 10-12 years serving as Secretary/Treasurer (now a combined position in order to reduce total time and also make room for additional BOD members), Treasurer, Vice President, President, and Past President.

There are more than 2,000 active SPA members. If one of you are interested in being the next member who helps to make a difference by taking on this commitment, please contact one of the Committee Chairs and start from there. Your work and dedication will always be appreciated. In particular, the Membership Committee needs help.

This is a great segue to thank my contributing editors, as always, for your contributions. I am always impressed with your excellent work.

Reminder

If your entire group, division or department joins SPA, there is a 10% discount on your dues! Contact Kim Battle, Membership Manager, at kim@societyhq.com for more information!

Pediatric Chronic Pain: Miles to Go Before We Sleep

Anjana Kundu, MBBS, DA
Kathleen Cooke, MBBS FANZCA FFPMANZCA
Seattle Children's Hospital


Dr. Kundu

Although many advances have been made in understanding pain during development as well as in the management of pediatric acute pain, chronic pain in children suffers from lack of information, education, training and resources. A recent UK survey of pain clinicians and General Practitioners (GPs) highlighted the lack of information regarding the prevalence and risk factors for pediatric chronic pain (Bhatia et al, 2008). It also noted that 95% of GPs and 77% of pain clinicians acknowledge lack of adequate training in pediatric chronic pain and limited consultative resources. Similar issues of accessibility to pediatric chronic pain services were also reported in Canada where the median wait time for multidisciplinary pain treatment was 4 weeks but could be as long as nine months (Peng et al, 2007). This lack of accessibility to timely treatment of pain has detrimental effects on physical, psychological and social aspects of children's lives.

According to a study by Martin A et al, 62% of children diagnosed with chronic pain continue to experience pain for a period of 1-6 years after discharge from chronic pain clinic. Over half of them continued to report pain that was highly frequent, adversely impacting their activities of daily living (ADL) and necessitating active pain control interventions. Another study noted that children and adolescents with reported pain experienced sleep problems (54%), inability to pursue hobbies (53%), eating problems (51%), school absence (49%) and inability to meet friends (47%) (Roth-Isigkeit, A et. al 2005). Pain frequency and restrictions on ADL increased with age in this study.

The literature on pediatric chronic pain leaves much to be investigated in terms of its natural history, risk factors and its long term impact. The current literature indicates a prevalence of chronic or recurrent pain amongst children and adolescents between 15- 35% (Roth-Isigkiet, A 2005; Peng et al, 2007), with most common complaints being headache, functional abdominal pain or musculoskeletal pain (Martin, A et al, 2007; Roth-Isigkiet, A et al, 2005). Influences of gender and age on pediatric pain indicate that females report more pain than males with a peak incidence at 14 years of age. Use of health care resources, medications and non-drug methods of pain control is also higher amongst females (Martin, A et al, 2007). These investigators also reported, when pain was significantly associated with psychosocial factors, females were significantly more likely to report continuing pain compared with males. The reasons for these gender differences have not been adequately studied but may reflect parental and child preferences as well as a greater societal acceptance for reporting and seeking pain treatment for females. However, the self reported triggers for pain also vary between boys and girls. Girls report triggers such as weather conditions, illness, anger/ disputes, family conditions and sadness while boys tended to identify physical exertion more often as the trigger (Roth-Isigkeit, A et al, 2005).

Factors influencing utilization of health care have been linked to increased age, increased intensity and duration, but not frequency, of pain (Roth-Isigkiet, A et al, 2005).

Fifty percent of children and adolescents with pain sought professional help and 52% reported using pain medications. Yet there are significant barriers to provision of healthcare in this population including lack of knowledge, training and education amongst health care providers (Bhatia et al, 2008; Dowden et al, 2008). Outmoded beliefs and misconceptions about pediatric pain and analgesia continue to prevail (Dowden et al, 2008). There is also a lack of resources and finance for multidisciplinary pain management services for children. Funding for non-pharmacological, Complementary and Alternative Medicine (CAM) therapies in pediatric pain management as well as development and promotion of community education also suffers greatly (Dowden et al, 2008). Massage and acupuncture therapy allow for improved physical and psychological well being and a decreased reliance on and tolerance to analgesic medication (Santhanam et al, 2008). Thus, making such therapies optimal adjuncts for pain management with minimal risk associated. A survey at a pediatric hospital in North America found that, despite their belief about CAM having a significant role in health and symptom management, health care providers hesitate to recommend CAM therapies due to lack of knowledge about CAM and concerns about training of CAM providers (Kundu et al, 2007).

In 2008, the core outcomes domain group (PediIMMPACT CORE 2008) met and made recommendations for consideration in clinical trials of pediatric chronic and recurrent pain, to include,

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SAVE THE DATES

23RD ANNUAL MEETING
October 16, 2009
Sheraton New Orleans
New Orleans, LA

FUNDAMENTALS OF PEDIATRIC ANESTHESIOLOGY
April 17 - 18, 2010
The Grand Hyatt
San Antonio, TX

PEDIATRIC ANESTHESIOLOGY 2010
April 15 - 18, 2010
The Grand Hyatt
San Antonio, TX

Meeting Reviews: Pediatric Anesthesiology 2009

Edited by Allison Kinder Ross, MD
Duke University Medical Center

The regular session of the Winter Meeting of the Society for Pediatric Anesthesia opened Friday morning, March 20th with Welcome Messages from Program Director, Dr. Linda Jo Mason (Loma Linda University), Dr. Joseph P. Cravero (Dartmouth Hitchcock Medical Center), and SPA President Dr. Joseph R. Tobin (Wake Forest University). Following the welcome, the SPA program began with sessions that are summarized as follows:

CONTROVERSIES IN PEDIATRIC ANESTHESIA

Reviewed by Sean Flack, MB, ChB, FCA, DA
Seattle Children's Hospital

The first session began with a lecture by Dr. Carolyn F. Bannister (Emory University) entitled Brain Monitoring Function in the Pediatric Patient – Where are we now? In 2006, the ASA issued a practice advisory for intraoperative awareness and brain function monitoring in adults that emphasized the use of multiple monitoring modalities including clinical assessment and conventional monitoring systems. They further concluded that brain function monitors are not routinely indicated but should be used on a case by case basis. However, there is little scientific evidence on which to base a similar advisory in children.

Brain function monitors can be divided into two groups. The first group records, amplifies and then digitizes spontaneous EEG/EMG signals (BIS, Entropy, Narcotrend, SEDline, SNAP Index, Cerebral state monitor). The second group records auditory-evoked responses (AEP Monitor). At best, brain function monitors provide an imprecise measure of the state of hypnosis, displaying a numerical value that "predicts" level of consciousness. Validation studies have shown a strong correlation of sevoflurane, isoflurane and propofol anesthetic levels to BIS values in children older that 6 months. Studies of Narcotrend and Entropy monitors validate their use in children older than 12 months. Pediatric studies of the Cerebral State Monitor are lacking, whilst the AEP Monitor demonstrated poor prediction of anesthesia concentration in both infants and older children.

The use of brain function monitors has been shown to result in quicker wakening, decreased recovery time, reduced anesthetic requirements and a decrease in the incidence of awareness in adults. However, a recent study by Avidan et al (NEJM 2008) failed to reproduce the results of previous studies, finding no evidence to support routine BIS monitoring. Furthermore, Dr Bannister cautioned the use of brain function monitors in infants due to maturational differences in EEG activity.

The reported incidence of awareness in children is around 1%, higher than the 0.2% reported in adults. Children have difficulty in separating pre, intra and post-operative events and this has lead to some doubt as to the true incidence of awareness in children. By nature, such studies are subjective and based on self-reporting. Dr Bannister concluded that if children truly are at higher risk for intraoperative awareness, then pediatric anesthesiologists should have an acute interest in reliable brain function monitors. Consequently, we should take an active role in developing and testing appropriate algorithms upon which such monitors can be developed.

Dr. Randall P. Flick (Mayo Clinic) then followed with a talk titled Clinical perspectives in Anesthetic Toxicity. It is now well known that early exposure to some anesthetic and sedative drugs causes neurohistopathologic and behavioral changes in animals. Implicated agents include NMDA antagonists as well as GABA agonists. Whether these findings in rodents can be extrapolated to humans is questionable, but emerging data in primates appear to confirm these rodent findings. Obviously, these findings are of great concern; however, there are no data available to conclude whether early exposure to anesthetics is harmful to humans.

Dr. Flick then presented the findings of an early exposure to anesthesia and learning disability study (Anesthesiol 2009; 110:796-804) performed using a birth cohort of children in Olmsted County, Minnesota. The purpose of the study was to determine whether there was an association between exposure to anesthesia prior to age four and the development of any learning disability. They identified 8,458 children born between 1976 and 1982 to mothers residing in the county. Using the Rochester Epidemiology Project, the researchers were able to identify all children in the cohort who underwent a procedure requiring general anesthesia before their 5th birthday. They were also able to review the educational records of every child in the cohort and access the records of the only private tutoring agency in the community during the years of the study.

After various exclusions, 5,357 children were included in the final report. 593 children required general anesthesia before age four and underwent 875 procedures with 449 having a single procedure. 932 children developed a learning disability (LD) before age 19. The risk for developing a LD increased with the number of anesthetics before age 4 yr ($p<0.001$). Although, children exposed to a single anesthetic were not at increased risk, those exposed to two or more anesthetics were almost twice as likely to develop a LD. Longer duration of anesthesia also increased the risk of LD. These risks persisted, even after children with ASA physical status III or greater were excluded from analysis.

Dr. Flick noted that it is not possible to conclude whether exposure to anesthetics was causative for LD in this cohort study or rather a marker for conditions that increase LD risk. Also, given the quality of healthcare available in Rochester, it is possible that children requiring a high level of care remain in the community thus biasing the surgical group toward children with more severe disease.

EMERGING TECHNOLOGIES AND TECHNIQUES FOR PEDIATRIC PATIENTS

Reviewed by Paul Reynolds, MD, FAAP
University of Michigan

The second half of the spring SPA afternoon session was moderated by Dr. Lynne Maxwell (Children's of Philadelphia). The first lecture "New modes of mechanical ventilation for children" was given by Dr. John Arnold (Boston Children's), the Medical Director for Respiratory Care and Biomedical Engineering. Dr. Arnold reviewed both current and new modes of ventilating children with acute lung injury. This lecture included an in-depth discussion of

high frequency oscillation ventilation which allows for bulk delivery of oxygen and effective recruitment of alveoli, while delivering minimal tidal volumes at high rates. Dr. Arnold's presentation included in-vivo microscopic images of porcine lung tissue with traditional ventilation versus non traditional ventilatory modes. Next, Dr. Arnold discussed APRV; airway pressure release ventilation, where patients breath spontaneously with continuous positive airway pressure to maintain airway recruitment. Finally, the concept of NAVA (or neurally adjusted ventilatory assistance) was described. This mode of ventilation uses a computer-assisted analysis of diaphragmatic activity (through an esophageal probe) to adjust ventilation, both within a given breath and between breaths. The electrical activity of the diaphragm (Edi) quantifies diaphragmatic activity. By utilizing the Edi signal, maintenance of synchrony between the patient and the ventilator is improved while supplying the clinician with additional data for weaning patients.

Dr. Ivor Berkowitz (Johns Hopkins) spoke on "Uses of Cardiac support outside the OR." Dr. Berkowitz began with a discussion of ECMO, its indications, and the differentiation of VA ECMO versus ECMO as a left or right ventricular assist device. He also spoke about the usefulness of ECMO for unknown or short-term use in cardiac failure, however, discouraged its use when recovery is not viable. Various approaches for cannulation were presented, as were potential complications. Next, Dr. Berkowitz discussed ECMO in the context of extracorporeal cardiopulmonary resuscitation. Indications, decision-making processes and delivery systems were all discussed. Percutaneous cannulation is preferred, and speed is of the essence. Finally, ventricular assist devices were discussed, including the Berlin Heart, and the Medos VAD.

NEW DRUGS ON THE HORIZON FOR PEDIATRIC ANESTHESIA

Submitted by Toyin Olutoye, MD

This session kicked off with a talk on Intravenous Acetaminophen by Dr. Greg Hammer (Lucille Packard Children's Hospital, Stanford). Intravenous (IV) acetaminophen, yet to be approved for use in the U.S, is being used widely in Europe, under the trade name Perfalgan. The attraction to IV acetaminophen is due to its efficacy, analgesic, anti-pyretic properties and wide therapeutic index. Its safety profile is comparable to oral acetaminophen. When administered intravenously, the parent drug, propacetamol is converted to acetaminophen and the therapeutic levels range between 10 -20 mcg/ml with target concentrations achieved between 15 minutes to 2 hours. Interestingly, 50% of patients given rectal Tylenol never attain therapeutic levels. For example, 40 mcg/kg of rectal Tylenol achieves only half of the therapeutic level with peak plasma levels being attained between 0.6 to 16.6 hours suggesting that suboptimal doses of rectal Tylenol are being used widely. The four metabolic pathways of IV acetaminophen were reviewed: 1) Conjugation to glucoronide, 2) Conjugation to sulphate, 3)Methylation to methylacetaminophen, and 4) Oxygenation to the toxic metabolite which is associated with hepatotoxicity. Despite delayed clearance of IV acetaminophen in neonates, there is no resulting elevation of serum transaminases. Hepatotoxicity does not occur because neonates have an increased ability to metabolize intravenous acetaminophen via the sulphate pathway and rarely utilize the oxidative pathway therefore toxic metabolites which cause liver damage are not produced. The rate of hepatic clearance gradually increases up to age 2 years at which point it approaches that of adults. A 48 hour study revealed that children rapidly achieved therapeutic concentrations with peak (Cmax) being achieved in a dose proportional manner. The median term half life was longer in neonates compared to children and adolescents and it was relatively non-toxic in all groups studied. Dr. Hammer was optimistic about the future of IV acetaminophen and felt confident it would be approved by the FDA for use in the U.S fairly soon with phase 4 studies to follow in the very near future.

Dr. Nina Guzzetta (Children's Healthcare of Atlanta, Emory) followed with a talk on Recombinant Factor VII (rVII). A quick survey showed that 37% of the audience had used rVII approximately 2-5 times in their career. Its mechanism of action involves facilitation of thrombin formation. It affects the prothrombin time as well as the INR. The FDA-approved uses are for the management of bleeding in Hemophilia A and B patients while off-label uses include bleeding associated with non-hemolytic conditions such as liver failure, liver transplantation, intracerebral hemorrhage and renal failure.

Two papers have suggested a temporal relationship between the use of rVII and a decrease in blood loss but there is a paucity of randomized controlled trials studying the effects of this drug in both adults and children. A review of existing adult studies/case reports reveal that the use of rVII is more effective when it is administered early enough prior to the occurrence of severe bleeding. The exact dose required is unclear, but reports suggest 90-100 mcg/kg and a review revealed a mean dose of 123 mcg/kg. Advantages of rVII include absence of infection, ease of administration and the small volume required. Disadvantages include the high cost,lack of a standard lab to assess its efficacy, unknown safety profile and thromboembolism. Of the 185 thromboembolic events reported to the FDA between 1999 and 2004, 151 of them occurred following off-label use of rVII.

Since a reduction in anti-thrombin enhances the hemostatic effects of the drug, specific monitoring of anti-thrombin levels may limit the incidence of complications. More prospective randomized trials are needed to assess its efficacy and prophylactic use.

Sugamadex was discussed by Dr. Jay Deshpande (Vanderbilt Children's). He reviewed the structure of this drug, stating that its negatively charged side chains bind to the positively charged side ions of rocuronium and vecuronium resulting in a tightly bound moiety easily excreted in urine while the inactive, uncomplexed drug is excreted in bile. While Sugamadex does not bind with benzylisoquinolone agents (atracurium and mivacurium) or succinylcholine, it forms complexes with other medications like cortisone, atropine and verapamil albeit with much less affinity and therefore does not result in significant clinical effects. The amount of Sugamadex required is proportional to the amount of neuromuscular agent administered and side effects include hypotension, cough, nausea and vomiting, parosmia and possible prolongation of the QT interval. A recent study by Plaud et al. using Sugamadex revealed that there was 90% recovery of T4 in all age groups. Dr. Deshpande concluded that while this is a promising agent with a good safety profile across all age groups, there are some reports of hypersensitivity reactions hence it has not yet been approved by the FDA for use in the United States.

Opioid antagonists, Methylnatrexone and Alvimopan were discussed by Dr. Constance Monitto (Johns Hopkins Hospital). These agents have recently been approved for use by the FDA. They both do not cross the blood brain barrier due to the polarity of their

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structures and therefore function only as peripheral opioid antagonists. Unlike Alvimopam which is only administered orally, Methylnatrexone can also be administered via the intravenous or subcutaneous route. Methylnatrexone is approved only for the treatment of opioid induced constipation in patients receiving palliative care or long term illness and side effects are GI related making it contraindicated in mechanical GI obstruction. Pediatric studies are lacking on the use of this medication.

AFTERNOON REFRESHER COURSES

Submitted by Cheryl K. Gooden, MD, FAAP
Mount Sinai Medical Center, NY

The Friday afternoon session included two outstanding refresher courses.

Dr. Sulpicio Soriano (Children's Hospital Boston) presented "Pediatric Neuroanesthesia: Principles and Update". First, he emphasized various developmental changes occurring in the brain beginning with infancy through childhood and highlighted impact of various perturbations on cerebral blood flow, autoregulation, and intracranial pressure. Management issues of traumatic brain injury were stressed along with the question of oxygen as friend or foe in the presence of brain injury. He concluded his presentation with comments on the future direction of pediatric neuroanesthesia with advances being made for epilepsy and interventional neuroradiology.

During the second refresher course, Dr. Zeev Kain (UC – Irvine) discussed "Management of Preoperative Anxiety in Children". The initial part of his presentation focused on behavioral interactions and the induction of anesthesia. He emphasized that there is room for improvement with regards to anesthesia preparation programs for the pediatric patient, stressing the use of web-based interventions. He completed his discussion with a description of the inherent overlap of evidence-based practice with clinical practice.

Saturday, March 21st started with a variety of early morning PBLD's and were followed with SPA sessions that are summarized as follows:

PULMONARY CORE

Submitted by Zulfiqar Ahmed, MBBS, FAAP
Children's Hospital of Michigan, Detroit

The Saturday morning session was moderated by Dr. Mary Ellen McCann (Boston Children's) on the session of pulmonary medicine. Dr. Walter Robinson (Dalhousie University, Nova Scotia) was the first speaker discussing Cystic Fibrosis (CF). Contrary to previous teachings, CF is now a chronic disease with long term implications with CF patients being managed more aggressively and the age of disease exacerbations is much later in life. These patients may be on a large number of medications (Azithromycin, inhaled Tobramycin, inhaled hypertonic saline, inhaled Pulmozyme and high dose ibuprufen) and they may also be taking licorice (which may cause hypertension) and ginkgo baloba (may cause recurrent hemoptysis by altering Vit-K metabolism). These patients may have associated diagnosis of osteoporosis or diabetes mellitus (DM), and should be screened for DM as it may be unmasked from stress. CF patients are usually very well optimized and may have detailed medical records with serial pulmonary functions documented. One should consider a two-week period of increased airway clearance in preoperative period and which should be continued in the postoperative period for two more weeks. These patients may be on respiratory isolation in the perioperative area for drug resistant bacteria. Fever in a CF patient may be a grave sign of impending sepsis. These patients may have nasal polyps and sinus diseases so nasal intubation should be reconsidered if indicated. Increased production of mucus may result in postoperative desaturations.

Dr. Gerhard Wolf (Boston Children's) was the second speaker of the day discussing Asthma which is the third leading cause of hospital admission in US in children. He described the difference between reactive airway disease (RAD) and asthma. RAD is the wheezing that occurs in toddlers due to viral infection, whereas asthma is a chronic lung disease that has many triggers. Chest X-Ray of asthmatics may show atelectasis, hyperinflation, subcutaneous emphysema and pnuemomediastinum. Pathophysiology of asthma includes smooth muscle hypertrophy and broncho-constriction along with mucosal hyperplasia and edema. Treatment of in-patients includes beta agonists, steroids, continuous albuterol nebulization and subcutaneous epinephrine. He describes that anticholinergics like ipratropium are of questionable effectiveness. Intravenous magnesium especially in the emergency department is found to be very effective in difficult patients with limited doses. According to Dr. Wolf, therapies that are not effective in asthma patients are theophylline, antibiotics, aggressive hydration, chest physiotherapy, mucolytics and sedation. Intubation in these patients depends on clinical judgment guided by increasing CO2, respiratory muscle exhaustion, altered mental status, refractory hypoxemia or hemodynamic instability. Issues which may arise after intubation include decreased preload secondary to dehydration, decreased pulmonary vascular resistance and decrease myocardial contractility due to hypoxia and acidosis. The goals of mechanical ventilations in ICU are smaller tidal volumes, decreased inspiratory time, permissive hypercapnia, non-toxic oxygen concentration and use of expiratory hold maneuvers, among others. PEEP reduces the work of breathing by preventing end-expiratory collapse of alveoli. One can minimize the alveolar gas trapping with bronchodilators and by decreasing expiratory time. There is no convincing evidence at present that use of Heliox is effective in preventing intubation in asthmatic patients. Isoflurane is used in very limited centers.

The third speaker of the day was Dr. Brian Hanna (Children's Hospital of Philadelphia). His topic was Pulmonary Hypertension (PHTN) in pediatrics. According to Dr. Hanna, the incidence of PHTN is 1-2 per million but Cor Pulmonale is responsible for 20 % mortality in NICU. The current perioperative mortality in patients with PHTN is 1-2%. The most important risk factor in mortality is increased right ventricular (RV) pressure. There are three main etiologies for PHTN in pediatric population. First is abnormal lung development, which in utero may be secondary to congenital diaphragmatic hernia or other masses. The second reason is the presence of supernumerary vessels in an abnormally

developed lung tissues. The third reason is intimal hyperplasia and arteriopathy in the pulmonary vessels. Elevation of serum Beta-Natriuretic Peptide (BNP) has been shown to be correlated with increased mortality even though the patient may be asymptomatic at the time of measurements. Assessment of these patients may include decreasing exercise intolerance or worsening hypoxia, syncope and chest pain, hemoptysis, clubbing, increased JVP and desaturations. Preoperative evaluation should look for signs and symptoms of heart failure such as hepatomegaly. These patients should be free from inter-current illnesses. Current research on treating these patients is geared towards inducing apoptosis in proliferated smooth muscles to control or limit their proliferation and improving angiogenesis.

AAP SECTION ON ANESTHESIOLOGY AND PAIN MEDICINE ASK THE EXPERTS PANEL

Reviewed by Constance S. Houck, MD, FAAP
Boston Children's Hospital

This year the "Ask the Experts" panel was sponsored by Nemours Children's Clinic of Jacksonville, Florida and Monroe Carell, Jr. Children's Hospital at Vanderbilt. The topic, Anesthesia for Children with Pulmonary Disease, was based on the Saturday morning Core lecture series. A series of cases were devised describing typical surgical procedures that would be performed on children with the pulmonary problems described in the morning lectures. Each presentation also included a series of audience response questions dealing with the more controversial or challenging parts of caring for children with these disorders.

Dr. Eugene Freid (Nemours Children's) tackled the first case of a 3 y/o with pulmonary hypertension controlled with a prostaglandin, an endothelin-1 inhibitor and a phosphodiesterase inhibitor who was scheduled to undergo removal and exchange of the CVL line through which she is receiving continuous epoprostanol (Flolan). He began by emphasizing the results of a recent review that showed that pulmonary artery hypertension is a direct predictor of perioperative mortality. To decrease perioperative morbidity, careful and deliberate preoperative preparation including recent cardiac studies reflecting the reversibility of pulmonary hypertension with oxygen and vasodilators are essential. The type of anesthetic is less important than the maintenance of physiologic balance and prevention of hypoxia, acidosis and sympathetic stimulation in order to minimize elevations in pulmonary pressures. The most effective treatment measures in the event of a pulmonary hypertensive crisis include oxygen, mild hyperventilation, fluid boluses and cardiac support (with milrinone as the first line agent),avoidance of noxious stimuli and the institution of inhaled nitric oxide.

Dr. Kevin Sullivan, (Nemours Children's) took on the next challenge of an obese 14 y/o with chronic persistent asthma treated with montelukast (Singulair), inhaled fluticasone (Flovent) and inhaled albuterol scheduled for a repair of a slipped capital femoral epiphysis. He discussed the value of a comprehensive preoperative history that includes risk factors such as recent hospitalizations, ED visits and ICU admissions. If at all possible, treat this type of patient with intravenous steroids and inhaled β agonists prior to anesthesia induction to optimize preoperative pulmonary status. If a regional anesthetic is not an option choose an anesthetic technique that would have the least risk of intraoperative bronchospasm by avoiding drugs that can cause histamine release and by providing a deep anesthetic prior to instrumentation of the airway with IV lidocaine as an adjunct to blunt the airway reflexes. In an obese adolescent, he suggested weighing the risk of aspiration and airway difficulty with the potential decrease in airway irritability of a deep extubation. Awake extubation is a viable option for this patient and airway reactivity could be lessened by the use of a bronchodilator at the end of surgery and potentially a dose of dexmedetomidine. He emphasized the use of intravenous β agonists, magnesium sulfate and additional intravenous steroids if intraoperative bronchospasm develops. He also stressed the importance of ventilator management that includes sufficient time for exhalation (respiratory rates of 4 – 10/minute), low tidal volumes (4 – 7 mL/kg) and no PEEP. He reminded the audience that hypercapnea has minimal long-term effects compared to the significant morbidity caused by barotrauma.

Dr. Stephen Hays (Monroe Carrell, Jr. Children's Hospital at Vanderbilt) described his approach to the last case of a child with cystic fibrosis undergoing flexible bronchoscopy for evaluation and management of lower lobe atelectasis. Prior to his review of the recent literature, his initial recommendation would have been that endotracheal intubation was the preferred form of airway management, however recent studies suggest that airway management with an LMA is safe, well tolerated and has minimal respiratory complications in patients with cystic fibrosis. Respiratory deterioration is common in children after bronchoscopy and bronchoalveolar lavage but these deteriorations are usually transient and well tolerated. A recent study suggested that physiotherapy had no effect on respiratory function in the perioperative period. Based on these studies, he recommended that if there is a potential long-term benefit from the proposed procedure, proceeding with surgery is probably indicated despite poor underlying respiratory function, with the clear understanding that initial postoperative respiratory deterioration is expected, treatable and in most cases short-term.

The afternoon session was completed with excellent Refresher Courses presented by Dr. Lisa Wise-Faberowski (Denver Children's) on Craniofacial Abnormalities: An Overview for the Pediatric Anesthesiologist and Dr. Inge Falk van Rooyen (Seattle Children's) on Anesthesia for Pediatric Spine Surgery.

A variety of Workshops were available to participants on both Friday and Saturday afternoons for hands-on experience.

PBLDS AND BREAKFAST DISCUSSION

Reviewed by Constance Monitto, MD
Johns Hopkins

Dr. Debra A. Schwinn, Professor and Chair of the Department of Anesthesiology and Pain Medicine at the University of Washington, gave the SonoSite Lecture titled "Genetics and Anesthesiology: Defining the Vulnerable Patient."

Dr. Schwinn discussed the role the ongoing genomic revolution may play in the development of patient-focused drug therapy and our ability to improve patient care. She emphasized that perioperative interventions will become increasingly focused on both getting patients through acute hospitalizations safely and providing good long-term outcomes. The role of genome based medicine, then, will be to identify the genetic factors that patients

Continued on page 8

Session Reviews, *from page 7*

intrinsically possess that may either protect them or create more problems when they undergo anesthesia, surgery, and hospitalization. These differences will occur at many levels – changes in DNA code (pharmacogenomics), differences in RNA expression (the transcriptosome), differences in protein expression (the proteome), and alterations in metabolic pathways. All aspects of these pathways can and will be studied using different biochemical techniques that are currently making their way from the bench to the bedside.

She illustrated her thesis with a number of clinically relevant examples. For example, a number of genetic differences that impact on protein expression and function are clinically important in anesthesia. These include pseudocholinesterase deficiency, the inability the metabolize codeine to its active metabolite morphine (cytochrome P450 variants), and malignant hyperthermia susceptibility (ryanodine receptor mutations and other channelopathies). In addition, some single nucleotide polymorphisms (SNPs) in beta receptors have been shown to cause beta receptor downregulation. Response to beta blockade therapy is altered in these patients and this may increase their risk of perioperative morbidity in the setting of coronary artery disease. Beta receptor subtypes may also be important in the response to bronchodilator therapy seen in asthmatics. An additional area of interest is the field of inflammation. It is known that chronic low grade inflammation can promote subsequent cardiovascular dysfunction. Surgery, given its nature as controlled trauma, may predispose to an increase in inflammation. This may help explain why some pro-inflammatory SNPs have been associated with adverse perioperative outcomes.

While many of the studies Dr. Schwinn described have been performed in adult patients, in closing she mentioned an upcoming meeting at the NIH to discuss the development of pediatric studies, some of which should involve assessing the effects of different genetic factors on perioperative outcomes in pediatric patients as well.

Following the Breakfast Discussion, an interesting morning that focused on journals and publications ensued. Dr. Andrew Davidson presented "What a Reviewer Wants to See in a Manuscript" followed immediately by Dr. Peter Davis (Pittsburgh Children's) who presented "What an Editor Wants to See in a Manuscript." Afterwards, the 2008 Editor's Best Picks for three journals were presented as follows: Dr. Peter Davis for Anesthesia and Analgesia, Dr. Zeev Kain (UC-Irvine) for Anesthesiology, and Dr. Robert Friesen (Denver Children's) for Pediatric Anesthesia.

After the Moderator's Pick by Dr. Charles Coté (Mass General) and a discussion period, the SPA Winter Meeting was adjourned.

Chronic Pain, *from page 3*

pain intensity, global judgment of satisfaction with treatment, symptoms and adverse events, physical functioning, emotional functioning, role functioning, sleep and economic factors. This would only be feasible if we develop increasing awareness of the impact of pediatric pain management and increase education amongst pediatricians, GPs and pain clinicians. Increased communication and training should also be encouraged to foster education and research in this field. The multimodal, multidisciplinary approach to pediatric pain with a flexible, child friendly program that has the best outcomes is a precious and scarce resource (Peng et al, 2008). It is possible to improve pain control through pain education and quality management as the German STOP program in pediatric oncology patients demonstrated (Zernikow, B et al, 2008).

Continued advocacy for resources, even in these difficult times, is necessary to allow pediatric patients access to multidisciplinary, multimodal treatments as the prevalence of chronic pain and its impact on their functional ability is significant and may have long lasting effects on their development.

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Congenital Cardiac Anesthesia Society Meeting Review

MORNING SESSION

Submitted by Robert D. Valley, MD
UNC Children's Hospital

The Congenital Cardiac Anesthesia Society (CCAS) meeting was held in Jacksonville Florida. This was the fifth meeting of the society and the third in conjunction with the winter SPA meeting. Program Director Dr. Emad Mossad (Texas Children's) opened the meeting and gave an outline of the days activities.

Session 1: Heart Failure and Transplant

The first sessions began with an excellent review of cardiomyopathy in children presented by Dr. Jeff Towbin (Cincinnati Children's). He reviewed common and uncommon forms of cardiomypathy and addressed prognostic and therapeutic options. He discussed the newly identified mitochondrial myopathies and also provided some insight on the management of children with dilated, obstructive and the less common but serious restrictive forms of cardiomyopathy. He emphasized the need for the anesthesia provider to be aware of rhythm disturbances, the unique clinical variables associated with different forms of cardiomopathy and the implications for anesthetic agents, cardiac medications and volume administration.

Dr. Jack Copeland (Seattle Children's) then spoke on ventricular assist devices (VAD) for children. He started out by discussing the 0.6 to 6.8% need for mechanical support following pediatric cardiac surgery, with ECMO being the most common type of support provided. Unfortunately the morbidity associated with ECMO when used as a bridge to transplant is significant. Dr. Copeland quoted a 32% survival for neonates on ECMO waiting for transplantation versus a 71% survival at 1 year utilizing a ventricular assist device as a bridge to transplantation. He did mention the cost differential, with VADs costing about 3 times as much as ECMO. Dr. Copeland then discussed new devices under development that offer options such as being fully implantable, percutaneous insertion, uni-or biventricular assist possibilities, small prime volumes and a possible need for antiplatelet anticoagulation only.

Dr. Barry Kussman (Boston Children's) then gave a nice overview of pediatric heart transplantation. He noted that while 350 to 400 pediatric heart transplants are performed each year, about 17% die while waiting for transplantation. Dr. Kussman reviewed the demographics of children considered for heart transplantation and the risk factors for mortality while waiting for a donor. He then reviewed survival data and it was interesting to note that infants had the highest early mortality but had the best intermediate and long term survival. Patient, donor and institutional characteristics were identified that can effect mortality. Dr. Kussman then reviewed the causes of transplant morbidity. He emphasized the problems with coronary artery vasculopathy in the survivors beyond 1 year. He went on to review the encouraging experience with ABO incompatible transplant in infants and finished up discussing our growing population of "Failed Fontans" that are being listed for transplantation.

A lively question and answer period followed. An excellent take home point was made about the difficulty to provide effective CPR in patients with Glenn or Fontan physiology and ECMO should be considered before they arrest.

Session II. Coagulation and Blood Transfusion

Session II was moderated by Dr. Suanne Daves (Comer Children's, Chicago) and began with a discussion by Dr. Nina Guzzetta (Children's Health Care of Atlanta) on coagulation monitoring in the OR and ICU. Dr. Guzzetta initially discussed the many causes of post-CPB coagulopathy in children and then discussed the need for adequate anticoagulation on CPB and the possible benefits of tailoring heparin doses using a heparin management system (Hepcon®) in addition to the ACT which can be affected by factors other than heparin. She went on to review the many available tests of coagulation and emphasized the utility of point-of-care activated whole blood tests of coagulation such as the thromboelastography (TEG), rotation thromboelastometry (ROTEM), and the SONCLOT®. Dr. Guzzetta explained how the use of heparinase allows some of these measurements to be made while the patient is on CPB and can provide information on platelet function and fibrinogen kinetics. She also sited data demonstrating better normalization of these types of coagulation parameters when cryoprecipitate (rather than FFP) was administered when bleeding persisted despite platelet administration.

The next speaker was Dr. Patricia Massicotte (University of Alberta). She spoke about transfusion dilemmas in pediatric cardiac surgery. She gave an excellent review of the risks and types of blood products administered to children, especially those requiring CPB. She addressed the controversies surrounding leukoreduction utility, the necessity for irradiation, the age and type specificity of blood products, the use of directed donation and infectious risks, especially CMV. She concluded by stating the need for evidence-based data to help develop proper pediatric transfusion guidelines.

The final speaker in this session was Dr. Michael Eaton (Rochester Medical Center) who gave a very interesting talk on "Life after Aprotinin." He reviewed the lysine analogues epsilon-aminocaproic acid (EACA) and tranexamic acid and their use as antifibrinolytics, noting the extreme variability in reported dosing regiments and the patient populations (cyanotic versus non-cyanotic) included in studies claiming efficacy. He did provide some useful guidelines for EACA. Dr. Eaton went on to discuss "Platelet Anesthesia." The use of glycoprotein IIbIIIa receptor blockers, epoprostenol and nitric oxide were mentioned as agents that might help preserve platelet function on CPB. Next he discussed mechanisms to enhance anticoagulation on CPB and the possibility of using non-heparin anticoagulants such as the direct thrombin inhibitors (DTI's). Combination therapy with heparin and DTI's may hold promise. Dr. Eaton brought up the interesting concept of the "biopassive" CPB circuit to prevent even the early phases of inflammation and coagulation. He discussed the use of steroids and the paucity of good evidence for efficacy even though over 95% of centers give them to infants and children going on CPB. Earlier dosing may enhance efficacy. Dr. Eaton concluded with a discussion of "rescue" therapy with recombinant activated factor VII (rVIIa). Although many studies attest to its efficacy in diffuse bleeding Dr. Eaton notes that RCT's are few and there is a significant risk of thrombosis. The one RCT in children post-CPB did not show efficacy.

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Session III. Hybrid Anesthesia- Myth and Reality

The final morning session was moderated by Dr. James DiNardo (Boston Children's) and the first presentation was by Dr. Helen Holtby (Hospital for Sick Children, Toronto). She presented salient issues on the benefits of the hybrid procedure, the set up of the hybrid suite and management of the single ventricle patient undergoing the hybrid procedure. She reviewed Toronto's experience from the last 5 years. She discussed timing of the atrial septectomy and the use of a "reverse" BT shunt to prevent coronary ischemia in the event of loss of retrograde flow to the ascending aorta. Dr. Pablo Motta (Cleveland Clinic) and Dr. Peter Winch (Nationwide Children's Hospital) shared their experiences. While Dr. Motto felt that the hybrid offered no advantage over the Norwood, Dr. Winch was much more enthusiastic. In their experience with 77 consecutive patients at Nationwide, 60% were extubated at the end of the procedure, had an average ICU stay of 5 days and a 12 day hospital stay. He reported an interstage mortality of 14% and suggested that morbidity may be less than in the Norwood because of the ability to avoid general anesthesia and CBP in the neonatal period. He also noted fewer problems with feeding and vocal cord dysfunction following the Hybrid procedure.

AFTERNOON SESSION

Submitted by Lisa Wise-Faberowski, MD
Denver Children's Hospital

"Who should provide sedation/anesthesia for patients undergoing cardiac catheterization?" was the question for the afternoon session of the CCAS. With her list of statistics, Dr. Laura Diaz (Children's of Philadelphia) was pretty convincing stating that a pediatric cardiac anesthesiologist is most suited for this task. Most patients are ASA 3 and 4, at the extremes of age and have an overall risk rate for cardiac arrest of 88% with the highest incidence of cardiac arrest in the cath lab. So maybe the question is, "Who wants to take care of these children?" as 95% of them are surviving into adulthood.

Dr. Ian James (Great Ormond Street, London) makes the distinction of whether the cath is diagnostic or interventional. If the cath is diagnostic, you have four objectives for the child: to be asleep, to be pain free, to be motionless and to wake up and be transferred to the ward. He suggests these cases are suited for the general anesthesiologist who does this every day. For interventional caths, as long as the general anesthesiologist knows which way the blood flows, knows where the cath lab is, and has the right personality, then that individual would do well. All pediatric anesthesiologists are trained to understand rhythm disturbances and to fear pulmonary hypertension and are aware of the medical modalities to treat such occurrences should they occur.

Dr. Jumbo Williams (Stanford) provided the reality check with his statements. His question was, "Does every nail need a ten pound hammer?" Plainly, the personnel demand of the cath lab exceeds the supply of cardiac anesthesiologists and general pediatric anesthesiologists. Furthermore, the reimbursement and institution support for anesthetic supervision by a cardiac or general pediatric anesthesiologist may not be there. So who knows the physiology, the rhythms, the personnel and procedures, and is still a medical doctor? The cardiologist does. In addition, and for future discussion, perhaps there is a role for nurse anesthetists and adult cardiac anesthesiologists to provide anesthesia for these children.

A cardiologist, Dr. Naomi Kertez (Texas Children's), provided the Electrophysiology Update. (Wow! I bet you were hoping I would take notes on this one. LW-F) Based on the audience responses to the questions, I think the best advice is to call the cardiologist. Dr. Kertez offered the audience important pearls as follows: 1) A-wire is the right and left arm leads connected to the atrial wires and read as lead I on the ECG machine, 2) Jet has more r's than p's or more v's than a's and the p's march through, 3) Check procainamide levels not NAPA because NAPA is cleared by cardiopulmonary bypass, and 4) Remember that ECMO is the ultimate anti-arrythmic.

From Pediatric Anesthesiology 2009

FROM LEFT TO RIGHT: Dr. Paul Striker receives a Young Investigator Award from Dr. Linda Mason; Dr. Juan Gutierrez-Mazorra, Dr. Quentin Fisher; Dr. Frank McGowan and a Jeopardy participant.

Please keep an eye on **www. pedsanesthesia.org** for program and registration details about Pediatric Anesthesiology 2010.

Winter Meeting AAP "Ask the Experts" Panel Review

Reviewed by Constance S. Houck, MD, FAAP

This year the AAP, Section on Anesthesiology and Pain Medicine, Ask the Experts Panel was sponsored by Nemours Children's Clinic of Jacksonville, Florida and Monroe Carell, Jr. Children's Hospital at Vanderbilt. The topic, Anesthesia for Children with Pulmonary Disease, was based on the Saturday morning Core lecture series. A series of cases were devised describing typical surgical procedures that would be performed on children with the pulmonary problems described in the morning lectures. Each presentation also included a series of audience response questions dealing with the more controversial or challenging parts of caring for children with these disorders.

Dr. Eugene Fried tackled the first case of a 3 y/o with pulmonary hypertension controlled with a prostaglandin, an endothelin-1 inhibitor and a phosphodiesterase inhibitor who was scheduled to undergo removal and exchange of the CVL line through which she is receiving continuous epoprostanol (Flolan). He began by emphasizing the results of a recent review that showed that pulmonary artery hypertension is a direct predictor of perioperative mortality (see Suggested Readings below). To decrease perioperative morbidity, he stressed the importance of careful and deliberate preoperative preparation, and that recent cardiac studies, reflecting the reversibility of pulmonary hypertension with oxygen and vasodilators, are essential. He pointed out that the type of anesthetic (i.e. sedation vs. general endotracheal anesthesia) is less important than the maintenance of physiologic balance and prevention of hypoxia, acidosis and sympathetic stimulation in order to minimize elevations in pulmonary pressures. He went on to describe the most effective treatment measures in the event of a pulmonary hypertensive crisis including oxygen, mild hyperventilation, fluid boluses and cardiac support (with milrinone as the first line agent),avoidance of noxious stimuli and the institution of inhaled nitric oxide.

Dr. Kevin Sullivan, also from Nemours Children's Center took on the next challenge of an obese 14 y/o with chronic persistent asthma treated with montelukast (Singulair), inhaled fluticasone (Flovent) and inhaled albuterol scheduled for a repair of a slipped capital femoral epiphysis (SCFE). He discussed the value of a comprehensive preoperative history that includes risk factors such as recent hospitalizations, ED visits and ICU admissions. He recommended, if at all possible, to treat this type of patient with intravenous steroids and inhaled β agonists prior to anesthesia induction to optimize preoperative pulmonary status. If a regional anesthetic is not an option as was presented in this case, he emphasized the importance of choosing an anesthetic technique that would have the least risk of intraoperative bronchospasm. This included avoiding drugs that can cause histamine release and providing a deep anesthetic prior to instrumentation of the airway. He also recommended IV lidocaine as an adjunct prior to intubation to blunt the airway reflexes. In an obese adolescent, he suggested weighing the risk of aspiration and airway difficulty with the potential decrease in airway irritability of a deep extubation. He indicated that awake extubation was a viable option for this patient and airway reactivity could be lessened by the use of a bronchodilator at the end of surgery and potentially a dose of dexmedetomidine (as has been demonstrated in animal studies –see below). He emphasized the use of intravenous β agonists, magnesium sulfate and additional intravenous steroids if intraoperative bronchospasm develops. He also stressed the importance of ventilator management that includes sufficient time for exhalation (respiratory rates of 4 – 10/minute), low tidal volumes (4 – 7 mL/kg) and no PEEP. He reminded the audience that hypercapnea has minimal long term effects compared to the significant morbidity caused by barotrauma.

Dr. Stephen Hays from Monroe Carrell, Jr. Children's Hospital at Vanderbilt described his approach to the last case of a child with cystic fibrosis undergoing flexible bronchoscopy for evaluation and management of lower lobe atelectasis. He focused particularly on recent studies describing the anesthetic care and outcomes of children with cystic fibrosis (see references below). He stated that prior to his careful review of the recent literature, his initial recommendation would have been that endotracheal intubation was the preferred form of airway management. Several recent studies, however, suggest that airway management with an LMA is safe, well tolerated and has minimal respiratory complications in patients with cystic fibrosis. He went on to describe several recent reviews that suggest that respiratory deterioration is common in children after bronchoscopy and bronchoalveolar lavage but that these deteriorations are usually transient and well tolerated. He also discussed whether preoperative or intraoperative interventions such as physiotherapy could improve postoperative respiratory function. He cited a recent study that suggested that preoperative and intraoperative physiotherapy had no effect on respiratory function in the perioperative period. Based on these studies, he recommended that if there is a potential long term benefit from the proposed procedure that proceeding with surgery is probably indicated despite poor underlying respiratory function, with the clear understanding that initial postoperative respiratory deterioration is expected, treatable and in most cases short-term.

Suggested readings:

Pulmonary hypertension

Carmosino MJ et al. Perioperative complications in children with pulmonary hypertension undergoing noncardiac surgery or cardiac catheterization, Anesth Analg 2007;104: 521-7.

Williams GD, et al. Ketamine does not increase pulmonary vascular resistance in children with pulmonary hypertension undergoing sevoflurane anesthesia and spontaneous ventilation. Anesth Analg 2007;105:1578- 84.

Asthma

Groeben H, Mitzner W, Brown RH. Effects of the alpha2-adrenoceptor agonist dexmedetomidine on bronchoconstriction in dogs. Anesthesiology 2004;100:359-63.

Cystic fibrosis

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Wainwright CE, Grimwood K, Carlin JB, Vidmar S, et al: Safety of bronchoalveolar lavage in young children with cystic fibrosis. Pediatr Pulmonol 2008;43:965-72.

Tannenbaum E, Prasad SA, Dinwiddie R, Main E. Chest physiotherapy during anesthesia for children with cystic fibrosis: effects on respiratory function. Pediatr Pulmonol 2007;42(12):1152-8.

Della Rocca G: Anaesthesia in patients with cystic fibrosis. Curr Opin Aneasthesiol 2002;15:95-101.

Meeting report: First meeting of the SPA Special Interest Group on Pediatric Pain

Submitted by David M. Polaner, MD, FAAP
Denver Children's Hospital

The initial meeting of the Special Interest Group on Pediatric Pain was held on the day prior to the start of the SPA/AAP meeting in Jacksonville, FL. It was very well attended (in fact, better than the organizers had anticipated) with over 50 anesthesiologists participating. The session was ably chaired by Dr. Rita Agawal (Denver Children's/ University of Colorado) and Dr. Sabine Kost-Byerly (Johns Hopkins).

The first half of the meeting was devoted to an update on clinical management of several pain topics. Dr. David Polaner (Denver Children's/ University of Colorado) began by presenting an update on pediatric acute pain management, and focused on three primary areas. First, he described what we know about the ontogeny and development of pain responses in the neonate. He noted that the neonate's neurophysiology and responses to drugs and noxious stimuli can be different from that of the older child. While our usual concerns about an analgesic drug are focused on the potential altered pharmacokinetics, there are additional factors that must be considered. For example, does the drug's interaction with its receptor produce the same expected physiologic response in the neonate as it does in an older child? Are there untoward effects of a drug or drug class on neurodevelopment?

Next, he discussed the use of parent controlled and nurse controlled analgesia. This modality, useful for children who are too young to use PCA pump, are cognitively impaired, or lack the motor ability to activate the demand button, has some increased risks over PCA but can be used safely within defined boundaries, especially the strict caveat that a dose should never be delivered when the patient is not awake. Complementary to this topic, he spoke about the use of small dose naloxone infusions for the treatment and prevention of opioid related side effects.

The talk concluded with a discussion about ambulatory regional analgesia using continuous peripheral nerve blocks. The advantages, including high quality analgesia with few side effects, must be balanced with the relatively high rate of catheter dislodgement, and the rare risks of infection and nerve injury. Critical to success and safety is a program of education and daily follow up.

Dr. Steven Weisman (Milwaukee Children's/ University of Wisconsin) spoke about the perioperative management of the child with chronic pain. These patients do have greater complaints of postoperative pain as compared with other children, although it is not clear if this is a neurophysiologic, psychiatric or pharmacodynamics issue. This is especially the case for those on chronic opioid therapy, where tolerance as well as hyperalgesia may play a role. It is important to continue the patient's regimen and to provide an appropriate level of baseline opioid analgesia in the postoperative period. However, one must also be aware of potentially problematic drug interactions. The NSAIDs and SSRIs may cause increased bleeding, as may some of the anti-convulsants such as valproate. Many drugs used in these patients affect the metabolism of opioids, especially those metabolized via the 2D6 isoenzyme subclass of the P450 pathway. This can lead to the risk of drug accumulation. For patients on SSRIs that inhibit the 2D6 pathway it is best to avoid drugs like tramadol, codeine and methadone.

Following surgery, psychotropic drugs (most of which are only available orally) should be restarted as soon as possible and reloaded if necessary. The use of regional techniques should be strongly considered. Perioperative gabapentin should be considered if the child is not already on it. Indeed, there is some evidence that perioperative administration of gabapentin may be beneficial in other patients as well, and may reduce opioid requirements and improve analgesia following spine surgery, although data from a randomized prospective trial is lacking. Finally, drugs should be titrated to effect with careful attention to conversion calculations from the child's preoperative regimen.

Dr. Adrian Bosenberg (Seattle Children's/University of Washington) ably stepped in at the last minute, substituting for Dr. Sathanam Suresh who was unable to attend, and spoke about regional blockade for postoperative analgesia. He focused primarily on ways to reduce the risk of regional blockade and the use of ultrasound to identify the optimal placement of the needle, identify anatomic variants, and reduce the dose of drug necessary to achieve a successful block. He first spoke about the fallacy that there is a threshold of current that either is indicative of intraneural needle placement or that indicated proper needle position. Rather, there is a continuum of nerve stimulator current that varies from patient to patient and from block to block. The best indicator of intraneural placement is resistance to injection greater than 20psi. Intraneural injection itself may be injurious only when the drug is injected into the nerve fascicle itself, and not into the matrix between the fascicles.

There is growing evidence that the use of ultrasound may have the potential to increase the reliability of regional blocks and reduce the drug needed for success. He cited evidence that the failure rate with ilioinguinal nerve block can be reduced from 12 to 1% when ultrasound is used, and that ultrasound can compensate for both anatomic variability and erroneous assumptions as to a nerve's location based on inaccurate landmark data. We still have much research to do in this are, but the current literature is demonstrating continuing improvement in regional analgesia in children.

In the second half of the meeting, the meeting chairs discussed several topics related to the structure of the SIG and what its role and mission should be.

Education: What should an anesthesia resident or a pediatric anesthesia fellow learn about pediatric pain management? The ACGME requirements only state that the subspecialty resident (fellow) "should gain expertise in….recognition, prevention and treatment of pain in medical and surgical patients." Expanding upon this general statement must begin by creating a catalogue of the current experiences in the different programs, identifying minimum requirements, and then suggesting desirable program components and general improvements. Eventually, any improvement should be measurable in order to develop a QI process in resident/fellow education. Members of the SIG can contribute to the educational mission of SPA in providing education about

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FELLOW'S CORNER

The Oral Boards: A Shocking Perspective

Dr. Eastwood

By Chuck Eastwood, MD, CM
Fellow, Cincinnati Children's Hospital Medical Center

I am sitting in the Cincinnati airport waiting for a flight to New York City, where tomorrow I will meet four people who will decide whether I know enough to be considered a board-certified anesthesiologist. In two months, I will finish my fellowship in pediatric anesthesia. It has been a long haul. I joke with my friends and family that my one goal is to complete my education by the time I am 35. I will reach that goal with two days to spare.

But, has it paid off? This is a question that I have considered as I have spent the last several months of my pediatric fellowship studying adult anesthesiology, in anticipation of the boards. After 13 years of public school, 4 years of college, a 1 year post-baccalaureate blitz of pre-medical requirements, 4 years of medical school, 1.5 years in a Family Medicine residency, three years of Anesthesiology training, and 10 months of fellowship, do I know enough? Do I know enough to convince my examiners that I should be allowed to become a board-certified anesthesiologist? Am I ready to do my own cases and make my own decisions? Will I know enough when it really matters?

While waiting I review the most recent ACLS protocols. My hope is that tomorrow I will avoid a raised eyebrow and a withering, "Dr. Eastwood, it's 2009. Do you want to give this patient 1mg of Atropine? Or, would you rather give him 0.5mg. You are up to date on your ACLS protocols, aren't you?" I have just finished the section on pulseless arrest when I hear a loud "THUD!" behind me, then a lady screaming, "Oh my God, he just fell down!"

Turning around I see, not six feet away, an older gentleman staring at the ceiling with a pool of blood starting to spread from behind his head. I throw down my papers and rush to his side. He looks as if he might be trying to breathe, so I perform a jaw thrust to open his airway. The result is an agonal gasp, and I know before I put my fingers to his neck that I will find no pulse. My suspicions confirmed, I begin chest compressions. A pack of Pall Malls falls from his pocket as the first of several ribs gives way. A crowd has gathered and I try to direct individuals to call security and go get the nearest AED. I am met with stares almost as blank as the man's before me, although someone does produce some Kleenex to place behind his bleeding head.

Fortunately another traveler, who happens to be a paramedic, has seen what is going on and arrives with an AED. He applies the pads, while I continue compressions. I pause to allow the machine to analyze. A shock is advised and delivered. I continue compressions. Someone in the crowd shouts out, "Hey, aren't you going to do mouth-to-mouth?" The paramedic looks at me. I look at

Continued on page 14

BOOK CORNER

By Helen V. Lauro, MD, MPH, FAAP

A Practical of Anesthesia for Infants and Children - Expert Consult Online and Print, Charles J. Coté, M.D., Jerrold Lerman, M.D., and I. David Todres, M.D. 1192 pages, $149.00, ISBN 978-1-4160-3134-5, New York, N.Y., Elsevier, 2009.

In this newly released fourth edition, Dr. Charles J. Coté is joined by Dr. Jerrold Lerman in creating a totally revamped textbook on pediatric anesthesia, with more than one hundred contributors from six continents.

The textbook is divided into ten sections: Introduction, Drug and Fluid Therapy, the Chest, the Heart, the Brain and Glands, the Abdomen, Other Surgeries, Emergencies, Pain and Special Topics. Following an introductory overview of the practice of pediatric anesthesia, fifty two additional chapters are presented. Brand new chapters address pivotal areas such as total intravenous anesthesia, the extremely premature infant, fetal intervention and EXIT procedure, malignant hyperthermia, ultrasound-guided regional anesthesia, orthopedic and spine surgery, plastic and reconstructive surgery, chronic pain, cardiopulmonary bypass, cardiac assist devices, interventional cardiology, infectious disease considerations for the operating room, pediatric anesthesia in developing countries and medico legal issues. One noteworthy addition is the "Essentials of" chapters (Pulmonology, Cardiology, Hematology, Endocrinology, Hepatology, and Neurology) which reinforce fundamental physiology and pathophysiology necessary for safe pediatric perioperative management.

This is the first pediatric anesthesia textbook in the Expert Consult premium product line from the publisher, and as such enables fully searchable online access to the chapters. A downloadable image library (a subset of the images from the textbook) is useful for power point presentations. Videos of pediatric anesthesia procedures with imprinted audio overlays are provided and address topics such as pediatric airway, essentials of cardiology, sedation, regional and vascular access techniques—a limitation is that the videos cannot be downloaded for use in lectures. Pediatric drug dosage and intravenous infusion calculators are also supplied. The most valuable feature is that the reader can be confident that online content is regularly updated.

Photographs, figures and tables are presented in color throughout and are striking for their simplicity and clarity.

An extremely worthwhile investment for all anesthesiologists called upon to care for children.

SIG Meeting Report, *from page 12*

pediatric pain for anesthesiologists in general practice as well as for pediatric subspecialists. The organizers plan to contribute to the program of the SPA Spring meeting in 2010 and hope to be able to offer an all day program in the Spring of 2011. A broader goal is to look at the continuum of pain medicine education from medical school to practice. This could involve other disciplines that closely interact with ours such as pediatrics, pediatric surgery, and emergency medicine. Identifying the few participants in the SIG group who are active members in other pain organizations such as APS and IARS can help to build stronger ties to those organizations and enhance our advocacy efforts. Clinical practice, research, QA/QI: Long-range goals are to identify current practices and terminology, develop a data registry, and improve strategies to ultimately produce evidence- based practice guidelines. A website with access to the current participants' assessment tools and protocols for pain therapy could help centers that are just instituting various modalities draw on the experience of others, and serve as a blueprint or "virtual consultancy". The SIG should also foster cooperation between medical centers that have purchased similar new technologies and devices such as smart PCA pumps. Finally, more research cooperation for relatively rare conditions between different medical centers should be fostered. Structure of the organization and work with other groups: The SIG will remain a special interest group for the next year, but transformation into a SPA committee may be contemplated in the future. While there are no intentions to develop a separate society such as CCAS, the chairs hope to organize a bi- or tri-annual one-day meeting in association with the SPA/ AAP annual meeting. Dr. Kost-Byerly also emphasized that the SIG wants to work closely with other pain advocacy groups and identify common goals, and would be happy to invite their members to present at the SIG meetings, particularly as very few SIG participants indicated previous or continuing APS or IARS involvement.

Fellow's Corner, *from page 13*

him. We look up at the bystander just long enough to say, "No," in unison. Then we go back to our work.

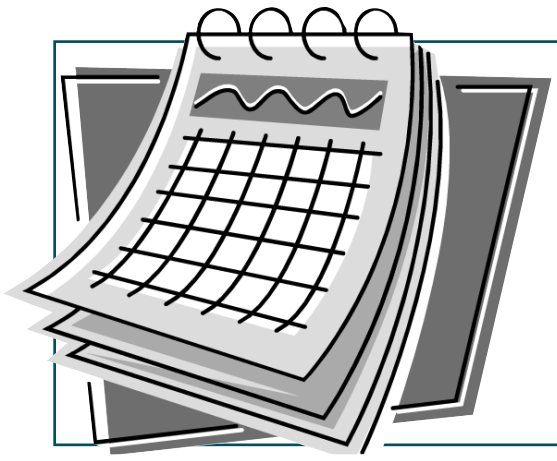
Switching positions, I rummage through the AED kit and find a barrier device for ventilation. It's one of those cellophane/gauze contraptions that fit on a keychain. We pause for a second so that I can attempt to give two breaths. The seal I obtain is minimally effective, while the equally ineffective filter leaves me feeling as if I have had a two pack-a-day habit for years. We abandon ventilation attempts and continue CPR. I wonder what chance anyone has of providing breaths through such a device if a board-eligible anesthesiologist has such difficulty.

The airport paramedics arrive. It is time to check for rhythm and pulse. At the carotid I now feel a distinct pulse, and the paramedic's monitor reveals a sinus tachycardia. Moments later color returns to the gentleman's face and he begins to breathe on his own, assisted by bag and mask. As the paramedics strap him onto their stretcher he is groaning and opening his eyes.

After the paramedics leave and the crowd disperses, Mr. Walker, the paramedic, and I shake hands. A Delta concierge thanks us and asks what flights we are on. Mr. Walker says he is on standby to Alaska. The concierge smiles and says, "Let me see what I can do about that." To me he says he will see about getting a "more comfortable" seat for my flight to New York. Then he asks, "Is there anything else that I can get for you?" I truthfully reply, "Some mouthwash would be nice." He smiles and says, "I can't get mouthwash, but would some Scotch do instead?"

He escorts me to The Crown Room where I have a chance to wash up and enjoy some quiet before my flight departs. As the shakes subside, I open my books. I pause for a moment, and then shut them. I put them away reflecting on what just happened, and I realize that the answer to my question is: "Yes." Yes, the years of study have paid off, but not because of my ability to pass or fail an exam.

"When it matters," is not sitting in a hotel room with oral board examiners. I did not go into medicine to pass tests, jump through hoops, or to earn certificates to hang on my wall. It is easy to get caught up in such processes and blinded to the goal of the journey that is medical education. The opportunity to study medicine is a high honor and a privilege, the purpose of which is to help others in their time of need. Whatever happens tomorrow at the boards, my training served one man when it mattered most to him.



PLANNING AHEAD

The SPA/AAP Pediatric Anesthesiology 2010 Call for Abstracts (Application Material) is on **www.pedsanesthesia.org**. The deadline date for abstract submission is December 1, 2009.

PEDS PASSPORT Your global meeting itinerary

2009

Helen V. Lauro, MD, MPH, FAAP
Long Island College Hospital,
Brooklyn, NY

September 2-4: Cambridge, England, United Kingdom
Paediatric Intensive Care Society (PICS) Conference 2009
Tel: + 44(0) 1243 532406, Fax: +44(0) 1234775559
Information: Tarquin Scadding-Hunt Maximize Events Ltd, Virginia House, High Street, Partridge Green
West Sussex, RH13 8HX
www.picsconference.co.uk/home.htm

September 10-13: Warsaw, Poland
Seventh European Congress of Paediatric Anaesthesia
Tel: +48 22 6299418, Fax: +48 22 6282988
Information: Dr. Marcin Rawicz, Dpt Paediatric Anaesthesia, Medical University of Warsaw, Marszalkowska 24, 00-56 Warszawa, Poland
www.feapa.eu

September 12-13: Boston, Massachusetts, USA
Pediatric Sedation Outside of the Operating Room
Tel: (617)-384-8600, Fax: (617)-384-8686
Information: Harvard Medical School, Department of Continuing Education, P.O. Box 825, Boston, MA 02117-0825
www.cme.hms.harvard.edu

September 24-27: Chandigarh, India
First Asian Congress of Pediatric Intensive Care (APICC2009) & 11th National Conference of Pediatric Critical Care Chapter of Indian Academy of Pediatrics (IAP) : "Pediatric Intensive Care Within Limited Resources—Taking it to Masses "
Tel: 91 172 275 5301, Fax: 91 172 274 4401
Information: Conference Secretariat Prof. Sunit Singhi, Chief Organizer
Advanced Pediatrics Centre, PGIMER, Chandigarh 160012, India
www.apic2009.org/

October 1: Paris, France
Maintien des connaissances et des compétences en anesthésie pédiatrique
Tel: +33 32 044 6269, Fax: +33 32 087 7669
Information: Dr. Philippe Courreges, President Association des Anesthésistes Reánimateurs Pédiatriques d'Expression Française (A.D.A.R.P.E.F), Pôle d'Anesthésie Réanimation Hospital Jeanne de Flandre Av. Eugéne Avinée 59000 Lille France
www.sfar.org/t/spip.php?article430

October 9-12: Hamburg, Germany
50th Annual Meeting of the European Society for Paediatric Research
Tel: +41 22 908 0488,
Fax: +41 22 732 2850
Information: Kenes International, The Secretariat, 1-3 rue de Chantepoulet, P.O. Box 1726, Geneva CH-1211, Switzerland
www.kenes.com/Paediatric-Research/

October 16: New Orleans, Louisiana, USA
Society of Pediatric Anesthesia (SPA) 23rd Annual Meeting
Tel: (804)-282-9780, Fax (804)-282-0090
Information: Society of Pediatric Anesthesia, 2209 Dickens Road, Richmond, VA 23230-2005
www.pedsanesthesia.org

October 29-November 1: Canberra, Australian Capital Territory, Australia
Society for Paediatric Anaesthesia in New Zealand and Australia (SPANZA) Annual Scientific Meeting
Tel: +61 2 4973 6573, Fax: +61 2 4973 6609
Information: SPANZA Secretariat, P.O. Box 180, Morriset, New South Wales, Australia 2264
www.spanza.org.au

November 6-8: Toronto, Ontario, Canada
Twenty Fourth Paediatric Anaesthesia Conference
Tel: (416)-813-7445, Fax: (416)-813-7543
Information: Elizabeth McLeod, Shue Lin Loo, The Hospital for Sick Children, Department of Anesthesia, 555 University Avenue, University of Toronto, Toronto, Canada M5G1X8
www.sickkids.ca/anaesthesia

2010

April 15-18: San Antonio, Texas, USA
Pediatric Anesthesiology 2010
Society of Pediatric Anesthesia (SPA)/American Association of Pediatrics (AAP)/Congenital Cardiac Anesthesia Society (CCAS) 2010 Winter Meeting
Tel: (804)-282-9780, Fax (804)-282-0090
Information: Society of Pediatric Anesthesia, 2209 Dickens Rd., Richmond, VA 23230-2005
www.pedsanesthesia.org

April 17-18: San Antonio, Texas, USA
Fundamentals of Pediatric Anesthesiology: Pediatric Anesthesiology for the Generalist
Tel: (804)-282-9780, Fax (804)-282-0090
Information: Society of Pediatric Anesthesia, 2209 Dickens Rd., Richmond, VA 23230-2005
www.pedsanesthesia.org

Continued on page 16

Please forward all information concerning congresses relevant to Pediatric Anesthesia to:
Helen V. Lauro, MD, MPH, FAAP, Department of Anesthesiology, Long Island College Hospital, 339 Hicks Street, Brooklyn, New York 11201.

May 26-28: Boston, Massachusetts, USA
Fourth Annual Pediatric Anesthsiology and Critical Care Medicine Conference: Perioperative Care of the Infant and Child
Jointly Sponsored by Children's Hospital Boston, the Children's Hospital of Philadelphia and Harvard Medical School
Tel: (617)-355-8253, Fax (617)-730-0894
Information: Carol Vey, Department of Anesthesiology, Children's Hospital Boston, 300 Longwood Avenue, Boston, MA 02115
http://cme.med.harvard.edu/

June 17-19: Saarbrücken, Germany
36th Annual Meeting Gesellschaft für Neonatologie & Pädiatrische Intensivmedizin - GNPI 2010
Tel: +49(0) 621 / 4106-137, Fax: +49 (0) 621 / 4106-80 13 7
Information: Daniela Ruckriegel, Rosengarten Platz 2, 68161 Mannheim
www.gnpi2010.de/default.htm

September 2-5: Queenstown, New Zealand
Society for Paediatric Anaesthesia in New Zealand and Australia (SPANZA) Combined Meeting with Asian Society of Paediatric Anaesthesiologists (ASPA)
Tel: +61 2 4973 6573, Fax: +61 2 4973 6609
Information: SPANZA Secretariat, P.O. Box 180, Morriset, New South Wales, Australia 2264
www.spanza.org.au

October 2-5: Copenhagen, Denmark
21th European Society of Paediatric and Neonatal Intensive Care (ESPNIC) Medical and Nursing Annual Congress at the European Academy of Paediatrics
Tel: + 41 22 906 9178 Fax: + 41 22 732 2850
Information: ESPNIC Administrative Office, c/o Kenes International, 1-e Rue de Chantepoulet,
P.O. Box 1726, CH- 1211 Geneva 1, Switzerland
www.espnic.de

October 15: San Diego, California, USA
Society of Pediatric Anesthesia (SPA) 24th Annual Meeting
Tel: (804)-282-9780, Fax (804)-282-0900
Information: Society of Pediatric Anesthesia, 2209 Dickens Rd., Richmond, VA 23230-2005
www.pedsanesthesia.org

2011

March 13-17: Sydney, Australia
6th World Congress on Pediatric Critical Care
Tel: +61 292650700, Fax: +61 292675443
Information: 6th World Congress on Pediatric Critical Care Congress Organisedrs, GPO Box 128, Sydney, NSW 1001, Australia
www.pcc2011.com

March 30-April 3: San Diego, California, USA
Society of Pediatric Anesthesia (SPA)/American Association of Pediatrics (AAP) 2011 Winter Meeting
Tel: (804)-282-9780, Fax (804)-282-0900
Information: Society of Pediatric Anesthesia, 2209 Dickens Rd., Richmond, VA 23230-2005
www.pedsanesthesia.org

June: Hannover, Germany
22nd European Society of Paediatric and Neonatal Intensive Care (ESPNIC) Medical and Nursing Annual Congress
Tel: + 41 22 906 9178, Fax: + 41 22 732 2850
Information: ESPNIC Administrative Office, c/o Kenes International, 1-e Rue de Chantepoulet,
P.O. Box 1726, CH- 1211 Geneva 1, Switzerland
www.espnic.de

October 14: Chicago, Illinois, USA
|Society of Pediatric Anesthesia (SPA) 25th Annual Meeting
Tel: (804)-282-9780, Fax (804)-282-0900
Information: Society of Pediatric Anesthesia, P.O. Box 11086, Richmond, VA 23220-1086
www.pedsanesthesia.org

2012

October 12: Washington, D.C., USA
Society of Pediatric Anesthesia (SPA) 26th Annual Meeting
Tel: (804)-282-9780, Fax (804)-282-0900
Information: Society of Pediatric Anesthesia, 2209 Dickens Rd., Richmond, VA 23230-2005
www.pedsanesthesia.org

Society for Pediatric Anesthesia

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Reservations about reservations?

By Stewart A. Hinckley
Executive Director

Why is it important for me to stay in the meeting hotel and make my room reservation under the SPA group block? You may have asked yourself this question when discovering better rates down the road at another hotel, or perhaps through websites like Expedia and Travelocity. Hotels will typically offer a very small block of rooms to these online companies, usually on a very short-term basis. The hotels occasionally offer these specials at the last minute because they are just as concerned about increasing occupancy as they are in achieving a high average room rate.

There are some obvious reasons why the SPA encourages you to reserve your hotel room at the headquarter hotel. First, there is the convenience factor where you can simply take the elevator down to the meeting room. Second, you can enjoy the fellowship of seeing friends you haven't seen for months, if not years (many times riding UP that same elevator).

There are some NOT so obvious reasons why SPA encourages you to make your room reservation under the group block. Did you know that by utilizing all of the required hotel rooms in the SPA block, the society avoids having to pay an attrition penalty? By avoiding attrition penalties, the society is able to keep meeting registration fees and member dues low for you. Also, by having strong guest room "pick-up" or utilization, this translates into making the SPA meeting a better piece of business. A better piece of business in the hotels' eyes means that we are able to leverage the society's buying power in the marketplace and better negotiate the next hotel contract on your behalf (e.g. and get you lower group rates).

Finally, one of the best reasons to avoid the online temptations is that although you may get lucky and save $5, your room is not "protected." In other words, if the hotel gets into an oversold situation, the reservations made through the online companies will be the first ones "walked" to another property. Translation: you arrive at the front desk to check into your confirmed hotel room after a long flight, only to have the desk agent inform you that they will need to find alternate accommodations for you somewhere in the city (the first night is at their expense though). The hotels will protect the SPA group reservations because they want to get the group to return. So remember to support your society and make it easy on yourself in the process. Stay with us – "we'll leave the light on."

To learn more about upcoming SPA meetings, please visit **WWW.PEDSANESTHESIA.ORG**