

Society for Pediatric Anesthesia



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Find it on the Web

- Literature Reviews with full references
- Commentary & Reviews (Complete)
- 24th Pediatric Anesthesia Conference: A Review
- PedsPassport
- 2006 SPA Supporters and Exhibitors
- SPA Committee List - Chairs

Society for Pediatric Anesthesia



The Society for Pediatric Anesthesia (SPA) publishes the SPA Newsletter four 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.

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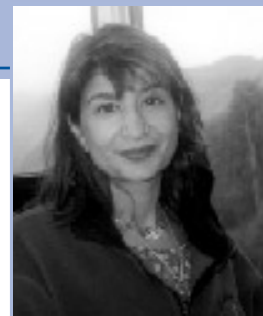
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The complete communications committee roster and assistant newsletter editors can be found on the SPA website www.pedsanesthesia.org.

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Editor's Corner



Rita Agarwal, MD, FAAP

This issue of the newsletter is usually dedicated to coverage of the SPA Annual Meeting and the ASA. Unfortunately with the upheaval of this year's meeting, many of my wonderful contributing editors were not able to attend.

My special thanks go to Dr. Connie Houck for volunteering to review the AAP Breakfast Panel and Dr. Shobha Malviya for presenting the highlights of the ASA Poster Session that she moderated. The complete listing of all the abstracts presented can be found at www.asaabstracts.com.

Two future pediatric anesthesia fellows, Drs. Mark Twite and Ryan Schellpfeffer from the Children's Hospital/UCHSC, Denver share their experience and views of the ASA in the Fellows' Corner.

The 24th Annual Pediatric Anesthesia Meeting in Toronto was well attended and two of the editorial staff, Drs. Helen Lauro and Zulfiqar Ahmed both reviewed the meeting. Dr. Ahmed's review appears on the web-based newsletter.

Dr. Ahmed deserves additional thanks for his wonderful collaboration with Sara Anspach, a recreational therapist at Detroit Children's Hospital, for enlightening us on the interests of little girls for this issue's "Keeping Up with the Kids". I have to confess that all my boys still like Dora the Explorer (although my oldest son wouldn't be caught dead admitting it).

There was an interesting case recently on the PAC, asking about the use of tight fitting endotracheal tubes (ETT) in tonsillectomy patients. This initial question spurred a great debate on the benefits of using uncuffed tubes, cuffed ETTs and LMA's for in pediatric patients. Drs. Elizabeth Yun and Sam Golden decided to review the advantages and disadvantages of these techniques and present the current literature on these topics.

Dr. Thomas Mancuso has again provided us with his personal reviews and commentary. In addition, excellent literature reviews have been provided by Drs. Cheryl Gooden, Zulfiqar Ahmed, Michael Jon Williams, and Hoshi Khambatta. Please read the article from Dr. Dean Andropoulos updating us on the new Congenital Cardiac Anesthesia Society, and plans for a new ACGME-approved Pediatric Cardiac Anesthesia Fellowship. In the spirit of providing greater insight into the workings of the SPA, Dr. Anne Lynn has a review on the SPA election process.

As always we welcome all contributors and contributions. If you are interested in helping with the SPA newsletter please contact me at Agarwal.Rita@tchden.org. Hope to see everyone at the Pediatric Anesthesiology in Florida, February 17-19.

Rita Agarwal, MD, FAAP

Editor

The Children's Hospital/UCHSC, Denver, CO

Congratulations Dr. Alastair Ewen – the winner of the SPA Member Recruitment Incentive!!



Dr. Ewen is the winner of the SPA Member Recruitment contest where a ticket was placed in a drawing for every new member application received. Dr. Ewen receives complimentary luxury accommodations for three nights during the SPA/AAP Pediatric Anesthesiology 2006 Meeting at the Sanibel Harbour Resort, Fort Myers, Florida, and a \$100 gift certificate to be used in the hotel Spa.

The Society would like to thank all those who participated in referring new members – your support is integral to the growth of the Society.

President's Message

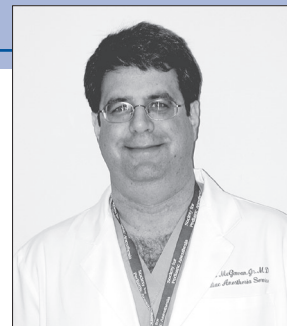
Dear Friends and Colleagues,

We have reached that point here in the Northeast where the progressively limited amounts of daylight (a particular occupational hazard for those of us who go to and return from work in the darkness) and the frequent periods of rain that seem to alternate only with freezing rain and/or snow really get my seasonal affective disorder running at full tilt. On the other hand, it has been a fairly busy and stimulating year for the SPA, and I would like to take this opportunity to summarize some of these successes and ongoing challenges for you.

Our overall mission continues and is worth restating: patient care, education, and research. Through these and related activities, we seek to be the recognized voice to advocate on behalf of the perioperative care of children and the practitioners who provide that care. To this end, the Society continues to be quite strong in terms of membership, activities, and finances. Over the past year, we added more than a hundred new members; the total number of full-time members is now over 1,700. Our financial position is solid, in large part due to your ongoing support and that of our corporate sponsors. We also continue work hard to control expenses, and appreciate your help and understanding in this effort (e.g. communicating largely by email, having meeting syllabi on CD-ROM as opposed to printing, which saves more than \$40K per year). Board members Lynn Martin and Joe Tobin have performed yeoman-like service to further improve our financial structure and organization (more details about Society finances and fund-raising goals in an upcoming Newsletter).

A major goal of the officers and committee members has been to ensure that your membership is valuable to you, and to identify new ways of increasing that value through high-quality educational offerings and other efforts that support your practice. Current examples include the annual meetings, the Society Newsletter (which now comes out four times per year), and the website (recently revised, with additional revisions and additions on-going). The quality of these efforts is outstanding. They are the result of the hard and persistent work of a large number of SPA members, including the members of the Educational Committee, under the leadership of Jay Deshpande, the current and future Program Directors for our two major meetings, Santhanam Suresh, Nancy Glass, Valerie Armstead, and Randall Flick, and the members of the Communications and Newsletter committees, under the direction of Rita Agarwal, Allison Kinder Ross, and Shobha Malviya. The current membership of these groups can be found on the website. They deserve tremendous credit and thanks for their work.

In the coming year, we will introduce new web-based educational modules on a regular basis. The intent is to provide members with an effective, convenient, and efficient way to garner needed CME credits. The first of these modules should be available on the website by the time you receive this edition of the Newsletter. Their content is based upon the lectures that would have been given at the Fall meeting in New Orleans (which of course had to be cancelled due to Katrina and its aftermath); you should have already received a free CD-ROM containing the syllabus materials for the lectures that would have been presented. Also within the coming year, we plan to be able to directly forward CME credits that you earn from SPA activities to your own personal MOCA (Maintenance of Certification in Anesthesiology) account at the ABA, hopefully making the whole process at least a little easier. We also intend to produce a pediatric anesthesia educational module that will be available to members to help them meet the requirements for maintenance of certification.



This has been a productive year in terms of collaborative and advocacy efforts on behalf of the specialty of pediatric anesthesia. In response to member concerns, SPA has authored a statement on requirements for the "Pediatric Anesthesia Environment". SPA, the ASA Committee on Pediatric Anesthesia (COPA), and the American Academy of Pediatrics Anesthesia Section combined to lodge formal objections to the JCAHO "sentinel event" alert on awareness during pediatric anesthesia, and also to inaccuracies contained in a New Yorker article. Complete versions of these statements can be found on the website. The SPA also sponsored an expert consensus conference on the issue of pediatric awareness in May, 2005; the results of this are being prepared for publication at the time of this writing. SPA also joined with COPA to strongly encourage intravenous catheter manufacturers to continue to produce "traditional-type" catheters, particularly in infant sizes; thus far, it appears that availability continues, but we continue to keep an eye on this issue. We look forward to further collaborations of this sort, and seek your help and suggestions about issues that affect your practice where we may be of assistance.

A large group of our colleagues, organized by Don Tyler, has been diligently working to establish QA/complication indicators and methodologies specific to pediatric anesthesia. The task they were given, stated quite simply, was to "define what to collect and how to collect it". The goal is to provide Society members with a system--one that is created and validated by the expertise and experience of a large, diverse group of pediatric anesthesiologists--to help them meet QA and regulatory requirements in their own practices. A common system would also offer the possibility to establish a large-scale or even national registry with its obvious potential to improve safety and quality in pediatric anesthesia care. This group has made substantial progress, and I expect them to be able to present the results of their work, at least in preliminary form, around the time of the Winter meeting.

FAER (the Foundation for Anesthesia Education and Research) has asked the SPA help it define the "top 10 to 20" critical areas of deficient scientific knowledge that are directly relevant to pediatric anesthesia, and are therefore worthy of future emphasis and research funding. There will be a forum at the Winter SPA meeting this coming February in Sanibel, Florida, to gather opinions and seek consensus from the members of the field about what these areas are. This is a substantial opportunity to have a major impact on the direction of research and the future and advancement of the specialty. I encourage you to give a lot of thought to this issue, and to plan on attending this session at the meeting (which at present is scheduled for late in the afternoon on Saturday). I would also be very interested in receiving your thoughts beforehand by email (francis.mcgowan@childrens.harvard.edu). We will also be sending an email solicitation for thoughts and ideas to the overall membership.

SPA has taken a leadership role in the establishment of the new Congenital Cardiac Anesthesia Society (CCAS), which will be a part of the SPA. We believe that the care of patients with congenital heart disease and the efforts of the people who care for them deserve support and were most appropriately housed within the specialty of pediatric anesthesia. We look forward to the educational and

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SPA Elections: 2006 How it Works

Anne Lynn, MD
Chair, Nominating Committee



Elections for positions on the SPA Board of Directors and for Secretary will occur before the October 2006 meeting. Treasurer, Vice-president, and President usually are filled as officers move up the chain, but write-ins are always possible. This reminder is to alert the membership, so everyone will vote.

I also wanted to review the candidate selection process that has developed over the past 18 years. The best way to signal

interest in SPA is by participating! Most Board of Directors positions are filled by members, who have been active on committees, helped write the Newsletter or were program chairs for SPA's two meetings.

The Nominating Committee is chaired by the Past-president (me) and members include Mark Rockoff, Steve Hall, Peter Davis, Randy Clark, and Tom Mancuso. We are developing a slate of candidates to present to the membership, who will be able to vote electronically or by mail over the summer of 2006. This electronic voting became possible due to the work of Lynn Martin in updating our bylaws in 2004. Members may contact the Nominating Committee with suggestions; our slate must be finalized by the 2006 Winter Meeting.

Board of Directors positions have responsibilities, some of which I'll highlight:

1. SPA Board of Directors should not have simultaneous appointments on other Boards (most commonly this applies to the AAP Anesthesia and Pain Management section) since both require a considerable time and energy commitment. The SPA Board feels there are many worthy candidates to fill these positions in both organizations (this decision was made about eight years ago by the SPA Board and is still adhered to). Representatives from the AAP Anesthesia and Pain Management Section (President) and from the ASA Committee on Pediatric Anesthesiology (Chair) have one position each on the SPA Board to foster communication and information exchange among the groups interested in pediatric anesthesia;
2. Board members serve for 2-year terms with one reelection possible (4 year total). Board members must attend the twice-yearly Board meetings at their own expense (day prior to SPA meetings in October and February/March) as well as periodic conference calls as necessary;
3. Officers (Executive Committee) are committing to 10 years of service as they progress through the officer positions with the same meeting attendance as required for the Board. In addition, officers chair many of the SPA standing committees;
4. Officers and Board members are expected to contribute yearly to the SPA Research and Education Fund in an amount established by the President and Executive Committee (tax-deductible).

The reward to responsibility ratio, in my own experience at the far end of that decade of serving, highly favors its rewards, but those who choose to run for a board position should enter with "eyes open".

The Congenital Cardiac Anesthesia Society

Dean B. Andropoulos, MD
Texas Children's Hospital
Houston, TX
Chair, CCAS Organizing Committee



On October 19, 2005 the SPA Board of Directors voted to approve SPA Bylaws changes that formally incorporate the Congenital Cardiac Anesthesia Society (CCAS) as a new Society organized within the SPA. The CCAS concept originated with cardiac anesthesia directors and other key leaders at major congenital heart disease programs, who believed there was a need for a new society because of rapid advancement of highly specialized knowledge in the field, and a great increase in the numbers of patients, including adults with congenital heart disease. The mission of the CCAS is:

1. Education. Organizing high quality, in depth educational programs on the national and international levels.
2. Collaboration. Bringing together Society members for discussion of clinical care, education, and research for the anesthetic care of patients with congenital heart disease.
3. Coordination. Coordinating with and supporting the goals and objectives of other related societies.
4. Research. Encouraging and promoting research in the field of congenital cardiac anesthesia.
5. Database. Organizing and maintaining a multi-institutional database of the anesthetic care of patients with congenital heart disease.
6. Training. Assisting in developing and supporting guidelines for residency and fellowship training for congenital heart disease, with the SPA and Society of Cardiovascular Anesthesiologists.
7. Advocacy. Advocating for high quality anesthetic and perioperative care for patients with congenital heart disease.

Organized as a separate society within the SPA, the CCAS will have its own Board of Directors, and among its most important functions will be to sponsor high quality educational efforts, including a full day conference held in conjunction with the Winter SPA Meeting every other year beginning in 2007. The official launch of the CCAS will be on December 7, 2005 at the Pediatric Cardiac Anesthesia Conference at the Pediatric Cardiac Intensive Care Symposium 2005, and at the Winter SPA Meeting in February 2006. To join the CCAS, anesthesiologists must be SPA members, and the Society is open to all with an interest in anesthetic care of patients with congenital heart disease. Details of the dues structure, CCAS activities, and benefits of membership will be forthcoming. Among the most important proposed activities are the CCAS database, which will offer unprecedented information on the anesthetic care and outcomes of patients with congenital heart disease and offer opportunities for novel research projects.

The CCAS Organizing Committee consists of 10 leaders in the field, from a geographically diverse group of congenital heart disease centers. Within the next several months plans for election of a formal Board of Directors and Officers will be made, and a Web page will be initiated to facilitate communication and the activities of the CCAS. The Organizing Committee sincerely appreciates the efforts of the SPA leadership and their generous offer to organize the CCAS under the auspices of the SPA. This arrangement will benefit members of both Societies, and confirms the commitment of the entire pediatric anesthesia community to continued improvement in clinical care, training, and research for these patients with congenital heart disease.

Out and About the ASA

2005 Annual Meeting • Atlanta, GA

Monday Afternoon: Poster Session on Pediatric Anesthesia

Moderators: Shobha Malviya, MD and Linda Mason, MD
Reviewed by: Shobha Malviya, MD



Shobha Malviya, MD

Twenty-nine posters related to pediatric cardiac anesthesia, pain management and general pediatric anesthesia were presented in this session. The highlights of this session are reviewed here.

Two studies presented by Dr. Dean Andropoulos from Texas Children's Hospital evaluated pre- and post-operative cerebral oxyhemoglobin saturation in neonates undergoing cardiac surgery using cardiopulmonary bypass. Interestingly, the mean regional cerebral oxygen saturation index values (rSO2i) were higher preoperatively and lower postoperatively in infants with single ventricle compared to those with two ventricles. Additionally, the majority of the single ventricle patients had rSO2i values above the threshold associated with neurologic dysfunction of 40-50% preoperatively while the majority of these values were below this threshold postoperatively. The converse was true for the two ventricle patients. While only one patient had clinical evidence of neurological changes, further follow-up of the entire group is currently underway.

Another interesting study by Dr. Joe Tobias from the University of Missouri compared transcutaneous CO2 levels above and below the aortic cross clamp in children undergoing aortic arch surgery. He reported significant increases in TC-CO2 below the clamp with no changes in these values above the cross clamp. Furthermore, the degree of metabolic acidosis correlated with the lower TC-CO2 increase. Tobias speculated that the degree of tissue hypercarbia in the lower extremity may differentiate patients with adequate collateral circulation from those with poorly developed collateral circulation and may identify patients at risk for spinal cord ischemia.

Dr. Priti Dalal from St Louis Children's Hospital presented a study addressing the controversial subject of propofol sedation by non-anesthesiologists. In this study of children who received propofol, pentobarbital and chloral hydrate for MRI, 2.7% of those who received pentobarbital and 11% of those who received propofol experienced severe oxygen desaturation. While children who received propofol had faster induction and recovery times, the net time saving was 15 minutes in the propofol group. Another study compared the efficacy of placebo vs two doses of midazolam administered intranasally in preventing emergence agitation following myringotomy and tube placement. The investigators Dr. Alastair Ewen, et al from the University of Calgary reported no significant decreases in the incidence of emergence agitation with significantly delayed awakening and PACU discharge in both midazolam groups.

Dr. Andrew Kim, et al from the Children's Hospital of Philadelphia presented retrospective data regarding the safety and efficacy of low-dose (4-6 mcg/kg) intrathecal morphine for postoperative analgesia in children following a variety of surgical procedures. 22%

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American Academy of Pediatrics Section on Anesthesiology and Pain Medicine Breakfast Panel

Reviewed by Connie Houck, MD, FAAP



Constance Houck, MD

Safety Concerns for Patients and Practitioners: How is it Changing the Practice of Pediatric Anesthesia?

In keeping with the theme of this year's ASA meeting, 100 years of patient safety, the 2005 American Academy of Pediatrics Section on Anesthesiology and

Pain Medicine Breakfast Panel focused on three safety concerns that are particularly important for anesthesiologists caring for children.

Dr. Joel Gunter presented a very timely review of the causes of and preventative measures for combustion-related dangers associated with Sevoflurane. Reports of Carbon monoxide buildup, explosions and fires have mandated major changes in the way that anesthesia machines and CO2 absorbers are maintained. The chemical reactions involved and the potential toxins produced were carefully outlined along with ways to reduce the risks. These include the use of soda lime rather than Baralyme®, changing the CO2 absorber more frequently and consideration of the use of Am-sorb®, especially in locations where the anesthesia machines are used only intermittently.

Dr. Melissa Wheeler reviewed the advantages and disadvantages of "safety" catheters in pediatric anesthesia. She presented an overview of the newer "retractable needle" catheters available and reassured the audience that older catheters will most likely remain available for the next few years. She also reviewed the results from a study at Children's Memorial Hospital that use of these catheters can lead to more blood splatter and fewer successful cannulations, especially among attending anesthesiologists. She emphasized the importance of having both safety catheters and older catheters available for arterial access lines and venous cannulation in young infants.

Dr. Randall Clark gave an up-to-the minute account of the discussions between JCAHO and the ASA Committee on Pediatric Anesthesia in regard to the recently published sentinel event alerts on PCA by proxy and awareness under anesthesia. He reviewed the structure of the JCAHO, outlined the importance of educating hospital administrators and JCAHO reviewers about the differences between children and adults, and discussed how JCAHO regulations impact our ability to care for children in an effective and safe manner. Working together, the ASA, the AAP, Section on Anesthesiology and Pain Medicine, and the Society for Pediatric Anesthesia have been in communication with JCAHO about both of these sentinel event alerts and have outlined our concerns about how these issues affect anesthesia care in children.



Randall Clark, MD

Fellows' Corner

Pediatric Anesthesia at the ASA Meeting, Atlanta



Ryan Schellpfeffer, MD Mark Twite, MD

By Mark Twite, MD and
Ryan Schellpfeffer, MD

The change in venue for the ASA Centenary from New Orleans, Louisiana to Atlanta, Georgia was accompanied by a change in mood about the meeting. Could the ASA actually move such a huge meeting in a short time? Would anesthesiologists still attend? Would the educational program still be worthwhile? Would Atlanta be a fun city? The answers to these questions almost seemed irrelevant in the wake of Hurricane Katrina's destruction and the misery it had bestowed upon so many people.

Our pediatric experience in Atlanta included refresher course lectures, problem based learning discussions and workshops. Dr. Laura Diaz led an excellent problem based learning discussion on *Repair of Tracheoesophageal Fistula in a Neonate with Single Ventricle Physiology*. The discussion about single ventricle physiology and the anesthetic challenges it presents was fascinating and made readily understandable by Dr. Diaz with the help of a color hand-out. Complicate already complex physiology with a TEF and the discussion becomes very lively! But surely this is just a hypothetical discussion? Unfortunately not, Dr. Diaz has just published a retrospective case series of infants undergoing TEF repair. This

case series concluded that the presence of a ductal-dependent cardiac lesion was a significant risk factor for mortality in this group of infants.¹

Another problem based learning session focused on the unique anesthetic challenges of the increasing population of adult patients with Fontan circulation. Dr. James Spaeth guided the discussion of *Perioperative Management of an 18-year-old with Perforated Appendicitis and a Fontan Circulation*. A diverse group of participants debated various topics including the appropriate pre-operative evaluation, need for invasive monitoring, strategies for anesthetic induction, and goals of intra-operative management.

Dr. Myron Yaster gave an interesting refresher course lecture on Pediatric Pain Management. He stressed the multifactorial and complex nature of pain, including the contribution of emotional distress and lack of sleep – both conditions were easy to relate to as residents! A wide variety of commonly used analgesics were reviewed, and the myth of merperidine's supposed advantage in the setting of biliary spasm was debunked once and for all. Dr. Yaster also discussed the merits of using patient controlled analgesia (PCA), and related that, "any child able to play Nintendo® should be able to operate a PCA."

Next it was time for some hands on practice: The *Pediatric Difficult Airway Workshop*. The introductory lecture was a useful refresher on the pediatric airway. The 'hands-on' exhibits were an opportunity to demonstrate how your brain thinks it knows how to do something; it is just that your hands don't seem to be getting the message! Of course the challenge with an emergency cricothyroidotomy is you had better be able to do it when the time comes, so you can never actually practice it too many times.

After A and B obviously comes C: *The Pediatric Regional Workshop*. Dr. Nancy Glass provided a very useful handout about local anesthetic choices and doses, which is a good start for residents trying to avoid toxic blood levels and circulatory collapse. Demonstrations on real children of common upper and lower extremity blocks helped consolidate nerve block theory into practice. Dr. Suresh merits special mention for demonstrating fascinating blocks of the head and neck – our local ENT surgeons have subsequently been very impressed!

The Rovenstein lecture delivered by Dr. Mark Warner was a call to embrace the changing profession of anesthesiology. Dr. Warner predicted that surgery would become even less invasive and demonstrated this with a fascinating animation of miniature robots delivered via an endoscope into the abdomen through the stomach wall. These robots then perform an appendectomy, drag the appendix back to the endoscope and then deliver the appendix orally. Of course anesthesia for this procedure would be provided by a nurse anesthetist – the anesthesiologist would be looking after more critically ill patients either in the OR or ICU. While it is important that anesthesia continues to advance it seems that there may be more important global issues to tackle such as providing basic safe anesthesia and critical care to children in developing countries.

The ASA meeting reflected its members - anesthesiologists. It responded to a tragic situation by relocating to another city with expertise and no fuss. The result was the delivery of an excellent educational program - just ask any of the 14,000 participants. Was Atlanta fun? Well, it was just like several call nights in a row and it took the rest of the week to recover!

1. Tracheoesophageal fistula and associated congenital heart disease: implications for anesthetic management and survival. *Paediatr Anaesth*. 2005 Oct;15(10):862-9.

Dr. Mark Twite and Dr. Ryan Schellpfeffer are both Chief Residents at the University of Colorado Health Sciences Center and are both going into Pediatric Anesthesia.

President's Message

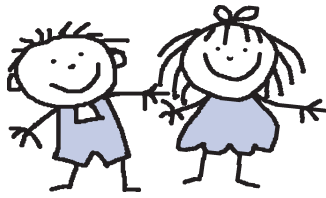
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other synergies that will result from this relationship and thereby benefit both our patients and our members; some these will include a one-day meeting every-other-year, before the formal beginning of the Winter meeting, devoted to congenital heart disease, as well as other contributions on the website and at the annual meetings. There is more about this exciting development in an article by Dean Andropolous this issue of the Newsletter.

As you can see, it has been a pretty busy year. On behalf of all of my fellow officers, committee members, and Society management personnel, I would like to thank you for your interest, efforts,

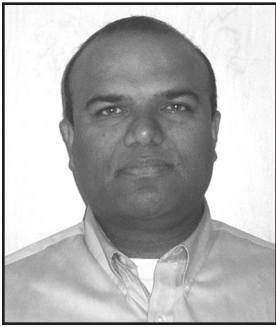
and support. We think that we have made substantial progress on a number of fronts, but clearly there is much more to do. We encourage you to actively identify areas and issues that matter to you and your patients, let us know how we can best address them, and get involved yourself. We wish you and your families great joy and promise for the coming year. It continues to be a tremendous honor and privilege for me to help represent you and your efforts to care for children.

With warm regards,
Frank McGowan, MD



Keeping Up with Kids

What are Kids into these Days?



Zulfiqar Ahmed, MBBS



Sara E. Anspach, CCLS

With two daughters, I have found myself as a dad surrounded with all “girly” stuff. When I saw the article in the fall issue of the SPA newsletter dominated by boys’ interests and cartoon descriptions of world domination, I decided to go on the offense. In order to counter that, I recruited Sara Anspach (no relation to the orthopods/neurosurgeons). She is a Child Life Specialist at Children’s Hospital of Michigan. We have written an overview of girl’s cartoons with some detail.

Dora the Explorer (animated)

Dora is a girl from a bilingual (English/Spanish) family and lives in a house with her Mamá and Papi, though she also often visits her Abuela (grandmother). Her band of friends is, Boots, a monkey, Dora’s backpack, her map and Diego her boy cousin. Swiper, a fox always tries to give them trouble. Boots is sweet and caring and loves to hold Dora’s hand. He follows her while she explores. He also loves to make Dora laugh by surprising her. Whenever Boots is feeling down he manages to bounce back with his special triple flips. Diego is a great partner to Dora in her adventures. He helps his parents at the Animal Rescue Centre and can even make animal noises and talk to wild animals. They go on adventures to Spooky Forest, Crocodile Lake, and other places. They face problems and need a child’s help to solve them. Along the journey the map helps guide them, Swiper the fox tries to swipe things that Dora needs to complete her quests. When Swiper has swiped something, he then hides it and it’s up to Dora, Boots, and the viewers to find where it is hidden. Then they all say “Swiper Stop

Swiping”. The backpack Dora has is a real go-getter. Backpack always provides anything Dora might need for her quest. The map is an incredibly useful helper because he always knows where to go and the best way to get there. ‘If there’s a place you need to get, I can get you there I bet’. On the way to her adventures, she identifies names of the objects in both English and Spanish, which teaches kids how to speak Spanish. They all sing some songs along the way. One of them is for Backpack. It goes like this.

*Backpack, Backpack
Backpack, Backpack*

*I am a backpack loaded up with things and knickknacks, too
Anything that you might need, I got inside for you.*

*Backpack, Backpack,
Backpack, Backpack*

According to the authors of the show in every episode they incorporate seven different learning “intelligences” such as logical/mathematical, musical/auditory, and bodily/kinaesthetic as well as the introduction of Spanish at an early stage to the child.

Zulfiqar Ahmed, MBBS, FAAP; and Sara E. Anspach, CCLS
Children’s Hospital of Michigan
Detroit, MI

Poster Review

Continued from page 5

of patients required supplemental opioids in the PACU and 52% on the general care unit. Side effects including nausea occurred in 23% of patients, pruritus in 27% and urinary retention in 4%. No adverse events including spinal headache, hypotension or respiratory depression requiring intervention occurred in this sample.

Two interesting studies were presented by investigators from Seoul, Korea. Dr. Seung-Yeon Yoo, et al from the Seoul National University Medical College compared three different techniques of endotracheal tube positioning; 1) placing the ETT endobronchially and withdrawing it until bilateral breath sounds are heard and withdrawing it 2 cm further, 2) by placing the marks on the ETT at the level of the vocal cords, or 3) palpating the tip of the ETT at the suprasternal notch. They then measured the tracheal length from the ETT tip and the carina via a fiberoptic bronchoscope with the neck in the neutral position, and in full flexion and extension. They found that in the first group, endobronchial intubation occurred in 29% of the children with neck flexion suggesting that the technique of withdrawing the tube after endobronchial intubation was suboptimal. Dr. Ki-Young Lee, et al from the Yonsei College of Medicine presented a study of great practical value. They compared the incidence of oculocardiac reflex following propofol and ketamine induction in children undergoing strabismus surgery. One hundred twenty children were randomized to receive propofol 3mg/kg, ketamine 1mg/kg or ketamine 2mg/kg. The incidence of oculocardiac reflex was 35%, 10% and 2.5% in the three groups respectively with no difference in the duration of PACU stay or the incidence of vomiting.

The session was well attended and each poster generated an interesting discussion.

Literature Reviews

Analysis of the Bispectral Index During Natural Sleep in Children

Benini F, Trapanotto M, Satori S, et al. *Anesthesia & Analgesia* 2005;101:641-4.

Review: The goal of the study was to evaluate the trend of the Bispectral Index® (BIS®) system during the various stages of sleep in children. The BIS system incorporates an integrated analysis of an electroencephalogram (EEG) trace, provided by two frontal leads (F7, F8), and gives an assessment of the level of sedation and anesthesia. The BIS records a continuous EEG signal, and compares it with EEG tracings stored in its data bank, with the end result providing a numerical value between 0 and 100.



Cheryl K. Gooden, MD

The investigators of this study examined BIS values during waking, sleeping stages I – IV, and reawaking. This non-randomized study consisted of 15 patients, aged 1.2 – 16.5 years, with a prior history of seizures but were seizure-free for the past two years. All study participants had both unremarkable clinical findings as well as on the EEG. In addition, the patients were not receiving anticonvulsant medications.

On the night prior to the study, the patients were deprived of sleep for four hours. The study took place in a soundproofed room, and electrodes were applied to the study participants to record the EEG and BIS. The EEG consisted of a 16-channel computerized system. The standard placement of the BIS sensor was employed. The quality of the BIS signal was determined by the signal quality index (SQI), and BIS values were included in the study if the SQI was 50% or greater.

The stage or stages of sleep recorded among the children varied. All of the participants in the study reached stage II sleep. Three children reached stage III and one child reached stage IV. The resulting data presented by the investigators included for each stage, the mean value, the standard deviation, and the maximum BIS value. Also, the duration of the BIS recording was noted.

Following final analysis of the data, this study showed that the BIS decreased progressively as sleep became deeper. The correlation analysis between the stage of sleep and the BIS was significant ($P < 0.05$). On reawaking, a slow increase was apparent in the BIS.

Comments: This study, although quite small in terms of the number of participants, is the first to investigate BIS monitoring in children while asleep. The study demonstrated that the BIS was accurate in reflecting the changes on the EEG trace that occurred during the different stages of sleep. Earlier studies investigating this subject have been limited to the adult population, and the results are relatively similar to those found in this study.

Further studies need to be done to examine the results of BIS during sleep. Although, deviating slightly from the topic of this study, more investigations of BIS monitoring in children under general anesthesia are also necessary. The topic of awareness under general anesthesia has evoked much discussion among anesthesia providers, particularly due to the great deal of media attention that it has received. There is much more to be learned regarding “the use or not to use” of brain function monitoring in children under general anesthesia. The results generated are possibly applicable to one’s clinical practice if you are using this monitoring.

An FYI for the reader of this section! In October 2005, the House of Delegates of the American Society of Anesthesiologists (ASA) approved a Practice Advisory for Intraoperative Awareness and Brain Function Monitoring. I recommend taking a look at this Advisory.

Reviewed by Cheryl K. Gooden, MD, FAAP
Mount Sinai Medical Center, New York, NY

Adjuncts to Caudal Block in Children—Quo Vadis?

PA Lonnqvist. *Br J Anaesth* 2005; 95:431-3



Hoshang J. Khambatta, MD

The author has written a thought provoking editorial to remind us to think before we rush into publication behind the guise of academic curiosity. In particular, he cautions us on the subject of adjuncts to caudal blocks in children. Caudal block was first described by Campbell in 1933. It has evolved to become the most popular regional anesthetic technique for children. The technique is popular amongst both pediatric anesthesiologists and those who only do such cases occasionally.

Interestingly, it has been shown that a new resident in anesthesia can achieve the same level of skill after administering 32 blocks as an older senior colleague. Hence, this relative rapid learning curve may account for the popularity of the caudal block. As with any interventional procedure there is of course a potential for complications, but if proper technique is used the incidence is low.

Although the caudal block is versatile and useful for the most common pediatric procedures, such as repair of inguinal hernia, circumcision, orchiopexy and repair of ambiguous genitalia, it has a major limitation – the limited duration of action. Even though a continuous caudal block can be administered via a catheter which can be left in situ for 48 hours, its use can not be justified for many of the common surgeries. To overcome this time limitations different adjuncts have been used to prolong the duration of analgesia. The earliest was epinephrine, though its use has diminished. This may be because of the recent introduction of long-lasting local anesthetics that are not available with added epinephrine or to the availability of more potent adjunct options. In the late 1980s opioids were the adjunct of choice and soon after, racemic ketamine and clonidine were added to the list. Since then a large number of studies have been published describing their use, efficacy, and safety. A study published in 2002 showed that 58% of British pediatric anesthesiologists used adjuncts for performing caudal blocks with the most commonly used agents being ketamine, clonidine, fentanyl and diamorphine. The choice of opioids as adjunct has been questioned because of the high incidence of side effects. There is no doubt that together with ketamine and clonidine they do result in clinically relevant prolongation of post operative analgesia. Recently the combined use of S(+)-ketamine and clonidine as a single injection without a local anesthetic has been reported to give 24 hours of post operative analgesia. Although not all of these adjuncts have been labeled for use in the caudal space, multiple studies have proved that these agents are probably safe choices for prolonging post operative analgesia after a caudal block.

Against this background it is difficult to understand and accept that other drugs which have not undergone adequate safety testing (some drugs may contain potentially toxic preservatives), and which produce only limited prolongation of post operative analgesia, or are associated with clearly unacceptable side effects still remain the focus of clinical studies. The most obvious recent example is neostigmine which remains a focus of investigation with numerous

publications even as its caudal use produces a 30% increase in nausea and vomiting after anesthesia. It is unimaginable that even after such a high incidence of unacceptable side effects the authors of these studies recommend further large scale investigations.

Comments: The editorial asks Quo Vadis? It goes on to say that we currently do possess a number of different options to enhance post operative analgesia after caudal block. These choices are, safe, effective, and have acceptable side effects and safety profiles. Therefore, there appears to be little justification to investigate new drugs, except for academic curiosity. As suggested by the author, the road forward should follow one of the three different but eventually converging paths. First, the individual anesthesiologist should adapt his/her current clinical practice to better adhere to the existing literature and evidence base. Second, working groups of relevant specialist bodies (e.g., The Society for Pediatric Anesthesia and The American Society of Anesthesiologists) should issue guidelines to help the clinician to identify what is considered to be the standard of care. Third, new alternatives to opioids, clonidine and ketamine should only be tested in prospective, randomized trials of adequate size. Such new alternatives should only be incorporated into clinical practice if they provide improved analgesia, combined with acceptable safety and side effects compared with the existing alternatives. The occurrence of serious neurological complication following 'unauthorized use' of a new drug in the caudal space is just not acceptable in a world where safe alternatives are well known and available. Furthermore, such irresponsible action has the potential to cause caudal block to fall into disrepute. The future losers would thus be children deprived of the excellent pain relief that proper caudal analgesia can offer.

Reviewed by Hoshang J. Khambatta, MD

Perioperative Management of Pediatric Surgical Patients with Diabetes Mellitus

Rhodes ET, Ferrari LT, Wolfsdorf JL. *Anesth Analg* 2005; 101:986 - 999.

The article by Dr. Rhodes and colleagues in a recent issue of *Anesthesia and Analgesia* is one that should have broad appeal not only to pediatric anesthesiologists but to our more general anesthesia colleagues as well. As stated by the authors, despite many recent changes in the care of diabetic patients, there has not been a large amount of literature written about the care of pediatric, diabetic patients within the perioperative period. Unfortunately, an increasing number of children with type 1 and 2 diabetes are coming for surgical procedures and due to vast differences in body size and developmental/metabolic changes, these patients are not just "small adults". The authors do a nice job of describing and presenting algorithms used at the Children's Hospital of Boston for taking care of diabetic patients coming for anesthesia and surgery. In a very clear, stepwise approach, the authors show the decision trees developed at the Children's Hospital of Boston for the preoperative, intraoperative and postoperative care of pediatric diabetics, both type 1 and 2, for minor, major and emergency surgery. In addition to describing management, the article also reviews some of the new insulin formulations, their bioavailability, and management practices using these new insulin types.

For pediatric anesthesiologists who have not reviewed the topic in some time, for departments who wish a starting point in developing standards of care, or for general anesthesiologists who will be presented with an older, pediatric patient with diabetes, just in for "minor surgery", this is a nice reference to keep. With the ever increasing average body mass index of the US population, including our children, it is unfortunately necessary but timely to have an article reviewing the management of these patients in the perioperative period.

Reviewed by Michael Jon Williams, MD

Topic Review

Editor's Note: The following reviews were inspired by a recent discussion on the PAC website. Dr. Yun practices at the University of Wisconsin in Madison, where their ENT surgeons have a preference for LMA use in their tonsillectomy and/or adenoidectomy patients. The anesthesiologists there have embraced the technique and presented their experience with it at both the ASA (poster) and SPA annual meetings. Dr. Golden practices at the Comer Children's Hospital and University of Chicago and has shared his views on this topic on the PAC.

The LMA for Tonsillectomy: A Review

By Elizabeth Yun, MD

In the United States, the endotracheal tube is the standard airway for the tonsillectomy patient despite several disadvantages to this technique. Laryngoscopy is associated with increases in heart rate and blood pressure and possible dental injury. When reviewing the physics of the situation it is obvious that the endotracheal tube is a tube within a tube (i.e. the trachea). This creates a constriction at the junction of these tubes and leads to a decrease in gas flow. An uncuffed endotracheal tube may not protect the patient from aspirating blood and secretions. While a cuffed endotracheal tube provides a protective seal, there may be an increased risk of tracheal edema and post intubation croup.

The flexible laryngeal mask airway (LMA) is an alternative airway that addresses the concerns of the endotracheal tube. This LMA consists of an elliptical mask connected to a flexible reinforced tube. When the patient is deeply anesthetized, the index finger of the dominant hand is placed at the junction of the cuff and tube. The LMA is then directed along the hard palate around the tongue. The other hand meanwhile extends the head. While the LMA can be placed standing at the top of the patient's head, an alternative is to stand at the side of the patient. When the cuff is inflated, the mask forms an airtight seal in the hypopharynx. Because of the reinforced nature of the LMA tube, it fits easily into the groove of the tonsil gag blade and is not kinked or compressed. Lubrication of this groove prevents the tube from sticking.

There are several advantages using the LMA for tonsillectomy. Insertion does not involve muscle relaxants and a laryngoscope blade, leading to fewer changes in blood pressure and heart rate and less trauma to the airway. Removal is also better tolerated by patients with fewer episodes of laryngospasm and coughing. Because the diameter of the LMA tube is larger than an endotracheal tube, there is no constriction at the junction of trachea and the LMA, leading to greater airflow. Some disadvantages of the LMA are its inability to definitively protect against aspiration and the possibility of blocking the surgical view. Fiber-optic bronchoscopy of the LMA demonstrates that there is no blood inside the LMA or below the cords after a tonsillectomy, unlike with an uncuffed ETT. One study in a small number of patients has shown that there is less blood in the stomach when an LMA is used compared to an ETT. Blood and secretions often pool on top of the LMA and are removed when the LMA is pulled out. With proper placement, the LMA sits in the hypopharynx, below the surgical field. Other disadvantages of the LMA are inadequate ventilation for the patient with obstructive sleep apnea, the obese patient and possible displacement.

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Topic Review

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While there have been no large controlled studies comparing the LMA and the endotracheal tube in tonsillectomy patients, the LMA is used safely and effectively in many places. The key to success is patient selection, adequate depth of anesthesia and communication between surgeons and anesthesiologists.

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Cuffed vs Uncuffed Endotracheal Tubes in Children: A Review

By Samuel Golden, MD

There has been a growing body of literature regarding the use of cuffed endotracheal tubes for pediatric intubation. The following will be a brief review of this complex subject.

Traditionally, uncuffed endotracheal tubes (ETTs) have been recommended in children for the prevention of acute and chronic ischemic injury to the tracheal mucosa which might result in post-extubation stridor and subglottic stenosis, respectively. This was felt especially true in children under eight years of age, when the narrowest point of the airway is at the level of the circumferential, non-distensible cricoid cartilage. It is logical to be concerned that placement of an ETT cuff at the level of the cricoid, where subglottic stenosis occurs, could be problematic.

First, I will present the arguments against routine use of cuffed ETTs. In two major studies supporting the use of cuffed endotracheal tubes, one has subtracted one full ETT size and the other half of a tube size to allow for the increased external tube diameter due to the cuff itself. It has been pointed out that going from a size 4.0 to 3.0 ETT roughly triples the airway resistance. Thus, with small diameter ETTs, using a cuffed ETT will increase airway resistance and work of breathing. Also, the risk of occlusion of the tube lumen by secretions will increase with use of a smaller ETT. Currently available cuffed ETTs are poorly designed for pediatric patients. The cuffs are low-volume, high-pressure, thick-walled, and located an excessive distance from the tip of the ETT. When the air in the cuff of currently available tubes is removed, it is easy to see longitudinal, spike-like protrusions of folds of cuff material radially projecting from the tube. These projections could damage the tracheal mucosa. The excessive distance of the cuff from the tip of the tube makes it possible for the cuff to be at the cricoid or just below the vocal cords even when the ETT tip is located properly in the mid-trachea. Indeed, development of a laryngeal web after three days of intubation from the later situation has been reported.

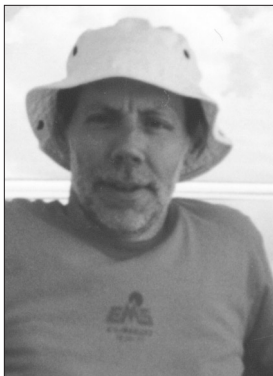
In the adult, mucosal perfusion pressure is 25-30 cm H₂O. Based on this, most pediatric anesthesiologists recommend keeping cuff pressure < 25 cm H₂O. Unfortunately, studies have shown that palpation of the pilot balloon, even by experienced clinicians, is not a reliable measure of cuff pressure, and in fact often grossly underestimates it. This is obviously an even greater problem if N₂O is used. Thus, monitoring of cuff pressures is recommended by most authors, requiring the purchase of a commercially available manometer or setting up a manual transduction system. Perhaps alternatively, one could frequently deflate and reinflate the cuff to just barely provide a seal or leak at peak inspiratory pressures, but this would be rather crude.

Similarly, the arguments for using cuffed ETTs are compelling. Evidence has been presented that the major determinants of subglottic stenosis are tube size, duration of intubation, and amount of ETT manipulation. It is noteworthy that the frequency of development of subglottic stenosis in NICU graduates is much lower than in the past (now ~1-2%). Repeated laryngoscopies, necessitated by the need to change ETT size and leak pressures can be traumatic. Khine, et al randomized 488 children to cuffed or uncuffed ETTs for short surgical procedures (duration intubation 1 hr). These investigators showed that children having cuffed ETTs had fewer tube changes, less environmental contamination with anesthetic gases, and were less likely to require fresh gas flows above 2 L/min. There was no difference in croup symptoms between groups. In a PICU setting, Newth et al reviewed data on intubation of patients over a 1 year period. In children under five years of age, 387 patients were intubated with an uncuffed ETT and 210 with a cuffed ETT. The mean duration of intubation was similar between groups. The rate of successful extubation, need for racemic epinephrine, and rate of tracheostomy was the same for both groups. ETT cuff pressures were monitored at 8-hr intervals. Dullenkopf and colleagues have reported extensively on a newly designed high-volume, low-pressure pediatric ETT (Microcuff GmbH, Weinheim, Germany). The cuff is very thin-walled and close to the ETT tip (no Murphy eye). In a recent study of this ETT, when using the formula ETT size = 3.5 + age/4, this group has shown that sealing pressures were very low (9.7 cm H₂O), and as expected, the need for tube changes and post-extubation racemic epinephrine treatments very low. The Microcuff ETT should theoretically be safer and easier to apply in unusual circumstances previously reported such as utilizing the cuff to occlude the fistula in a typical type C TEF and performing 1-lung ventilation for repair of a ruptured mainstem bronchus. Lastly, any cuffed ETT should protect better against aspiration than an uncuffed ETT. Despite the growing number of pediatric patients intubated with cuffed ETTs, there is scant literature documenting any significant adverse events for short intubation periods.

Analyzing the above data and coming to a cohesive clinical approach is difficult. Opinions range from nearly never using cuffed ETTs in children under eight years to routine use when needing an ETT of internal diameter of four or greater. All clinicians must come to their own conclusions. Perhaps an intermediate approach at this time is most reasonable. For "short" cases, when the ETT size is four or greater, choice of a cuffed vs uncuffed ETT tube probably will not matter. Situations where a cuffed ETT may be preferable include the following: high risk of aspiration (e.g. bowel obstruction), patients likely to have or develop low lung compliance (e.g. patients with ARDS, patients having pre-existing lung disease undergoing pneumoperitoneum or CO₂ insufflation of the thorax, and patients undergoing cardiopulmonary bypass), and in situations where precise ventilation and control of PCO₂ are important such as in patients with increased intracranial pressure and single ventricle physiology.

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Commentary & Review



By Thomas J. Mancuso, MD, FAAP

Clown Doctors as a Treatment for Preoperative Anxiety in Children: A Randomized, Prospective Study.

Vagnoli, L PhD et al *Pediatrics* 2005;116:e563-567; www.pediatrics.org/cgi/doi/10.1542/peds.2005-0455

The aim of this investigation was to determine the effects of the presence of clowns on the anxiety of parents and

children undergoing parent present inductions of general anesthesia. Forty subjects were randomly assigned to the clown or control group. In the clown group, children underwent a PPI with both a parent and a clown and in the control group the PPI was accomplished with the parent. Anxiety was measured in children using the Modified Yale Preoperative Anxiety Checklist. Parental anxiety was measured using the State-Trait Anxiety Inventory. Health professionals completed a questionnaire that sought their opinions of the presence of clowns and the clowns themselves also completed a questionnaire about their interactions with the child.

With the instruments in use in this study, both the children and the parents in the clown group exhibited less anxiety in the induction room. This decreased anxiety correlated with the perceived effectiveness of the clowns in their self-evaluation. The majority of the staff was opposed to continuing the practice because of perceived interference with OR procedures.

Commentary: I can't help myself, but aren't there already enough clowns in the OR? On a more serious note, I am certain that distracting children during inhalation inductions will decrease their measured anxiety and just as certain that the LAST thing the OR needs is more distractions. When I have a semi-conscious child with an exquisitely irritable airway, little or no airway protective reflexes and no IV access in my care, the last thing I want is more distractions. Every effort should be made to provide comfort and support to the child undergoing the induction of anesthesia. However, when push comes to shove, safety trumps comfort every time. The intervention described in this paper, in my mind, sacrifices safety for comfort.

Parental Perspectives on Staff Kindness After a Death.

MacDonald ME et al. *Pediatrics* 2005;116:884-890

Twelve parents of children who had died in a PICU of a tertiary care children's hospital were interviewed. A multidisciplinary team evaluated information about the child's care and the interview data to corroborate themes. Acts of kindness by staff members included attending the funerals, sending sympathy cards, phoning/visiting the family home and attending memorial services. The following emerged from the data collected:

1. Parents placed great importance on hospital memorial services and staff attendance at these services;
2. Although return to the hospital was difficult, all parents did return for the memorial services;
3. Parents appreciated receiving cards and phone calls from hospital staff.

Commentary: This paper simply documents the obvious fact that families appreciate acts of kindness. Something we should always keep in the front of our minds as we care for children. Unfortunately, as anesthesiologists we often do not have the opportunity to form long-term relationships with our patients. Nevertheless, we often may be involved in the care of children who are near the end of life or whose trip to the OR is indeed just at the end of life. While we may not be missed by the families at memorial services as long-term PICU staff would be, this paper simply underscores the huge importance of the need for sensitivity and care for families of critically ill children who come to the OR. I am certain that families always appreciate acts of kindness from all medical staff, even "anesthesia".

Are Language Barriers Associated with Serious Medical Events in Hospitalized Pediatric Patients?

Cohen AL et al. *Pediatrics* 2005;116:575-579

This case-control study was carried out at a single Children's hospital in the Pacific Northwest. Cases were all hospitalized patients who experienced a serious medical event over a 5-year period. Controls (n = 475) were hospitalized children who did not experience a serious medical event, in that same period. These were matched to cases by age, admitting service, ICU admission and date of admission.

There were 97 cases of hospitalizations with serious medical events during the study period. A serious event was defined as: an event that led to unintended or potentially adverse outcome according to the hospital QI staff. The exposure variable was a language barrier, defined by a request by the family or health-care provider for an interpreter. Among Spanish-speaking families who requested an interpreter, the risk for an adverse medical event was increased twofold. (OR: 2.26; 95% CI: 1.06-4.81).

Commentary: Among pediatric patients the following factors are associated with an increased chance of medical errors: greater severity of illness, older age, adolescence, technology dependence, special needs. In addition, now another factor can be added to the list, the presence of a language barrier. Interestingly, in this study, families with language barriers in which a language other than Spanish was spoken did not have a higher incidence of medical errors. No obvious reason for this was found. The author's speculate that one reason may be the caregiver's mistaken impression that his or her own Spanish is sufficient for adequate communication when it is not. There were many more Spanish-speaking families included in the study, with many other languages represented by a very small number of families. It seems to me that the results found here for Spanish-speaking should be applied to all families with language barriers and extra care taken to minimize the likelihood of miscommunication.

Outcomes of CDH: A Population-Based Study in Western Australia

Colvin J et al. *Pediatrics* 2005;116:e356-e363; www.pediatrics.org/cgi/doi/10.1542/peds.2004-2845

This large retrospective review of all cases of CDH in Western Australia was undertaken to determine whether or not there has actually been improved survival of children born with this condition. The study included all cases of DCH from 1991 to 2002 including stillbirths, miscarriages and pregnancy terminations. Cases were identified using five independent databases.

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One Hundred sixteen cases were identified. Seventy-one were live born and 37 survived beyond one year of age. Another major anomaly was present in 54 cases and in 21 of these, the anomaly was likely to be fatal. Factors found to predict death of live-born infants with CDH included: right-sided hernia, the development of a major air leak, earlier gestational age at birth and lower 1- and 5-minute Apgar scores. Over the course of the time period of the study, the number of prenatal diagnoses increased, as did the number of births at tertiary medical centers. Also, in the later period of the study, the proportion of elective terminations increased. Overall, in this study, 33% of all cases of CDH underwent elective termination. The authors point out that there is wide variation in survival rates depending on the particular subgroup that is analyzed and that conclusions about a trend in overall survival based on analysis of a small subgroup may not be applicable to the entirety of infants diagnosed with CDH.

Commentary: This electronic paper shed some light on the difficult problem of determining the actual outcome for infants with CDH. Their data illustrate the large differences in survival rates (not to mention the quality of that survival) that can be reported depending on the group analyzed. As an example, 92% of infants who underwent surgery survived to one year, 80% of infants who made it to a tertiary surgical center survived, but 52% of live born infants with CDH survived. While this information is not specifically applicable to other countries, the concepts the authors illustrate with their data certainly are.

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24th Pediatric Anesthesia Conference

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Reviewed by Helen V. Lauro, MD, FAAP
*SUNY Downstate Medical Center/
Long Island College Hospital
Brooklyn, NY*

The 24th Pediatric Anesthesia Conference was held November 10-13 at the Hilton Toronto in Toronto, Canada and was extremely well attended. Pediatric Anesthesia Conference Coordinators were J. Ross Barlow, MD, FRCPC; Bernard M.

Braude, MD; Bruce A. Macpherson, MD; and W. Lawrence Roy, MD (Hospital for Sick Children, Toronto, ON). Welcoming remarks were provided by Dr. Roy.

The Friday evening session, Management of the Critically Ill Child "Really Sick Kids", was moderated by Steven E. Berdock, MD (Hospital for Sick Children, Toronto, ON). Bruno Bissonnette MD, FRCPC (Hospital for Sick Children, Toronto, ON) discussed controversies in management of acute head injury. He opened with demographics including that traumatic brain injury (TBI) is the leading cause of death in children aged 1-15 years who often do not present as "sick." In pediatric TBI the energy of the impact is preferentially transferred to the larger head of the small child resulting in a higher incidence of diffuse cerebral swelling (21% versus 6%) and depressed skull fracture (14% versus 4%). Common errors in anesthetic management of the TBI child can predispose to development of secondary brain injuries and adversely affect neurological outcome—these include attempted blind nasal intubation and cricoid pressure. Recommendations include (1) maintenance of cerebral perfusion pressure (CPP) in infants and young children at > 45 mm Hg and > 50-55 mm Hg in older children, (CPP < 40 mm Hg in the first 48 hours was associated with a mortality of 22%), (2) treatment of intracranial pressure (ICP) > 15 mm Hg in infants, >18 mm Hg in children < 8 years, and >20 mm Hg in older children-teenagers (mean ICP > 20 mm Hg increases the risk of neurological damage 11 times), (3) maintenance of PaCO₂ 30-35 mm Hg for sustained raised ICP reserving a PaCO₂ < 30 mm Hg for transient use, (4) hypertonic saline which has been demonstrated to be more effective than mannitol in decreasing interstitial fluid and controlling ICP spikes, (5) early seizure treatment (phenobarbital affects coagulation and administration should be used judiciously in trauma patients). Of note, gastric temperature is the most reflective of brain temperature, and should be maintained at 35-36 degrees Celsius. Robert Bingham, MD (Great Ormond Street Hospital, London, UK) spoke on recent developments in pediatric cardiac resuscitation. Resuscitation training has been shown to decrease deaths and improve outcome in children. Treatment recommendations of the International Liaison Committee on Resuscitation (ILCOR) are evidence based and are being published in *Circulation* and *Pediatrics* and may be accessed online at www.c2005.org. In brief, in the prehospital setting (1) doing anything has been found to be better than doing nothing, (2) the ideal ratio of compressions/ventilations in kids during cardiopulmonary resuscitation (CPR) is 15:2 for improving CPP and oxygenation, (3) bag mask ventilation is acceptable and is the gold standard for pediatric resuscitation as opposed to intubation, with the laryngeal mask airway (LMA) being reserved for floppy patients and those with upper airway abnormalities, (4) the automatic external defibrillator (AED) 10 Joules per kilogram can be used in

children greater than one year old, and such patients have a < 25% risk of myocardial damage. While the Heartstart FR2® automatic external defibrillator is specifically manufactured for children < 8 years old, adult pads can be used, (5) high dose epinephrine is not recommended and has been associated with reduced survival from asphyxia arrest. Dean Androupoulos, MD (Texas Children's Hospital, Houston, Texas) lectured on pharmacological resuscitation of the hemodynamically unstable child. The properties of the ideal inotrope must be tempered with the reality that such a medication does not exist. He considered the various drugs systematically discussing practitioner familiarity, receptor effects, dosing, adverse effects and the best use of each medication. Catecholamines are first line agents for resuscitation of the unstable child; however, high prolonged catecholamine doses should be avoided. Milrinone the phosphodiesterase II inhibitor is useful for preventing low cardiac output syndrome after cardiac surgery in infants and children, and in patients with pulmonary hypertension with normal or high systemic vascular resistance (SVR). Nesiritide, a recombinant B-type natriuretic peptide, is a new agent useful in acute decompensated heart failure and uncompensated congestive heart failure (CHF). Additionally, steroids, vasopressin, and thyroid hormone can be added early for management of the unstable child. Mechanical support can be considered if all other support fails. Cengiz H. Karsli, MD, FRCPC (Hospital for Sick Children, Toronto, ON) lectured on management of chest trauma in the pediatric patient, the primary etiology of which is motor vehicle accidents. Shield booster seats have been associated with 8 fold greater severe injury and 29 fold greater chest trauma and should not be used. He discussed a myriad of life threatening thoracic injuries (airway obstruction, tension pneumothorax, open pneumothorax, hemothorax, flail chest, and tamponade) and potentially life threatening thoracic injuries (aortic disruption, diaphragmatic rupture, myocardial contusion, and pulmonary contusion). Traumatic asphyxia, which arises from a blunt violent force to the chest with a closed glottis, is unique to children, and occurs when elevated intrathoracic pressure increases venous pressure in the superior vena cava causing capillary extravasation, rupture in chest and on face (petechiae, periorbital edema, conjunctival hemorrhage, seizures, respiratory failure, and disorientation). Fluid management in these trauma patients must balance the needs of TBI with chest trauma and strive for euvolemia.

The Saturday morning session "Pharmacology Update—What's New? 'The Drug Docs'" was moderated by Bernard M. Braude, MD (Hospital for Sick Children, Toronto, ON), Charles B. Berde, MD, PhD (Harvard Medical School, Boston, MA) lectured on pharmacology of new local anesthetics. Biologic causes of failure of local anesthetics including tachyphylaxis, infection, severe hyperalgesia and genetic variants such as Ehler Danhos syndrome. New classes of local anesthetics were presented including EMLA® (eutectic mixture local anesthetics), TAC® (tetracaine-adrenaline-cocaine), Ametop® (tetracaine gel), ELA-Max® (lidocaine 4% cream) and Lidoderm® (5% lidocaine patch) the onset of which can be assisted by iontophoresis, ultrasound, laser and heat. Future directions include sodium channel subtypes as targets for sensory selective local anesthetics. Mark W. Crawford, MD, BS, FRCPC (Hospital for Sick Children, Toronto, ON) lectured on current concerns with propofol in the pediatric patient. While propofol 1% has been a major pharmacologic advance for clinical practice, long chain triglycerides (LCT) in the formulation have been implicated in propofol infusion syndrome (PIS). PIS, originally associated with prolonged duration of propofol infusions >48 hours and dose >4 mg/kg/h in the sentinel case report of 5 children aged 4 weeks – 6 years of age in whom propofol sedation over several days resulted in death, is now held

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responsible for 28 cases in the pediatric literature, being fatal more than 80% of the time. Dr. Crawford advised that case reports have documented PIS in children receiving short term propofol infusions as well--an 18 month old with a duration of 5 hours and a dose of 100 mcg/kg/min, and a 5 year old with a duration of 6 hours and a dose of 250 mcg/kg/min. Medium chain triglycerides (MCT) shows promise to attenuate drawbacks of LCT without altering kinetics and pharmacodynamics, and these new propofol formulations are all being actively investigated in randomized controlled trials. These include propofol 6% SANZ® (6% propofol in 10% lipofundin), propofol lipuro® (1 or 2% propofol in 10% MCT/LCT), IDD-D propofol® (micro droplet propofol injectable emulsion 2%), and ampofol® (propofol 1%, soy oil 5%). William Splinter, MD, FRCPC (Children's Hospital of Eastern Ontario, University of Ottawa, Ottawa, ON) spoke on nonsteroidal anti-inflammatory drugs (NSAIDs) for "Perioperative pain: controversial issues". After defining the three classes of NSAID cyclooxygenase (COX) inhibitors 1, 2, and non-specific, contentious issues surrounding their use in children were elucidated. Drugs with more selective COX 1 inhibition (ketorolac, aspirin) are associated with impaired platelet action and bleeding whereas COX 2 inhibitors (celecoxib, diclofenac) are associated with thrombosis (fourfold increased in myocardial infarction with rofecoxib versus naproxen). Timing, dose and mode of administration are also important issues-- nonunion of bones after COX 1 is increased with high dose ketorolac (>120 mg/kg) rather than low dose ketorolac. Daisy T. Joo, MD, PhD, FRCPC (Hospital for Sick Children, Toronto, ON) presented "Narcotics: things you don't know". Morphine tolerance develops faster in young patients and therefore the ultimate pain management strategy is to decrease tolerance. Dr. Joo familiarized us with the most recent research into opioid tolerance development. Tolerance seems to depend on endocytosis, recycling and degradation of mu opioid receptors and low relative activity versus endocytosis (RAVE) values, which inhibit opioid tolerance development to other opioids. NMDA receptors are upregulated in opioid tolerance and treated with antagonists; and antiopioid systems ORL1 or Orphan receptors which are activated by endogenous peptide, nociceptin or ORQ and have an antiopioid role and whose inhibition reverses opioid tolerance. Adjunctive treatments that may prove helpful include methadone or hyperpolarizing or depressing neurons to produce analgesia.

Etsuro K. Motoyama, MD (Children's Hospital of Pittsburgh, Pittsburgh, PA) presented the A.W. Conn Lecture on the infant's response to hypoxia and anesthesia, after an introduction by David R. Bevan, MD (University Health Network, Toronto, ON). He drew an analogy between perinatal respiratory adaptation and the adaptation of climbers on Mount Everest (lower PaO₂, lower P₅₀, and higher hemoglobin levels). He highlighted the difference that while climbers depend on anaerobic and aerobic metabolism to survive in high altitude they can do so for only a short time and experience wasting of appearance, but the fetus grows and develops due to oxygen and nutrients from the placenta. Fetal breathing movements (FBM) which start in early gestation become increasingly organized in late gestation, but are suppressed in labor secondary to progesterone effect. It is postulated that the respiratory pacemaker is located in the ventral respiratory group (VRG) in fetus in the pre-Botzinger complex and disappears postnatally. FBM occur through both inhibitory central nervous system input and stimulatory peripheral input with the greater inhibitory contribution resulting in apneic intervals. The cord clamp initiates breathing (arousal or biochemical effect) and hyperoxia initiates and maintains rhythmic breath. He defined the breathing patterns characteristic of neonates including the irregular breathing in rapid eye movement (REM) sleep and the periodic

breathing in non-REM sleep, present in seventy-eight percent of full term neonates and greater than ninety percent of premature children. High risk patient groups for development of apnea and hypoxia include premature children (including siblings of those with sudden infant death syndrome (SIDS) and bronchopulmonary dysplasia (BPD), children up to 43 week post-conceptual age (PCA), REM sleep and presence of URI). Risks for SIDS includes prematurity with low birth weight, maternal smoking, prone position (decreases REM sleep, decreases arousal, decreases heart rate variability) and sleep apnea. Strategies to prevent postoperative apnea include eliminating atelectasis and avoiding hypoxemia, deep sighs pre-extubation, giving air-oxygen mix for transport, keeping patient warm in PACU, and vigilance for anemia. Anesthetic management to reduce postoperative apnea includes regional techniques rather than general, general with caudal, maintaining spontaneously breathing, keep patient warm, avoiding hypoxemia, administering caffeine. He pointed out that guidelines for maternal ventilation now discourage the Lamaze method of hyperventilation by the mother as this decreases umbilical blood flow and causes fetal hypoxia. In fact, maternal hypercapnia is beneficial for the fetus and the Lamaze method has been modified. Future directions include permissive hypercapnia for the ex-utero intrapartum treatment procedure (EXIT).

The first Saturday afternoon sessions "Pro versus Con" moderated by Bruce A. Macpherson, MD (Hospital for Sick Children, Toronto, ON). The first debate concerned PCA management by non-anesthesia personnel. In the pro position, Francis Veyckemans, MD (Université Catholique de Louvain, Bruxelles, Belgium) delineated benefits such as improved care of the child and more economical resource allocation for the hospital. He postulated that PCA is best managed by well trained ward nurses under supervision of the pain team, for whom pain management assessment is a required part of their care of the patient, when they take vital signs, change dressings and mobilize the patient. Advantages for using ward nurses at his hospital include attendance at ward rounds with the pain team, opportunities to evaluate analgesia at rest and during mobilization, being at the bedside all day, ability to repeat instructions to the patient, knowledge of the family, and continuity in providing analgesics after PCA. Drawbacks of this nonspecialized approach include the need for continuing education, trivialization of technique, need for written orders and instructions, need for coaching to keep motivated, risk of variability in care, and mandatory supervision by pain team. In the con position, Fiona Campbell, MD, FRCA (Hospital for Sick Children, Toronto, ON) stated that anesthesia-led acute pain services have ensured that the use of PCA in children is safe and effective with proper patient selection, information disclosure, and staff education. A survey of PCA practice in benchmark hospitals determined that most respondents felt PCA should not be managed by non-anesthesiologists because of concerns of lack of knowledge. Dr. Campbell states anesthesiologists should manage PCA because of their expertise in pain management and complications, and should not dismiss their medical responsibility to other providers such as surgeons and pediatricians for whom pain management is not a priority. The second debate concerned the superiority of thoracic epidurals to PCA for elective pectus excavatum repair. In the pro position, Bernard Dalens, MD (Université Laval, Centre Hospitalier Universitaire Laval, Québec) introduced the audience to pectus excavatum and the various surgical procedures including classical Ravitch, modified Ravitch and Nuss procedure all of which are extremely painful. With that in mind, he stated that while intravenous narcotics are as effective as epidurals to relieve pain at rest, only epidural analgesia can relieve pain on mobilization, procedural pain, inflammatory disorders and neural plasticity. Thoracic epidural analgesia provides superior analgesia for rib fracture pain, postthoractomy pain and thoracic trauma than intravenous PCA.

Advantages include early extubation, pain relief, improved respiratory function, and decreased complication rate. Disadvantages due to complications of procedure are mostly theoretical whereas the complication rate of the surgery is high averaging forty percent for delayed pneumothorax. J. Ross Barlow, MD, FRCPC. (Hospital for Sick Children, Toronto, ON) proposed the lack of justifiability for thoracic epidurals for this otherwise healthy patient population who he sees as receiving primarily a cosmetic operation. Concerns include local anesthetic neurotoxicity (numbness, seizures, coma), cardiac toxicity (vasodilation, myocardial depression, arrhythmias) and direct neurologic trauma (chemical, physical, ischemia), all of which are compounded by placement in a patient already under a general anesthetic. He proposes that more randomized controlled trials are necessary to look at safety of thoracic epidurals compared to PCA in pectus excavatum repair, and that in the interim dexmedetomidine and narcotic may decrease their need.

Bruce A. Macpherson, MD (Hospital for Sick Children, Toronto, ON) moderated the second Saturday afternoon session "Your Worst Nightmare: Two Case Discussions". Karen A. Cybulski, MD, FRCPC (Hospital for Sick Children, Toronto, ON) presented Just an M & T: A case discussion. The patient was an 18-month-old ex-premature for M&T and BERA (brainstem evoked auditory potential). History significant for respiratory syncytial virus, hypothyroidism, developmental delay, previous difficult intubation. After an uneventful anesthetic with a face mask, patient transported to recovery, developing chronic obstructive sleep disordered breathing, pulmonary hypertension, and Eisenmenger syndrome. Richard Lee, MD (British Columbia's Children's Hospital, Vancouver, British Columbia) presented an 11-year-old female for anterior/posterior fusion for left scoliosis. History significant for meningomyelocele. After an uneventful induction, patient developed a transfusion reaction of acute hemolytic reaction with mild DIC.

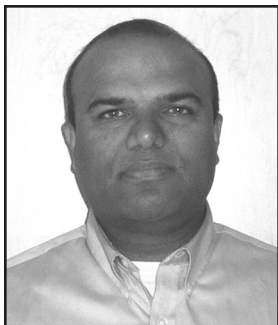
The Sunday morning lectures were divided into two sessions - Session A "Pediatric Regional Anesthesia Symposium 'The Deep Freeze'" moderated by Joost M. de Ruiter, MD (Hospital for Sick Children, Toronto, ON). Bernard Dalens, MD (Université Laval, Centre Hospitalier Universitaire Laval, Québec) presented regional techniques for inguinal hernia repair. Santhanam Suresh, MD, FAAP (Children's Memorial Hospital, Northwestern University, Chicago, IL) presented upper and lower extremity blockade for the pediatric patient. Ban Tsui, MD (University of Alberta Hospital, Edmonton, Alberta) presented epidural analgesia via the caudal approach using electrical stimulation guidance. James M. Robertson, MD, MSc, FRCPC (Hospital for Sick Children, Toronto, ON) presented troubleshooting for problematic epidurals in the postoperative interval. Session B "Nuts and Bolts" was moderated by W. Lawrence Roy, MD (Hospital for Sick Children, Toronto, ON). Francis Veyckemans, MD (Université Catholique de Louvain, Bruxelles, Belgium) presented laparoscopic surgery for infants and children. He reviewed the physiologic changes caused by increased abdominal pressure (IAP) and CO₂ absorption. In addition to the routine standard ASA monitors, transcutaneous CO₂ is more reliable than ETCO₂ to evaluate PaCO₂ (less sensitive to V/Q mismatch). In these cases, vigilance must be maintained for possible endobronchial intubation because the trachea is short in neonates and infants and elevation of the diaphragm caused by increased IAP moves the carina cephalad. New crisis situations such as CO₂ embolization were then presented, the risk of which was described in terms of driving pressure, defined as the difference of IAP and intravascular pres-

sure. When the driving pressure is zero, bubbles enter the vessels and CO₂ can remain trapped. Richard Lee, MD (British Columbia's Children's Hospital, Vancouver, British Columbia) presented anesthesia for bronchoscopy. He opened by giving some background into the history of the technique—Chevalier Jackson revolutionized practice by developing fiberoptic bronchoscopy management almost one hundred years ago and decreased mortality. After a discussion of the various types of airway management for upper airway lesions, foreign body removal, he emphasized preparation (all must be in working order!!) in terms of equipment, scope selection, suction, forceps, cautery, light source, recorder, notwithstanding good communication with the surgeon on their surgical objectives. It is largely no matter if you perform inhalation or intravenous induction, but a working intravenous, use of atropine, avoidance of nitrous oxide, and utilizing supraglottic or intratracheal lidocaine (reducing dose to 50% for newborns) is essential. Of note, sevoflurane causes more upper airway obstruction than halothane. Helen M. Holtby, MB, BS, FRCPC (Hospital for Sick Children, Toronto, ON) presented anesthetic considerations for the patient with congenital heart disease (CHD)-non cardiac surgery. She provided demographics that 50% of children with CHD are operated on less than one-year-old, 35% around one-month-old, with residual lesions in 5% of children after corrective surgery. Furthermore, 10% of those with CHD are diagnosed later in life. Increasing we are called on as pediatric anesthesiologists to provide care to survivors of complex CHD. Management issues in CHD include the complexity and severity of the lesion, associated anomalies (T21, T13, 22qdel, Marfan's, Williams), post-traumatic stress disorder, and drug interactions (LMWH, ASA, enalapril, and endocarditis.) Complications can include arrhythmias, ventricular dysfunction, residual and recurrent lesions, valve and conduit deterioration and endocarditis. Sudden death is the cause of mortality in 26% of patients with CHD—these involve aortic stenosis, William's syndrome, late TOF and DORV, pulmonary hypertension, Eisenmengers, failing Fontan, HLHS, and Ebstein's anomaly. Three case presentations of children with palliated or repaired congenital heart disease coming for non-cardiac surgery were used to illustrate the above points. Jason A. Hayes, MD, FRCPC (Hospital for Sick Children, Toronto, ON) presented Duchenne Muscular Dystrophy: Are Vapours a Problem. A short review of the genetic defects, clinical presentation and treatment preceded discussion of anesthetic management. Succinylcholine is obviously avoided because of risk of hyperkalemic arrest. Volatile agents have been more contentious, because of malignant hyperthermia-like reactions which he divided into three categories (1) acute onset of hyperkalemic arrest, (2) gradual onset of hyperthermia and tachycardia, (3) anesthesia induced rhabdomyolysis (AIR). AIR is due to exposure to vapors causing leakage of cell contents and a hypermetabolic response which looks like MH but has a different pathophysiology. All volatile agents including sevoflurane have triggered MH like reactions. He concludes that DMD patients are at risk of rhabdomyolysis and hypermetabolism when exposed to anesthetic vapours, but the underlying mechanism is probably AIR and not MH, TIVA should probably be used in DMD patients and anesthetic vapours should be avoided. In case of sudden cardiac arrest, think hyperkalemia not malignant hyperthermia. The day concluded with the session "Question the Experts 'Stump the Chumps'" moderated by Bruce G. Dodgson, MD (Hospital for Sick Children, Toronto, ON).

The meeting was extremely well received by the audience who look forward to the Pediatric Anesthesia Conference in 2007.

24th Pediatric Anesthesia Conference: A Review

Toronto, Ontario • November 10-13, 2005



Zulfiqar Ahmed, MBBS

Reviewed by Zulfiqar Ahmed, MBBS, FAAP
*Children's Hospital of Michigan
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The Hospital for Sick Children in Toronto organizes a Pediatric Anesthesia Conference every other year in November. It is an excellent conference and very well attended from all over the North American continent and abroad. About half of my department attended this conference. I was able to attend the second half of the conference from Saturday afternoon to Sunday morning session.

Dr. Bruce Macpherson of The Hospital for Sick Children moderated the Saturday afternoon pro and con session "Should PCA be Managed by Non-Anesthesia Personnel", Dr. Francis Veyckmans from Belgium spoke in favor and Dr. Fiona Campbell from The Hospital for Sick Children presented the con. Dr. Veyckmans advocated that PCA should be managed by the primary nursing staff that are with the patient 24/7 and know the patient very well. Adding to the issue is under this health system managing epidurals is not reimbursable to anesthesiologists. He advocated though that the nursing staff should be well trained and supervised by the anesthesiologists and pain team. Dr. Campbell maintained that other services, especially the surgical service, should not be involved in the PCA for a variety of reasons. She mentioned that pain in children is often undertreated and a snapshot audit in The Hospital for Sick Children revealed 77% of the inpatients had pain at some point of time during admission of which 68% had moderate to severe pain in the past 24 hours. She advocates that the anesthesia service provides a safe and effective method to manage the postoperative pain and should continue to do so.

In the following session "Thoracic Epidurals are Superior to PCA for Elective Pectus Repair". Dr. Bernard Dalens from Universite Laval, Quebec, Canada spoke in favor and Dr. J. Ross Barlow from The Hospital for Sick Children spoke against it. This topic was of special interest for me because of my previous research in Denver Children's. Dr. Dalens stressed the effectiveness of an epidural through various studies with emphasis on a cosmetic nature of surgery and the significant amount of pain involved. He also cited the studies describing the effectiveness of thoracic epidurals in chest cases, improved post thoracotomy functions and safety of this modality in pediatric patients. On the offense Dr. Barlow had collected a good number of MRIs from all over the world showing the abscesses and hematomas along with cord edema in patients secondary to thoracic epidurals. Also he cited studies showing significant need for i.v. narcotics in 47% patients in one study. The audience came alive with laughter upon Dr. Dalens's reminder that one should wash their hands before the placement of epidural catheters. One audience member from Arizona shared his group's hesitation in placing the thoracic epidurals secondary to an unfortunate placement of catheter in the spinal cord. Upon the survey of the audience, most of them use thoracic epidurals in these cases.

Dr. Macpherson then moderated a session named "Your Worst Nightmare: Two Case Discussions". Dr. Karen Cybulski from The Hospital for Sick Children and Dr. Richard Lee from B.C. Children's, British Columbia, presented these cases. Dr. Cybulski described a case of a 4-year-old with q22 deletion syndrome coming for M&T

(myrigotomy and tube, a.k.a. Gromets, a.k.a. BMT). Post operatively the patient was not doing well and unable to maintain room air saturations. The patient was admitted, next day had tonsillectomy and adenoidectomy done, worsened due to CHF and finally needed ECMO. The patient subsequently recovered and went home. Dr. Richard Lee described his experience of having recently switched from private practice to teaching facility. While working with a new resident, he was informed by the blood bank, during a case, that the blood bag was labeled incorrectly and the patient had received the wrong blood. Fortunately the wrong bag had the correct blood type and no adverse reaction occurred. Soon after during another case he was informed by the blood bank that the FFP which has just been transfused to the patient was labeled incorrectly. Again luck was on his side, as FFP transfusion with incorrect blood type does not result in serious complications usually.

Sunday morning was divided into two sessions. Session A: Pediatric Regional Anesthesia Symposium moderated by Dr. Joost de Ruiter of The Hospital for Sick Children. Speakers and the topics were "Regional Techniques for Inguinal Hernia Repair" by Dr. Bernard Dalens from Quebec, Canada; and "Upper and Lower Extremity Blocks for Pediatric Patients" by Dr. Santhanum Suresh from Children's Memorial in Chicago, "Epidural Analgesia via the Caudal Approach using Electrical Stimulation Guidance" by Dr. Ban Tsui from Alberta, Canada and "Trouble Shooting for Problematic Epidurals in the Postoperative Interval" by Dr. James Robertson from The Hospital for Sick Children. I attended Session B: Nuts and Bolts, moderated by Dr. Lawrence Roy from The Hospital for Sick Children, he was also the meeting organizer. The first speaker was Dr. Francis Veyckmans from Brussels, Belgium whose topic was "Laparoscopic Surgery for Infants and Children". He spoke with a great deal of scientific knowledge regarding the effects of laparoscopic surgery on children's physiology along with the complications it accompanies. This also was of interest to me as I have just finished a book chapter on it. Dr. Richard Lee then spoke on "Anesthesia for Bronchoscopy". He gave a detailed description on the history of bronchoscopy as improved by Chevalier Jackson. Later he went on to describe his experience with the TIVA technique using a Propofol and Remifentanyl combination. He also compared it with the controlled ventilation technique that was presented by Drs. Mancuso and Holzman in a pro and con article in the SPA 2001 Summer Newsletter. Dr. Helen Holtby from The Hospital for Sick Children presented the topic "Anesthetic Management for the Patient with Congenital Heart Disease for Non-Cardiac Surgery". She gave examples of the implications with case discussions and anecdotes from her adolescent children's experience regarding their problems. She also discussed the incidence of congenital heart diseases along with the complications of them. She mentioned the risk factors of sudden cardiac death and with the help of some cases went on to describe different problems faced perioperatively. She gave a useful mnemonic HEADS for adolescents with CHD. H=history, E=education/exercise, A=activities/affect, D=Drugs (legal/illegal), S=sleep/sex. The last speaker, Dr. Jason A. Hayes from The Hospital for Sick Children, presented "Duchenne Muscular Dystrophy: Are Vapours a Problem?" He discussed the pathophysiology of DMD, experiences from The Hospital for Sick Children and an MH like reaction in these patients. This reaction leads to rhabdomyolysis and hyperkalemia along with other problems. The incidence of Anesthesia Induced Rhabdomyolysis (AIR) is rare and the outcome with appropriate management is probably not adverse.

PedsPassport:

YOUR GLOBAL MEETING ITINERARY



By Helen V. Lauro, MD, FAAP

2006

February 2-5: Anaheim, California, USA

44th Clinical Conference in Pediatric Anesthesia
Tel: (32)-669-2262, Fax: (323)-660-8983
Information: Herbert Zarco, ACCM, Children's Hospital Los Angeles, 4650 Sunset Blvd, MS #3, Los Angeles, CA 90027
Website: <http://www.pac.chla-accm.org>

February 16-19: Ft. Myers, Florida USA

Sanibel Harbour Resort and Spa
Society for Pediatric Anesthesia (SPA)/
American Academy of Pediatrics (AAP)
2006 Winter Meeting

Tel: (804) 282-9780, Fax: (804) 282-0090
Information: Society for Pediatric Anesthesia
P.O. Box 11086, Richmond, VA 23230-1086
Website: <http://www.pedsanesthesia.org>

May 4-6: Cardiff, Wales, United Kingdom

Association of Paediatric Anaesthetists of Great Britain and Ireland Annual Scientific Meeting
Tel: 02920 744139
Information: Dr. Chris Gildersleve, Department of Anaesthesia, University Hospital of Wales, Heath Park, Cardiff CF-14 4XW
Website: <http://www.apagbi.org.uk>

May 24-27: Boston, Massachusetts, USA

Practical Aspects of Pediatric Anesthesia 2006
Tel: (617)-384-8600, Fax: (617)-384-8686
Information: Harvard Medical School, Department of Continuing Education, P.O.Box 825, Boston, MA 02117-0825
Website: <http://www.cme.hms.harvard.edu>

June 8-11: Pittsburgh, Pennsylvania, USA

The 5th International Symposium
on the Pediatric Airway
Tel: (412)-692-5260, Fax: (412)-692-8658
Information: Dr. Lawrence M. Borland, Division of Pediatric Anesthesiology, Children's Hospital of Pittsburgh, Pittsburgh, PA
Website: <http://homepage.mac.com/blackrosemd/ISPA.htm>

June 25-29: Vancouver, Canada

7th International Symposium on Pediatric Pain
Tel: (604) 681-2153 Fax: (604) 681-1049
Information: Conference Secretariat
International Conferences Services Limited
604-850 West Hastings Street
Vancouver, BC, Canada, V6C 1E1
Email: ispp2006@meet-ics.com

August 18-20: Queenstown, New Zealand

8th Annual Society for Pediatric Anaesthesia in New Zealand and Australia (SPANZA) Scientific Meeting
Tel: +64 3 379 0390, Fax: +64 3 379 0460
Information: Arna Wahl Davies, Event Manager, Conference Innovators, P.O. Box 13 494 Christchurch, New Zealand
Website: <http://www.spanza.org.au>

Footnote:

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

Don't forget to use your SPA Member Resources

SPA Link: www.pedsanesthesia.org/research

Research Funding: Foundation for Anesthesia
Education and Research Update

Application deadlines: February 15 and August 15

- Research Starter Grant (RSG)
- Mentored Research Training Grant (MRTG)
- Research Fellowship Grant (RFG)
- Research in Education Grant (REG)