



Society for Pediatric Anesthesia NEWSLETTER

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Pediatric Anesthesiology 97

300 attend winter meeting in San Antonio, Texas

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

The SPA Winter Meeting was held February 13-16, 1997 at the Hyatt Regency Hill Country Resort in San Antonio, Texas. The program Chairman, Frank McGowan, M.D., put together an excellent program that integrated research and clinical topics. The welcome address for the meeting was given by Mark Rockoff, M.D. the SPA President and Lynda Means, M.D. the Chair of the AAP Section on Anesthesiology.



The first session of the meeting entitled "Controversies of Neonatal Anesthesia", moderated by Frank McGowan, M.D., Children's Hospital of Boston, presented a diverse range of speakers and topics to review not only the historical

perspectives and research in this field, but also relevant treatment practices.

The first speaker M. Douglas Jones, M.D., University of Colorado, gave a lecture entitled "Neonatology Update" covering general principles of neonatal practice and recent advances in treatment.



This was followed by a lecture "Postoperative Apnea" by C. Dean Kurth, M.D., Children's Hospital of Philadelphia, who summarized the incidence and treatment of post-operative apnea in the premature infant and



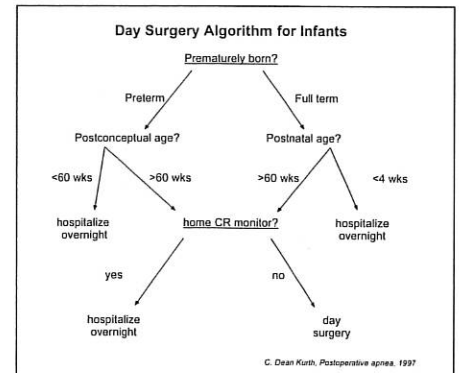
gave an algorithm for which of these infants are candidates for same day surgery. (see box on right)

The next speaker was Kanwal "Sunny" Anand, M.D. of Egleston

Children's Hospital in Atlanta. The lecture entitled "Rationale for Pain Management in Neonates and Infants" discussed the basic research on the perception of pain in the newborn and infant, and why adequate



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President's Message

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

In these trying times for medicine, I am very pleased to report on a number of "good things" that have happened recently. The Society completed its Third Annual Winter Meeting in conjunction with the American Academy of Pediatrics, Section on Anesthesiology. As discussed elsewhere in this Newsletter, approximately 300 individuals participated over the Presidents' Weekend in an outstanding and enjoyable educational course held at the beautiful Hyatt Regency Hill Country Resort in San Antonio, Texas. I would like to extend my personal thanks to the Program Director, Dr. Frank McGowan, and SPA Administrator, Stewart Hinckley, for all their efforts in planning this meeting. I also wish to thank all the SPA members who volunteered their time and considerable talents to producing high quality lectures, workshops and abstract presentations. Clearly, programs of this nature have become an excellent way for anesthesiologists to keep up with developments in our specialty and provide a delightful opportunity to meet old friends and make new ones. Anesthesiologists who care for children are a wonderful group; one of the greatest benefits to me of membership in the SPA has been the opportunity to get to know colleagues from around the country and the world. Membership in the Society is at an all-time high and includes more than 1600 anesthesiologists from nearly 30 nations, plus more than 2000 additional resident members. Plan to attend the Eleventh Annual Meeting on October 17, 1997 in San Diego and the Fourth Winter Meeting from February 12-15, 1998 in Phoenix.

Two days after the conclusion of the meeting in San Antonio, the Accreditation Council for Graduate Medical Education (ACGME) met to discuss the application for accreditation of training programs in pediatric anesthesiology. I am delighted to report that it was



APPROVED! Effective February 18, 1997, pediatric anesthesiology joined the other fields of medicine and surgery that have ACGME-accredited training programs in a pediatric subspecialty. The Residency Review Committee (RRC) for Anesthesiology is now considering how to implement this process. Programs will have to complete an application form to verify that they comply with the approved training requirements; it has not yet been decided whether site-visits will also be necessary. The process is likely to be similar to that already established for the other two RRC-approved subspecialties within Anesthesiology - Critical Care Medicine and Pain Management. The RRC for Anesthesiology will notify the Directors (Chairs) of all Anesthesiology Residency Programs of this action, and I have also requested that they notify the Directors of all Pediatric Anesthesiology Fellowship Programs that are listed in the SPA Fellowship Directory. This booklet was first published in 1994 and an updated version is now available thanks to the efforts of Dr. Steven Hall, SPA Vice-President and Chairman of the Education Committee. Anyone wishing to obtain a copy of the program requirements can get them faxed by calling the ACGME at (312) 245-9174 and requesting document-1042. The second edition of the SPA Fellowship Directory can be obtained by calling the SPA administrative offices at (804) 282-9780.



It is important to emphasize what this accreditation means to the field of pediatric anesthesiology. Programs will now be accredited to offer one-year subspecialty training in pediatric anesthesiology to individuals who have completed their basic residency requirements in Anesthesiology. While the RRC calls all trainees "residents", we generally call these individuals (who have completed an initial residency) "fellows". There are already accredited programs in many pediatric subspecialties, including some within pediatrics (such as neonatology, pediatric cardiology, pediatric hematology/ oncology, etc.), surgery (such as pediatric surgery, pediatric orthopedics, pediatric otolaryngology, etc.), and other areas of medicine (such as pediatric radiology, pediatric neurology, pediatric pathology, etc.). Pediatric anesthesiology now joins these other fields by becoming the 20th accredited pediatric subspecialty! This is an important step, since it will assure that our training programs meet the same level of national scrutiny as those of our colleagues. This is vital if

we expect our trainees to be held in the same esteem as other subspecialists. The timing of this approval is also fortunate, since there is an ongoing national debate to restructure (i.e., reduce) payment for graduate medical education. Now that our programs are accredited by the ACGME, we can take our rightful place in the discussion about this important matter. Programs that are not accredited by the ACGME are likely to have increasing difficulties funding their training positions.

This application process has taken more than two years and has been difficult, time-consuming, and occasionally frustrating. I want to thank all of the many pediatric anesthesiologists from around the country, at children's hospitals and general hospitals, who worked so hard to make this possible. In particular, I would like to acknowledge the efforts of a number of individuals who worked with me throughout much of this process. They include Drs. Mike Badgwell and Lyn Means (from the American Academy of Pediatrics, Section on Anesthesiology), Rae Brown and Steve Hall (from the

ASA's Committee on Pediatric Anesthesia), and Al Hackel, Jack Downes and Peter Rothstein (from the Pediatric Anesthesiology Study Group). Dr. Carden Johnston, one of the directors of the AAP, was an ardent supporter and his efforts on behalf of pediatric anesthesia deserves special thanks. In addition, the leadership from five children's hospitals helped get this project started - Drs. Paul Hickey (Boston), J. David Martino/Richard Hendershot (Columbus), Charles Lockhart (Denver), Marvin Jewell/ Charles Caldwell (Detroit), and Willis McGill (Washington, D.C.). Finally, the wise counsel of Dr. Burt Epstein, Chairman of the RRC for Anesthesiology, was always appreciated. To me, this is an excellent example of how we can make great progress in difficult times by working together on important matters of mutual interest. Undoubtedly there will be many more challenges in the future, but we clearly have demonstrated a determination, commitment and ability to advance the field of pediatric anesthesia. ❖



Editor's Corner

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

I am delighted to say that the SPA/ AAP meeting in San Antonio was a great success. Gail Rasmussen's summary points out that the meeting was very well attended and covered a broad range of topics of interest to practitioners.

The Publications Committee discussed plans for upcoming Newsletters. We plan on publishing three issues per year, which will allow us to report on highlights of the winter and annual meetings. We will continue the article reviews that have been so well received and

invite members to contribute their own reviews of articles of interest. Starting with this issue, we will feature a POINT/ COUNTERPOINT discussion on potentially controversial topics. I want to thank Berklee Robins and Allison Ross for volunteering to address a sticky topic and to be the first contributors to this section. Future topics include "There is no use for regional blocks in pediatric anesthesia" and "There is no such thing as conscious sedation in children". We solicit suggestions and volunteers to participate in these in-print discussions. ❖

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Point / Counterpoint

All females of childbearing age should be tested for pregnancy prior to anesthesia.

By *Berklee Robins, M.D.*
Oregon Health Sciences University
Portland, Oregon

The issue of whether to test female patients of childbearing age prior to anesthesia remains a controversial one. In particular, there is a lack of consensus for pediatric patients. At the SPA/AAP winter meeting, the subject was debated yet again. Why is this question so difficult? There are compelling reasons to test all female patients!

Why do we care if a patient is pregnant? In 1986, Duncan et al¹ published the results of a retrospective chart review. Among the 2500 pregnant patients who underwent incidental surgery while pregnant, they were unable to find any association between general anesthesia and congenital anomalies, compared to match controls. However, there was an increased risk (estimated risk ratio 1.54 - 2.0) of spontaneous abortion. The sample population was probably too small to detect any increase in congenital anomalies. The increased risk of fetal loss is the basis of the decision to postpone elective surgery during pregnancy.

Three recent studies on pregnancy testing have been published. In 1995, Manley et al² published a prospective one year study in which 7 of 2056 (0.3%) patients scheduled for elective ambulatory surgery were found to be pregnant. This population included all female patients of childbearing potential at their metropolitan Chicago hospital. All seven had denied the possibility that they might be pregnant! Surgery was canceled in each case. The authors concluded that their test led to an "alteration in perioperative management." The cost (based on a price of \$9.80 per test) was nearly \$2900 per pregnancy detected. The cost benefit ratio is unclear. It was subsequently suggested³ that patients be tested

as close as possible to the actual day of surgery to avoid missing any pregnancies.

Since 1 out of 10 adolescents becomes pregnant annually⁴, Azzam et al retrospectively examined the frequency of adolescent pregnancy in their St. Louis, Missouri, metropolitan hospital.⁵ None of their elective surgical patients under the age of 15 were pregnant, but that 2.4% over 15 were! Anesthetic management was altered based on the positive results. They had not obtained specific consent since it was their hospital's policy to test uniformly, and the general hospital consent covered medically indicated tests. The authors acknowledge that informing the patients and/or guardians of the test may be necessary for ethical reasons, given the likely impact of a positive result. They conclude that females over 15 years of age should be tested.

This paper generated a flurry of letters from anesthesiologists both in favor⁶ and opposed⁷ to such testing. In an editorial, Duncan and Pope⁸ examined the ethics of Azzam's policy, and specifically take issue with universal testing without specific informed consent. They argue that to test without consent would be a violation of patient autonomy. They dismiss any hospital policy that does not include informed consent, along with a plan for dealing with a positive result, as paternalistic and unacceptable. This is the basis for many hospitals' policy of informed universal testing.

Cartabuke⁹ agreed with Azzam that because the results of the test altered medical care based on the additional information obtained, testing was appropriate. He also agreed with Duncan and Pope's assertion that specific consent be informed, and plans for dealing with positive results be in place.

Malvia et al⁷ in Ann Arbor, Michigan, found that of 444 adolescent patients



undergoing 525 procedures, eight stated that they might be pregnant. In contrast to Azzam, all patients had a negative pregnancy test. They concluded that in their specific patient population, a privately obtained history by a female nurse was reasonable grounds for deciding who needed to be tested. However, it is unknown if their results can be applied to other populations.

The arguments against universal pregnancy testing include the cost of the test, the legal and ethical issues regarding testing, and the dilemma about what to do with positive results.

In comparison to the cost of most surgical procedures, the cost of the test is essentially insignificant (only a few dollars plus hospital administrative charges), and the results are important for subsequent anesthetic management. For example, a procedure might be canceled, changed to a "local" or performed with a regional anesthetic. Should surgery proceed, nitrous oxide might be omitted, and benzodiazepines avoided, to minimize potential risks to the fetus.

Additionally, left uterine displacement might be indicated in some cases. The use of x-ray or fluoroscopic equipment might be dramatically reduced or avoided. At the recent SPA/AAP winter

(Continued on page 7)

Point / Counterpoint

All female adolescents should not be tested for pregnancy prior to anesthesia

By Allison Kinder Ross, M.D.
Duke University Medical Center
Durham, NC

In these days of cost-conscious medicine many preoperative laboratory tests once considered routine have undergone a thorough *review* to determine their cost-effectiveness. The issue under debate is that of pregnancy testing prior to surgery and anesthesia in the adolescent. Approximately 24-35% of institutions presently employ routine preoperative HCG testing for all women of child-bearing potential.¹ This most likely indicates that the remaining institutions use the preoperative history to guide the decision of whether or not to order a pregnancy test on an individual basis.

The reasons to perform pregnancy testing are not only obvious, but they are valid.

Although the risks of teratogenicity from modern anesthetics remain unknown in the human fetus, there is certainly evidence that spontaneous abortion may be an increased risk when a woman has surgery early in pregnancy.² This pregnancy testing should be done only when history or suspicion indicates an increased probability that a patient is pregnant. The best way to do this is to improve our preoperative assessment of postmenarchal patients who present for surgery.

In the study of Malviya et al³ preoperative assessment provided an accurate guide for clinicians based on a thorough history. The preoperative assessment included a history performed by a female in the absence of the patient's family members when possible. The assessment included questions regarding last menstrual period, contraception, sexual activity and possibility of pregnancy and also teaching regarding the risks of anesthesia and surgery in a preg-

nant female. Their data on the 444 patients demonstrated that a thorough history was in agreement with pregnancy test results, therefore concluding that mandatory pregnancy testing for all patients is not necessary. These reasons included cost demographic variables, and medicolegal considerations.

The primary reason that is most often cited for not performing routine preoperative laboratories or X-rays is cost.⁴ Although a single pregnancy test involves a hospital charge of \$21-\$30, Manley et al reported a 0.3% positive pregnancy rate (7 positives in 2056 tested) which resulted in an actual cost of \$2,879 per pregnancy discovered.^{3,5,6} It is difficult, however, to determine the true cost of routine pregnancy testing as well as the costs that may be associated with nontesting.

Costs are not only limited to the price of the pregnancy test itself. A healthy adolescent, for example, may present on the day of surgery without an anesthetic evaluation. If all of these patients underwent pregnancy testing, this may lead to costly operating room delays. A thorough history, however, should yield enough information to make an informed decision regarding whether a patient actually requires a pregnancy test. The preoperative holding area also offers the best timing for the most accurate testing rather than several days in advance are a clinic visit.

As pediatric anesthesiologists we must consider the data that is presently available and apply it to our individual populations of adolescents. The study by Manley et al⁶ investigated women of all ages which included two patients scheduled to undergo fertility procedures. It could be postulated that these patients were actively pursuing pregnancy unlike most adolescents of whom only 5% had planned pregnancies.⁷ Furthermore, the



incidence of pregnancy in a metropolitan Chicago or St. Louis hospital⁵⁻⁶ may be quite different from the incidence in communities with very low teenage pregnancy rates.

We must also consider the medicolegal considerations of a patient who refuses pregnancy testing. If a patient refuses mandatory testing and then undergoes surgery, it is the physicians who take the risk and assume that she is not pregnant and then must answer why they allowed her to undergo surgery when all others must be tested. Additionally, there is the problem with routine testing that is performed, but where the results are not assessed preoperatively. This occurs between 30% and 60% of all lab abnormalities and poses a greater liability risk than not performing the test at all.⁸

There remains an even greater ethical and legal discussion on the topics of patient confidentiality and implications in the adolescent, patient autonomy and testing without consent, and responsibility of the physician to the patient in the case of positive pregnancy results. These issues may exist whether testing is mandatory or guided by clinical suspicion.

(Continued on page 7)

Controversies In CPR

By Charles L. Schleien, M.D.
University of Miami School of Medicine
Jackson Memorial Hospital

In 1992, the American Heart Association changed its guidelines increasing by tenfold the dose of epinephrine to be used during ventricular fibrillation or asystolic cardiac arrest. This was based on improved aortic diastolic pressure and end-tidal CO₂ measurements with these higher doses in both children and adults. Three subsequent large clinical studies did not reveal any increase in survival with higher doses of epinephrine. High dose epinephrine may actually lead to increased morbidity due to a higher frequency of arrhythmias and tachycardia following resuscitation or the possibility of coronary vasospasm.

However, current resuscitation practice continues to include high dose epinephrine in the event that two "regular" doses (0.01mg per kilogram) of epinephrine have no beneficial effect.

Sodium bicarbonate continues to be used during CPR only as a second line agent because of its possible adverse effects, which include hypernatremia,, hyperosmolarity and intracellular acidosis particularly when ventilation is sub-optimal. Sodium bicarbonate is still indicated however for cardiac arrest with pre-existing metabolic acidosis or secondary to hypercalemia, hypermagnesemia and when the arrest has lasted 5 to 10 minutes

Use of calcium salts during CPR also remains controversial, based on the fact that increased intracellular calcium mediates many of the adverse effects following ischemia. However, when either total or ionized hypocalcemia is observed, calcium is indicated. Ionized hypocalcemia is common after major blood transfusion following either operative or surgical bleeding. In addition, calcium is still used as an antidote for calcium channel blocker overdose and following hyperkalemic arrest.

The observation that pre-ischemia hyperglycemia worsens neurologic outcome is well known. Hyperglycemia occurs after cardiac arrest due to the stress response associated with the release of endogenous catecholamines and the administration of epinephrine. Whether this post-ischemic rise in serum glucose worsens outcome remains controversial. Frequent monitoring of serum glucose is important, withholding dextrose from iv fluids if glucose is in the normal or high range. Premature, malnourished, very ill patients and those with liver failure all are known to be predisposed to hypoglycemia.

Following cardiac arrest, hypoglycemia is particularly damaging to the brain with the release of excitatory amino acids. In those cases, dextrose should be given rapidly. ❖

Pediatric Anesthesia Fellowship Programs

The 1996-97 Pediatric Fellowship Program directory has been printed and an initial distribution to program directors has been completed. Members are entitled to 1 complimentary copy as a benefit of membership. Additional copies can be obtained for \$15.00 per copy, plus shipping. To receive your free copy of the Pediatric Fellowship Program Directory, call or fax the Society's Headquarters at 804 / 282-9780, Fax: 804 / 282-0090.

Since the printing of the publication, we have been contacted by the following institutions who have fellowship programs:

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Houghton-Mifflin publishing company is giving books to children's hospitals; how many books they give depends on how many e-mails they receive from people around the world. For every 25 e-mails they receive, they will give 1 book. All you have to do is e-mail: share@hmco.com and type a message saying: "children's hospitals book drive program". Hope you can spare a few seconds ... let your friends know. So far, they've only received 3,400 messages. Last year they got 23,000. Wouldn't it be great if we could kick it up to 30,000.

(Robins continued from page 4)

meeting, an informal poll indicated that although many of us do not test, nearly all of us would cancel an elective procedure if we knew our patient was pregnant. In most adolescent populations, we do not know how reliable the history is. Adolescents may not believe they could be pregnant, not know they are pregnant, or simply not be truthful and forthcoming.

There is strong evidence to support pregnancy testing if the history is uncertain. The dilemma is how to go about this. Most anesthesiologists will probably agree that patients and their families should be informed about pregnancy testing, even if done routinely. Patients and their families then have the right to refuse (i.e., truly informed consent). Those who refuse could then be allowed to proceed at their own risk or seek care elsewhere. If surgeons advise families that this will be done preoperatively, there should be little interruption in the OR schedule on the morning of surgery.

The issue of what to do with positive results is more troublesome, since legal statutes vary by state. A positive test will usually result in cancellation of an elective procedure, and the patient will be told of her pregnancy. What if the patient asks the physician not to disclose the information to the parents? By having previously informed all the parties (patient and parents), there should be no surprises about what will be done.

Alternatively, a hospital may adopt a policy, if legal in its state, that allows for informing only the patient of the plan to perform a pregnancy test, and disclose the results only to her. If the minor refuses to take the pregnancy test (unlikely if the parents aren't informed), then the procedure should probably be postponed. If she agrees, and the test is negative, surgery can proceed. If it is positive, elective surgery can be canceled and the patient's wishes (with respect to parental notification) honored in accordance with hospital policy and local laws.

An adolescent's pregnancy status is often unknown or uncertain. Pregnancy tests should be performed routinely and uniformly, because the results have such

important implications for anesthetic management. We should not omit a medical test that is inexpensive, convenient, and accurate, just because we are uncomfortable about disclosing results that a patient or family might not want to hear. Our first concern must always be what is best for our patient.

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(Ross continued from page 5)

In summary, preoperative pregnancy testing should not be performed on all patients, but be considered on an individual basis. There is no firm evidence that with an appropriate preoperative evaluation in the majority of patients that mandatory testing is critical. As clinicians who must make the decision of whether to either continue testing on history versus to test all adolescents, we must weigh demographic and sociologic factors to increase the probability of appropriate testing.

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Literature Reviews

The following literature reviews have been selected from recent issues of international journals concerning pediatric and surgical studies that may be of interest to the pediatric anesthesiologist.

Efficacy and Safety of Intravenous Midazolam and Ketamine as Sedation for Therapeutic and Diagnostic Procedures in Children.

Parker, Robert I. *Pediatrics* 1997; Vol 99: 427-431

Reviewed by **Thomas J. Mancuso, M.D.**
Egleston Children's Hospital Atlanta, GA

The authors used a combination of intravenous midazolam and ketamine to provide sedation for invasive or lengthy diagnostic procedures. According to the authors, sedation was carried out by the Hematology-Oncology and Critical Care medicine staff and was done in accordance with the guidelines published by the American of Pediatrics Guidelines for the Monitoring and Management of Pediatric Patients during and after Sedation for Diagnostic and Therapeutic Procedures published in *Pediatrics* in 1989. Sedation was provided for 68 children undergoing a total of 350 procedures such as lumbar punctures, bone marrow aspirations, radiation therapy sessions and imaging studies. Reported complications and incidence were SpO₂ less than 85% (1.1%), SpO₂ = 88%-94% during LP (32.4%), rash (11.9%), agitation (2.9%), sleep disturbance (2.9%) and vomiting (2.9%). The authors state that aspiration was not suspected to have happened in association with any of the episodes of vomiting. In the discussion, the authors state that the combination of IV midazolam and ketamine as they have used it provides safe, effective sedation for procedures in children and is superior to DPT. They attribute the safety and effectiveness of the sedation regimen to (1) the requirement that a second individual trained in airway management be present to, monitor the child and (2) the use of pulse oximetry.

Comments: I am glad that the sedation was done using AAP Guidelines for the Monitoring and Management of Pediatric Patients during and after Sedation for Diagnostic and Therapeutic Procedures. These guidelines include NPO times, monitoring requirements and specify different levels of sedation (i.e., conscious and deep). These guidelines should be an integral part of any institution's sedation policy. The authors report that the level of sedation ranged from "deep sedation" to "conscious sedation" but do not comment regarding the frequency that the children were "deeply sedated". In the AAP guidelines, deep sedation is defined as "a medically controlled state of depressed consciousness OR unconsciousness" and .. "includes the inability to maintain a patent airway independently". In the AAP guidelines, the following remark appears "the practitioner should be prepared to increase the level of vigilance corresponding to that necessary for deep sedation". Deeply sedated children therefore may indeed be unconscious. Since the trip from conscious to deep sedation is often a short and rapid one, those sedating children must always be prepared to increase the intensity of monitoring as the guidelines outline. The authors do not comment upon this matter. They do say that as more experience was gained, fewer children fell into the "deep sedation" category.

Outcome of Out-of-Hospital Cardiac or Respiratory Arrest in Children.

Schindler MB, Bohn D, Cox PN, et al *New England Journal of Medicine* 335:1473-1479, 1996.

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

Though they may not be directly involved in a pediatric intensive care unit setting, pediatric anesthesiologists are frequently called upon to aid in the resuscitation of a child either in the emergency department (ED) or immediately upon presentation to the operating room. Historically, these patients have fared poorly, with high mortality and neuro-

logic morbidity rates. These authors at the Hospital for Sick Children in Toronto sought to determine the contemporary rate of survival among children after an out-of-hospital arrest, to identify predictors of survival in this population and to propose clinical guidelines for limiting the duration of CPR in such children.

A prospective review was undertaken of 101 children (with a median age of two years), all of whom presented with apnea and in 80 cases also with no palpable pulse. Causes for the arrest were diverse, but the most common were SIDS, trauma, sepsis and near-drowning. Overall, initial resuscitation was successful in 64 patients (63%); but only 15 (15%) of them survived to discharge. Of note, while 9 (43%) of the 21 children with an isolated respiratory arrest survived to hospital discharge, only 6 (8%) of those with an initial cardiac arrest did so. Moreover, all six had moderate to severe neurologic sequelae at one year follow-up. Those in such a vegetative state could be expected to need upwards of \$90,000 (in 1994 dollars) of annual medical care.

Predictors of survival to hospital discharge included a median interval of less than 10 minutes between arrest and hospital arrival; a palpable pulse on presentation; a median duration of resuscitation in the ED of less than 6 minutes; and fewer doses of epinephrine in the ED.

The authors concluded that except in the face of severe hypothermia (less than 30 degrees C) or recurrent but not persistent arrest, resuscitation for a out-of-hospital cardiac arrest should be limited to 20 minutes and two doses of epinephrine.

Epidural Analgesia, Intrapartum Fever, and Neonatal Sepsis Evaluation.

Lieberman E, Lang JM, Frigoletto F, et al, *Pediatrics* 99: 415-19, 1997.

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

Just a quick review of a recent article that our pediatric or neonatal colleagues may be talking about. Very briefly this is a study looking at maternal tem-

Literature Reviews continued ...

perature in a group of women who had been randomized to either active trial of labor or "usual care". Epidural analgesia was provided to women on request. The data on maternal temperature were abstracted from maternal medical record and from the newborn record regarding outcome. Only women with singleton pregnancies, and infants in the cephalic presentation were included. Patients with pre-existing maternal fever, infection, and diabetes were excluded. 1657 women were included in the study of whom 1047 (63%) received epidurals. Women receiving an epidural were more likely to have slightly bigger infants (106gm), and less likely to have received the active management of labor protocol. The rate of fever (temperature $>100.4^{\circ}$) in the patients without epidurals was 1% whereas the group without epidurals was 15%. The incidence of fever in patients without epidurals remained low regardless of the length of labor, while the incidence of fever increased from 7% in patients with labor <6 hours to 36% in patients with labor >18 hours. Greater than 40% of patients in the epidural group had labor >12 hours (8% of mothers not receiving an epidural had labors >12 hours)

Thirty four percent of infants in the epidural group received a sepsis work-up compared to 10% of the infants born to mothers who did not receive an epidural. The former group of infants were four times more likely to be treated with antibiotics because of suspicion of sepsis. Infants born to mothers who received epidurals during pregnancy, but did not develop a fever, also had a higher rate for sepsis work-up and treatment. There appears to be no good reason for this finding.

The authors conclude that the use of epidural analgesia is associated with a higher rate of maternal fever (temp $>100.4^{\circ}$). They also state that the criteria used for neonatal sepsis evaluations should be re-examined and measures

taken to limit maternal elevation in temperature (for example, decrease room temperature).

Parents, Management of Children's Pain Following 'Minor' Surgery.

Finley GA, McGrath PJ, Forward SP, et al, *Pain* 64: 83-87 1996.

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

This study investigates the incidence of pain after day surgery as assessed by the children's parents and their attitude and treatment of that pain. The authors studied 189 children 2-12 years of age, undergoing a variety of "minor" surgery (including myringotomies, tonsillectomies, dental restorations, circumcision etc.) Parents were educated with regards to using the VAS (visual analog scale) and asked to keep a pain diary, recording their perception of their child's pain during five time periods during the day. In addition, they were asked to record which medications were used. The results are interesting because they show that while parents DO recognize that their children are in pain, many are still reluctant to administer adequate pain medication. Overall, of children judged to be in pain $>60\%$ were three or fewer doses of an analgesic medication on days 2 and 3 after their operation. More than 25% of children who had had tonsillectomy, dental extraction or circumcision still had significant (VAS >30 mm) more than 48 hours after the procedure. Many parents felt that medications should only be given as a last resort, 50% of parents thought that children could become addicted to opioids used for pain treatment, 31% believed that children who took pain medicine regularly might learn to use drugs to solve other problems!!

This study shows that we must continue to try and educate parents with regards to the appropriate use of analgesics.

Differences in hormonal responses to preoperative emotional stress between preschool and school children.

Aono J, et al, *Acta Anaesthesiol Scand* 1997; 41 :229-231.

Reviewed by **Mehernoor F. Watcha, M.D.**

Southwestern Medical Center at Dallas

This study compared the concentrations of catecholamines and cortisols in anxious and calm preschoolers and school-going children who were undergoing general anesthesia for surgery. Blood samples of adrenaline, noradrenaline and cortisol were collected immediately after induction of anesthesia. Anxious preschool boys (3-5 years old) had higher levels of cortisol, adrenaline, and noradrenaline than calm boys of the same age. Anxious school boys (6-12 years old) had higher cortisol concentrations compared to their calm counterparts. The authors concluded that hormonal responses to preoperative emotional stress between preschool boys differs from preschool boys.

Comments: This study has demonstrated differences in endocrine responses during emotional stress in preschoolers and school age children. This may indicate that preschoolers require a higher sedative dose on a mg/kg basis than older children.

High-frequency oscillatory ventilation combined with intermittent mandatory ventilation in critically ill neonates and infants.

Murthy BVS, Petros AJ, *Acta Anaesthesiol Scand* 1996; 40:679-683.

Reviewed by **Mehernoor F. Watcha, M.D.**

Southwestern Medical Center at Dallas

The authors evaluated high-frequency oscillatory ventilation combined with intermittent mandatory ventilation (HFOV - IMV) as a rescue mode in neonates who received maximal conventional

(Continued on page10)

Literature Reviews continued ...

(Continued from page 9)

ventilatory support for severe respiratory failure. Oxygen requirements decreased, gas exchange improved and hemodynamic stability was established when these infants were ventilated with the Drager Babylog 8000 SW 4.0.

Comments: Unlike high-frequency positive pressure ventilation and high-frequency jet ventilation, exhalation during high-frequency oscillatory ventilation is an active phenomenon. This reduces the potential for gas trapping, elevated mean airway and intrapulmonary pressures and carbon dioxide retention. However, terminal lung units may undergo atelectasis with high-frequency oscillatory ventilation. A low rate of intermittent mandatory ventilation permits sustained inflation to prevent ventilation perfusion mismatch.

Hemodynamic effects of tracheal and intravenous adrenaline in infants with congenital heart anomalies.

Jonmarker C, et al, *Acta Anaesthesiol Scand* 1996; 40:927-931.

Reviewed by **Mehernoor F. Watcha, M.D.**

Southwestern Medical Center at Dallas

In a randomized cross-over study, the authors examined the hemodynamic effect of a low dose of intravenous adrenaline (0.3 ug/kg) and a ten times higher tracheal dose (3 ug/kg). Tracheal administration of 3 ug/kg of adrenaline increased mean arterial blood pressure in infants with congenital cardiac anomalies, but the increase occurred later and was less consistent than after 0.3 ug/kg given I.V.

Comments: Tracheal administration of adrenaline has been recommended if I.V. access cannot be accomplished during CPR. Cardiovascular responses after this route of administration seem to be less consistent than after the I.V. route. The slow and varied response to tracheal installation indicates that large adrenaline doses may be required if this route is chosen. Possibly intra-

osseous administration is a better alternative to the tracheal route if vascular access cannot be established.

Parents and Procedures: A Randomized Controlled Trial.

Bauchner H, et al, *Pediatrics* 1996; 98:861-867.

Reviewed by **Mehernoor F. Watcha, M.D.**

Southwestern Medical Center at Dallas

In this randomized controlled trial, the effect of parental presence during the performance of painful procedures was assessed. Four hundred thirty-one parents were randomized to one of 3 groups - (A) the parental intervention, (B) parent not present, and (C) parent present but no parental interventions. Parental interventions were ineffective in reducing the pain of routine procedures, but did not negatively affect the performance of the procedure or increase clinician anxiety. Parents who were present were less anxious than those who were absent.

Comments: Many parents have indicated that they want to be present when their children undergo procedures. This study challenges the traditional belief that parental presence reduces our ability to successfully complete procedures. Similar claims were raised earlier for parental presence during induction. As pediatric anesthesiologists, we should encourage our colleagues to permit parents presence as far as feasible. Those who are accustomed to inducing anesthesia in the presence of family members will find little new in this study, but it is encouraging to see that our colleagues without anesthesiology training have begun to accept this.

American Academy of Pediatrics Committee on Drugs. Unapproved uses of approved drugs: the physician, the package insert, and the Food and Drug Administration: subject review. *Pediatrics* 1996; 98:143-145.
Reviewed by **Mehernoor F. Watcha, M.D.**

Southwestern Medical Center at Dallas

This statement on the off-label use of drugs in children clarifies the legal and informational status of the package insert. In an accompanying Comment by Cote et al (*Pediatrics* 1996; 98: 1112) expand on the issues that restrict drug research in children and describe the initiatives that have improved pharmacological research of new drugs in pediatric patients.

Comments: While the Committee on Drugs of the American Academy of Pediatrics and other organizations interested in the welfare of children have done great work in improving this situation, it is perhaps a little premature to consider that "children no longer will be therapeutic orphans." Many drugs are still not "approved" for use in children. Some managed care organizations have claimed off-label drug use is experimental and refused to pay for such drugs. To quote from Statement of the Committee on Drugs "Unapproved use does not imply an improper use and certainly does not imply illegal use." This statement clarifies the role of the physician as the one responsible for the decision to prescribe drugs in these situations. ❖

Visit the SPA Website at:

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

SPA / FAER Research Starter Grant: A Personal View ...

*By Zeev N. Kain, M.D.
Yale School of Medicine
New Haven, CT*

The period immediately after completion of fellowship training is a time of stress and extraordinary preoccupations. It is a time when a new faculty member is learning the task of a teacher while attempting to create a research program.

The tremendous advantage of the SPA/FAER award is the funding it provided without the requirement for an elaborated application process. This funding allowed me to begin my research, accumulate preliminary data, and later enter into the formal major peer reviewed application process.

Currently I am in my fourth year as a faculty member and have been awarded funding from the Arthur Vining Davis Foundations and the National Institutes for Health. I am grateful to the SPA for their support and I strongly recommend further aspiring academicians to pursue SPA/FAER support for themselves. ❖

*By Ronald S. Litman, D.O
Strong Memorial Hospital
Rochester, NY*

As a junior faculty member, the FAER award sponsored by the Society for Pediatric Anesthesia was crucial in the development of my academic career for the following reasons:

- The application process familiarized me with the grant-writing process and will be beneficial in the future as I apply for additional funding.
- The experiments I was able to complete as a result of the award will provide a basis for future funding.
- The grant enhanced my standing within my own department and helped pay for the additional non-clinical time to complete my research.
- The grant enhanced my reputation within the pediatric anesthesia community (presentations at the SPA meeting and the newsletters such as this) and the national anesthesia community (the reviewers of my grant are well-known national figures in anesthesiology and have since come to know my work).
- The grant helped pay for me to travel to present my research at a national meeting. ❖

SPA / FAER Research Starter Grant

The Foundation for Anesthesia Education and Research (FAER) offers exciting opportunities for young anesthesiologists. The Society for Pediatric Anesthesia supports two research starter grants through FAER. Each grant provides \$25,000 for one year as seed money to start a project related to pediatric anesthesia. The investigator may then seek support for continuation of the project.

The sponsoring institution must agree to match the amount awarded. The deadline for applications is July 31, 1997. For application information for the SPA / FAER Research Starter Grant, contact:

Alan D. Sessler, M.D.
Executive Director
Foundation for Anesthesia Education and Research
Charlton Building
Mayo Clinic
200 First Street, S.W.
Rochester, Minnesota 55905
(507) 266-6866

Pediatric Anesthesiology 1997 continued...

(Continued from cover)

analgesia, particularly in the postoperative period, may improve outcome by conferring physiologic advantages to the infant. Constance Houck, M.D. of Children's Hospital, Boston, presented a lecture entitled "Neonatal Pain Management" discussing the treatment modalities, including continuous epidural infusions used to manage neonates after surgery or stressful procedures.



The last speaker (but not least) for this session was J. Michael Badgwell, M.D., University of Texas,



Lubbock, whose talk "Controversies in Neonatal Anesthesia: Anesthesia Concerns" reviewed anesthesia induction and maintenance for the neonate and for specific congenital defects such as a diaphragmatic hernia or a tracheoesophageal fistula.

The next two sessions were devoted to Oral Abstract Presentations with a total of eight presentations in each group. The first session was moderated by Drs. William Greeley, Children's Hospital of Philadelphia, and Stephen Rimar, Yale University. The abstracts included several studies on different types of monitoring; including EEG, somatosensory evoked potentials and neuromonitoring in cardiac surgery. The second group was moderated by Drs. Howard Gutstein, C.S. Mott Children's Hospital, and Myron Yaster, Johns Hopkins Hospital. This session included many interesting clinical studies including the use of transnasal butorphanol, the Yale preoperative anxiety scale and the bronchoscopic examination of changes in tracheal lumen dimensions with head position. The oral abstract presentations overall were well prepared and presented with relevant discussion by the audience and moderators.

The last session of the day involved the Parallel Workshops which were very well attended. The workshops included a number of new sessions such as "The computer and Internet use" and "Women looking at Power", and the breakout sessions on **the fiberoptic workshop** and **advanced regional blocks** which have been favorites during previous meetings. These sessions were also repeated in the morning session of the next day so that a course participant could attend at least two of the sessions.

The first morning session of the second day of the meeting included the Poster Discussion of the 36 posters on display. The posters covered a wide range of topics including pharmacologic regimens for analgesia, e.g. Hydromorphone PCA, use of methadone to wean patients from iatrogenic induced opioid dependency and transmucosal fentanyl for preoperative sedation and analgesia. Newer techniques included two abstracts

on the use of the LMA, various regimens for dosing caudals and epidurals and the use of a new ventilator (Ohmeda 7900). There were also case reports of infants with cardiac arrest and pulmonary hemorrhage and clinical considerations in specific clinical entities such as arthrogyrosis multiplex congenita, gastroschisis repairs, sickle cell disease and asthma.

In the afternoon, the plenary sessions resumed following the SPA/AAP Award Presentations moderated by Patty Davidson, M.D., Columbus Children's Hospital.

Charlene Graves, M.D. whose talk was entitled "Safety Advocacy at the AAP", presented a concise review of the child safety initiatives that have been developed and sponsored by the AAP, including bicycle helmets, child car seats, hand gun and lawnmower safety. The following list includes the names and addresses of contact people and organizations to obtain information.

1. The AAP Section on Injury and Poison Prevention. Newsletter provides information on a wide variety of issues pertinent to child safety. Contact Sections Manager at the American Academy of Pediatrics, 141 Northwest Point Blvd., Elk Grove Village, IL 60007. 800/433-9016, Ext. 7880.
2. National Safe Kids Campaign. Local chapters in many states. Tracks child safety-related legislation on both state and national basis. Another newsletter that is most informative. Contact at 1301 Pennsylvania Ave., NW, Suite 1000, Washington, DC 20004-1707. 202/662-0600.
3. Safe Ride News. Great source of current information on all issues related to child traffic safety. Quarterly newsletter for \$25 annual individual subscription rate. Contact Safe Ride News Publications, 117 E. Louisa St., Box 290, Seattle, WA 98102. 206/328-1424.
4. Early Childhood Health Link. Focuses on health and safety issues pertinent to early childhood education. Published by the Pennsylvania Chapter of the AAP, Early Childhood Education Linkage System/Healthy Child Care PA. Rosemont Business Campus, 919 Conestoga Road, Building 2, Suite 307, Rosemont, PA 19010-1353. 610/520-9125. <http://www.voicenet.com>.

Steffie Woolhandler, M.D. of the Cambridge Hospital and Harvard Medical School gave an informative lecture called "Corporate Medicine or National Health Insurance." The impact of corporate medicine on the healthcare system of this country continues to confound many of us and the statistics that Dr. Woolhandler presented were quite thought provoking. Her review of the National Health Insurance system used





in Canada introduced an alternate perspective for the reform of our healthcare system. To learn more on this topic, members can contact Dr. Woolhandler's organization, Physicians for a National Health Program, 332 S. Michigan Avenue, Suite, 500, Chicago, IL 60604-4302.

The Hill Country Smokehouse Dinner was on Saturday Night in the hotel and was as Dr. McGowan promised "a real cowboy treat for both adults and kids".

The final day of the meeting was a half day potpourri. The day started with the Grand Rounds presentation moderated



by James Steven, M.D., the Children's Hospital of Philadelphia, and John Mulroy, M.D., Primary Children's Hospital. These moderators used the audience survey to review the issues in the case presented of a 14 year old with thoracolumbar scoliosis for a posterior spinal fusion. A debate ensued about transfusing this patient and about the lowest hematocrit that would be acceptable. The consensus of the attendees seemed to be that a hematocrit less than

fifteen may be the limit because lower hematocrit would provide inadequate oxygen delivery to the myocardium. Next, Dr. Margaret Kenna, a pediatric Otolaryngologist from the Children's Hospital, Boston, presented a lecture entitled "Complications of Pediatric Intubation". With excellent photographic examples, she pointed out that both early and late injuries to the airway can occur in response to laryngoscopy and intubation. In addition, in our young population, gastro-esophageal reflux can significantly worsen the potential damage to the airway. (see table of Dr. Kenna below)

M. Pre

INTUBATION INJURIES

	IMMEDIATE	EARLY	LATE
Dental	Tooth fracture or avulsion Damage to gums/alveolus	Edema gums Loose teeth	Same as early
Nasal	Edema Epistaxis Turbinate injury	Same as Immediate	Same as early plus Sinusitis, otitis
Nasopharynx	Epistaxis Submucosal ETT placement	Edema	Same as early Epistaxis
Hypopharynx	Laceration	Uncommon	Uncommon
Larynx	Edema Laceration/avulsion vocal cords Arytenoid dislocation	Edema Stenosis Granulation tissue Vocal cord dysfunction	Same as early
Subglottis	Edema Edema Laceration	Same as early Stenosis Granulation tissue	
Esophagus/tracheobronchial tree	Laceration Edema Post-obstructive pulmonary edema	F, edema trachea Granulation tissue trachea Tracheoesophageal fistula Stenosis	Same as early

(Continued on page 14)

Awards

The SPA/AAP Awards Presentation was moderated by Patty Davidson, M.D., Columbus Children's Hospital.

The Robert M. Smith Award of the AAP section of Anesthesiology, for lifelong contribution and meritorious service to pediatric anesthesiology was presented by J. Michael Badgewell, M.D. to **Charles Ronald Stevens, M.D.**



The SPA Committee on Research Award (from the FAER ASA Committee) was presented by Dr. David Nichols to **Robert Wilder, M.D. Ph.D.** for his work on local anesthetic tachyphylaxis at the spinal site.

AAP Resident Research Award (The John B. Downes Award) was given to the top three resident presentations at the meeting:

First Place: **Andrea Ibrahim, M.D.** of Children's Hospital of Boston for the presentation entitled "Cytokine-Induced Alterations in Intracellular Calcium Handling and Sensitivity."



Second Place: **Erin Foley, M.D.**

of Children's Hospital of Boston for the presentation entitled "Intraoperative EEG Monitoring in Children with Moya-Moya Syndrome."



Third Place : **Gregory Juarez, M.D.** of UCLA for the presentation

entitled "A Prospective, Unmasked Study Comparing Tidal Breathing and Vital Capacity Rapid Inhalation Induction Techniques Using Sevoflurane in Pediatric Patients."

SPA Young Investigator Award

First Place: **Lee Boehringer, M.D.** of Indiana University for the abstract "Transnasal Butorphanol is Effective for Postoperative Pain in Children Undergoing Myringotomy."



Second Place: **Douglas Ririe, M.D.** of Children's Hospital, Boston for the abstract "Hemifacial Macrosomia: Anatomic Prediction of Airway Difficulty."

Win

Pediatric Anesthesiology 1997 continued...

(Continued from page 13)

The next session was "Advances in Pediatrics/ Anesthesia and moderated by Timothy Martin, M.D., Arkansas Children's Hospital. There were two lectures on asthma;

"Asthma-What's New" by Pamela Zeitlin, M.D., Johns Hopkins Hospital, and "Asthma-Im-

PLICATIONS FOR ANESTHESIA" by Russell Sauder, M.D., Columbus Children's Hospital. Dr. Zeitlin presented an excellent review of

the latest information on humoral mediators in asthma and specifically targeted treatment options. Dr. Sauder discussed the anesthetic implications and management of increased airway irritability and bronchospasm and provided a logical and clear approach to the anesthetic management of these children. These lectures

were followed by updates on myopathies and their anesthetic implications. "Myopathies-What's New" by John Sladky, M.D., Emory University, outlined the recently identified of gene loci for the more common myopathies in childhood. Dr. Navil Sethna, Children's Hospital, Boston, spoke on "Myopathies-Implications for Anesthesia" focusing on preoperative assessment, common intraoperative complications, and risk stratification for these children. The topic of upper respiratory infections in children was the focus for the next

two speakers. "Colds in Kids-Implications for Anesthesia" by Ira Cohen, M.D., Children's National Medical Center, considered airway hyper reactivity and pathophysiologic changes of recent or ongoing URIs. David Nichols, MD, Johns Hopkins Hospital, spoke about "Developing a Multi-Institutional Pediatric Anesthesia Clinical Study of URIs". He discussed the efforts of the SPA Research Committee to set up a national project to study the increased morbidity associated with a URI and develop guidelines for practitioners for when it is best to cancel an elective surgical procedure.

During the final session, "Future Concerns of Pediatric Anesthesiologists", SPA President, Mark Rockoff, M.D. and Lynda Means, M.D. Chair of the AAP Section on Anesthesiology presented their views on the medical and economic challenges facing pediatric anesthesiologists.



Workshops & Posters



Pediatric Anesthesia - Where can I go from here?



Computer/Internet Use



Airway Equipment & Techniques



Women Looking at Power



Common Regional Blocks



Lightwands



Setting Up a Pain Service



Airway Equipment & Techniques



Billing for Pediatric Pain Services



Managing Your Ventilator



Advanced Regional Blocks

Controversies in Cardio-Pulmonary Resuscitation Intraosseous (IO) Infusion

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

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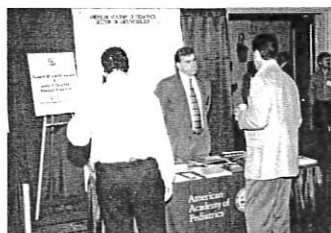
New Members

- Aziz, Adel M., MD,
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- Baggett, Michael E., MD,
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- Baust, Joanne, MD,
San Antonio, TX
- Benoit, Sharon A., DO,
Columbus, OH
- Board, A. John, MD,
Herston Brisbane, Australia
- Boehringer, Leigh A., MD,
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- Burnett, Kathleen C., CRNA,
Barrington, RI
- Byers, David J., MD,
Austin, TX
- Charles, Francois C., MD,
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- Chhibber, Ashwani K., MD,
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- Chinachoti, Thitima, MD,
Bangkok, Thailand
- Chung, Chan Jong, MD,
Pusan, Korea
- Clayton, Eugene N., MD,
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- Dragos, Huhulea B., MD,
Flushing, NY
- Dujon, Teresita F., MD,
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- Enjetti, Pamela C., MD,
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- Evans, Larry W., DO,
Georgetown, TX
- Goodarzi, Mashallah, MD,
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- Hausdorff, Mark A., MD,
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- Hughes, Daniel F., MD,
Tucson, AZ
- Iskandar, Susman, MD,
Jakarta, Indonesia
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- Juarez, Gregory C., MD,
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Society for Pediatric Anesthesia Annual Meeting

October 17, 1997
Hyatt Regency
San Diego, California

7:00 - 7:45am	Registration and Continental Breakfast
7:45 - 8:00am	Introductory Comments and Welcome - Drs. Mark Rockoff and Joe Tobin
8:00 - 10:00am	Pediatric Pain - What's new in basic sciences?
	Moderator: Anne M. Lynn, M.D.
8:00am	<i>Developmental Physiology of Pain Pathways</i> Professor Maria Fitzgerald
8:50am	<i>Advances in Pain Research</i> Chuck Berde, M.D., Ph.D.
9:40am	<i>Questions and Discussion</i>
10:00 - 10:30am	Coffee Break
10:30 - Noon	Pediatric Pain - Clinical Advances and Pearls
	Moderator: Allison K. Ross, M.D.
10:30am	<i>A Clinician's View of Advances in Knowledge of Pain Mechanisms: Implications for Pain Management</i> Professor Michael Cousins, A.M.
11:05am	<i>Cancer Pain Consultation in Pediatric Anesthesia</i> Steven J. Weisman, M.D.
11:40am	<i>Questions and Discussion</i>
12:00 - 1:30pm	Lunch
1:30 - 2:45pm	Practical Update: Glucose Homeostasis
	Moderator: David J. Steward, M.B.
1:30pm	<i>Perioperative Glucose Homeostasis - Physiological Implications for Clinical Practice</i> Prof A. Aynsley-Green
2:00pm	<i>Pro: Glucose administration</i> Lynne G. Maxwell, M.D.
2:15pm	<i>Con: Glucose administration</i> George A. Gregory, M.D.
2:30pm	<i>Questions and Discussion</i>
2:45 - 3:15pm	Coffee Break
3:15 - 3:50pm	Effective Advocacy for Children - the Whys and Hows of Political Activism
	Bob Hertzka, M.D.
3:50 - 4:30pm	The Exotic Practice of Anesthesia
	Pat Morris, DVM, San Diego Zoo
4:30 - 5:00pm	Business Meeting
7:00 - 10:00pm	Reception: Aerospace Museum

Registration Materials will be mailed to all members in June.

Continuing Medical Education Needs Assessment

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

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

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

2. Do you like workshops at the winter meeting?

Very Much - - - **Not at All**
1 2 3 4 5

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

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

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

Very Much - - - **Not at All**
1 2 3 4 5

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

Very Much - - - **Not at All**
1 2 3 4 5

5. Additional comments and suggestions: _____

Mail / Fax to:

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