

PRESIDENT'S ADDRESS

By *Aubrey Maze, M.B.*

After a very successful annual meeting in San Francisco, both academically and socially, it is the hope of the Executive Committee to see this success continue in the future. The Society would like to thank Gregory B. Hammer, M.D., San Francisco, California, for coordinating the postmeeting buffet at the Museum of Modern Art. In order to be successful, SPA must continue to act as conduit for the anesthesiologist who provides anesthesia for the pediatric patients in the community as well as in the academic environment.

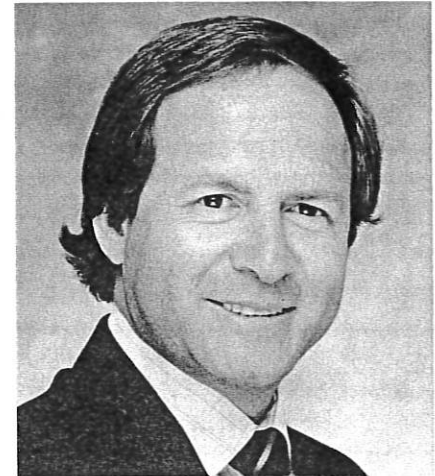
This was the goal of the late Milton H. Alper, M.D., Boston, Massachusetts, who was intimately involved with the formation of the Society. Milt was an inspiration to all of us who had the pleasure of being in contact with him. The meeting in San Francisco was therefore dedicated to his memory.

The growth of the Society has been steady,

and we hope that we can encourage new graduates from residency programs to join SPA. Please let the SPA office know of the names and addresses of any prospective members.

In New Orleans in October, 1992, we will be electing new members to the Executive Committee. Robert K. Crone, M.D., Seattle, Washington, will be coordinating this endeavor. Any SPA member interested in running for office should send me his or her name via the Society's office, and I will contact you in the near future. This Society is not closed, and we encourage new faces to run for leadership roles.

At present, we are finalizing the program for the SPA Annual Meeting on October 16, 1992. This will be held in conjunction with the Section on Anesthesia of the American Academy of Pediatrics and our European colleagues. The program in the morning will be related to pharmacology, and we hope to get a broad spectrum of ideas from both the American and European experts. The afternoon section will



Aubrey Maze, M.B.

address controversial issues.

This newsletter is the first of what we hope is many to be edited by Peter J. Davis, M.D., Pittsburgh, Pennsylvania, who succeeds Randall C. Wetzel, M.D., Baltimore, Maryland. Peter is at the University of Pittsburgh, and if you have any ideas or points you feel need to be "aired," please contact the editor. □

ANNUAL MEETING SUMMARY

The Fifth Annual Meeting of the Society for Pediatric Anesthesia (SPA) convened on October 25, 1991 at the San Francisco Hilton in San Francisco, California. The meeting drew an enthusiastic gathering of more than 400 people.

The first session, chaired by **Susan C. Nicolson, M.D.** of Children's Hospital of Philadelphia, Pennsylvania, was devoted entirely to the treatment of congenital heart disease. The topic was especially timely given recent outcome data suggesting adverse consequences from many palliative procedures and the advent of surgical procedures allowing definitive correction in neonates and young infants.

The afternoon session was comprised of three separate presentations on unlabeled uses of drugs, the incidence of complications in pediatric regional anesthesia and the need for subspecialization in pediatric anesthesia.



Susan C. Nicolson, M.D.

Morning Session

Treatment of Congenital Heart Disease - Present and Future

Left Ventricular Function in the Neonate: Evaluation of the Pressure-Volume Plane

David Teitel, M.D. from the University of California at San Francisco, a recognized expert in developmental cardiovascular physiology, presented the results of his efforts to derive and study meaningful indexes of myocardial contractility in the fetus and newborn infant. He concisely summarized the conflicting evidence on the presence of increased or underdeveloped myocardial contractile mechanisms in the newborn heart. He also noted the methodological limitations of much of this prior work, including use of isolated tissues or

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

Editor: Peter J. Davis, M.D., Children's Hospital of Pittsburgh, Pittsburgh, PA 15213-2583.

Dues Information

Membership dues for the Society for Pediatric Anesthesia are \$100 per fiscal year for Active members and \$25 for Resident members. The costs of the SPA Annual Meeting (guest speaker stipends, meeting place expenses and food) are underwritten in part by membership dues and by generous contributions from corporate donations and sponsors. For more information, interested physicians should write to:

THE SOCIETY FOR
PEDIATRIC ANESTHESIA
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Park Ridge, IL 60068-3189

Editor's Note

Included in this newsletter is a section entitled "Comments from the Readership." Hopefully, this section will serve as a forum for members of the Society to express their views and concerns with respect to articles and comments that have appeared in the literature and SPA Newsletters, as well as controversies that have been generated at the annual meetings.

I hope that members will take the time and contribute to this section.

— Dr. Peter J. Davis

IN MEMORIAM

On September 13, 1991, Milton H. Alper, M.D., Boston, Massachusetts, died after a long and courageous struggle with cancer. He had been Chairman of the Department of Anesthesia at Children's Hospital in Boston from July 1, 1980 until he stepped down from his administrative responsibilities on March 31, 1991.

During his tenure at Children's Hospital, he greatly expanded the Department of Anesthesia to one of the largest pediatric anesthesia programs in the world with nearly 30 on staff and 20 fellows. In addition, he was instrumental in helping establish the Society for Pediatric

Hospital and a Research Fellowship in pharmacology at Harvard Medical School.

He then joined the faculty of the Department of Anesthesia at the Peter Bent Brigham Hospital and, in 1969, was appointed Anesthesiologist-in-Chief at the Boston Hospital for Women. For the next 11 years, he helped establish one of the largest and most successful programs in academic obstetrical anesthesia in the nation. (It is worth noting that this took place during an era when remarkable changes were occurring in the entire concept of pain relief during childbirth.)

In 1980, Dr. Alper became Anesthesiologist-in-Chief at Children's Hospital in Boston and Professor of Anesthesia at Harvard Medical School.

During his career, Dr. Alper served with distinction on a number of committees at the Boston Hospital for Women and the Children's Hospital. In addition, he was involved with many activities at Harvard Medical School and was Secretary of the Executive Committee of the Department of Anesthesia at Harvard for many years.

Furthermore, he served in a leadership role in numerous national organizations, including the Society for Obstetric Anesthesia and Perinatology, the American Society of Anesthesiologists, the Association of University Anesthesiologists, and the Society of Academic Anesthesia Chairmen.

Dr. Alper authored many publications in the field of anesthesiology and, throughout his distinguished career, he served as a visiting professor at many hospitals and universities.

A dedicated physician, Dr. Alper also earned a reputation as a supportive and inspiring teacher, skillful administrator and much-loved colleague. Surviving him are his wife, Rhoda, three children, three grandchildren, a brother, a sister and his mother.

To recognize his many contributions to the field of anesthesia, his colleagues, trainees and friends have established the Milton H. Alper Fund. This will provide support for a visiting lectureship at Children's Hospital in Boston. Contributions to this fund should be made payable to the Milton H. Alper Fund and sent to the Development Office, Children's Hospital, 300 Longwood Avenue, Boston, Massachusetts 02115. □



Milton H. Alper, M.D.

Anesthesia (SPA) and, for many years, he served as a member of the SPA Board of Directors.

A 1950 cum laude graduate of Harvard College and 1954 cum laude graduate of Harvard Medical School, Dr. Alper completed an internship and a year of residency in the Department of Surgery at the Peter Bent Brigham Hospital in Boston. He then served two years as the Chief of Surgical Services at a U.S. Air Force Hospital in Japan. In 1959, he returned to Boston where he completed an anesthesia residency at the Peter Bent Brigham

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function indexes that were sensitive to preload, afterload or heart rate.

Dr. Teitel also discussed use of a 6 Fr left ventricular conductance catheter in newborn lambs to obtain left ventricular volume measurements and thereby generate LV end-systolic pressure-volume relationships (ESPVRs). The results, obtained by altering



David Teitel, M.D.

loading conditions and the contractile state, demonstrated that ESPVRs are reliable and sensitive to changes in the contractile state and loading conditions. They also confirmed prior results showing limited contractile reserve in the newborn heart, most likely due to a high basal β -adrenergic state. The validation and use of load-independent indexes to quantitate systolic performance have become increasingly important for both research and better assessment of therapeutic interventions. Conductance catheters have been used to produce ESPVRs in humans, and these methods are anticipated to move further into the clinical arena in the near future.

Treatment of Congenital Heart Disease in the '90s and Beyond

James E. Lock, M.D., a pediatric cardiologist at Children's Hospital, Boston, discussed the growth of both noninvasive diagnostic techniques and interventional cardiology in the management of congenital heart disease. He noted that some of the "simpler" interventional techniques, including pulmonary and aortic annuloplasty and dilation of coarctation, have become routine in many centers. He predicted that interventional methods will be used in 25 percent of congenital heart disease cases and account for 60 percent of all pediatric cardiac catheterizations.

Investigational transcatheter closure of atrial septal defects and patent ductus arteriosus has met with high success rates and essentially no complications. Children or adults with paradoxical emboli from patent foramina of ovale are another group likely to benefit from transcatheter closure.

Dr. Lock noted that a learning curve was necessary for the successful placement of these devices, which are expected to be clinically available within a year or two. Work with similar "clamshell" umbrella devices to close ventricular septal defects (especially the problematic multiple type) has been more difficult but has allowed closure of defects that were large or located in the muscular interventricular septum.

Interventional techniques also have facilitated operative approaches in patients with complex anatomy. For example, "rehabilitation" of hypoplastic pulmonary arteries using a right ventricle to pulmonary artery conduit to improve blood flow, balloon dilatation of the small vessel(s) and subsequent complete surgical repair has improved therapy for children with tetralogy of Fallot and small pulmonary arteries. In patients at high risk for the Fontan operation, allowing a small residual right-to-



James E. Lock, M.D.

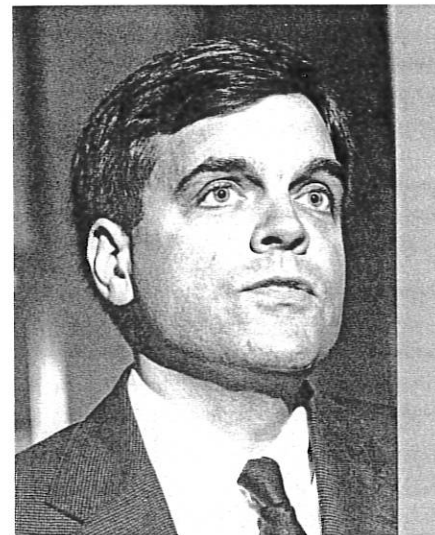
left atrial shunt to preserve cardiac output has proved to be beneficial in the early postoperative period. The ability of the pulmonary circuit to function fully can be tested later by balloon occlusion of this atrial opening in the catheterization laboratory; if tolerated, closure devices (in suitable patients) can be inserted or surgical closure can be performed with more information and less risk.

Methods of localization of catheters and ablation of dysrhythmia foci also are expected

to continue to progress rapidly, making ablation the primary mode of therapy for most patients.

Staring at the Operative Field

William J. Greeley, M.D. from Duke University Medical Center, Durham, North Carolina, discussed neurologic events sur-



William J. Greeley, M.D.

rounding the use of cardiopulmonary bypass to repair congenital heart defects. He noted the numeric and physiologic inadequacies of relevant brain protection studies, despite the use of more than 30 years of cardiopulmonary bypass (CPB) and deep hypothermic circulatory arrest, and the particular lack of information in infants and children. These deficiencies have become more apparent as the cardiac mortality rates of these operations have declined, allowing a shift in focus to the improvement of neuropsychiatric outcome.

In contrast to myocardial protection, brain protection has received scant attention. Neurologic injury from CPB may be due to hypoperfusion, inflammatory/immune responses activated by CPB, or emboli. Citing his own work and that of others, Dr. Greeley demonstrated that autoregulation of cerebral blood flow (CBF) was preserved during CPB. As a result, CBF is maintained across a wide range of pressures (> 20 - 30 mmHg) and flow rates (> 1.6 L/min/m²). Important determinants of CBF during CPB include temperature, anesthetic depth, cerebral O₂ consumption and PaCO₂.

Evidence would suggest that the "safest" flow rate is about 30 mL/kg/min, but it is unknown if such low-flow bypass is better than total circulatory arrest. However, during

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deep hypothermia (<22° C) and deep hypothermic circulatory arrest, Dr. Greeley's studies have demonstrated lost autoregulation such that CBF becomes dependent upon pump flow and pressure generation; this impairment may persist for at least several hours after CPB. It may be advisable, therefore, to keep flow rates and perfusion pressure higher after deep hypothermia with or without circulatory arrest. Cooling techniques that result in body temperature decreasing more rapidly than 1° C/min may be associated with poorer neurodevelopmental outcome.

Dr. Greeley also suggested that we now have the ability to begin to answer questions such as whether hypothermia is truly protective, by what mechanism(s) cerebral O₂ requirements are being met during different types of CPB, and which interventions (anesthetics, calcium channel blockers, "cerebroplegia") are truly protective. Sensitive measures of brain biochemistry, brain metabolism and neuropsychiatric outcome are available and must be applied to patients undergoing various types of CPB.

Reality Testing and the Congenital Heart Surgeon

Ross M. Ungerleider, M.D., Dr. Greeley's pediatric surgical colleague at Duke University Medical Center, discussed "how do we really know what we know, and then how



Ross M. Ungerleider, M.D.

do we use it?" A major problem, he stated, was the tremendous explosion of both knowledge and the number of journals in which to find it, and the difficulty in critically evaluating this information and determining its validity under varying conditions and in various hands.

As an example, he summarized some of the

myriad investigations concerning cardioplegia, where there is rampant disagreement even as to the susceptibility of the neonatal heart to ischemic damage, the beneficial/harmful effects of cardioplegia, the need for hypothermia and the advantages/disadvantages of various preservative substances and regimens. As another example, he cited the experience of the Duke group to critically assess the quality of repair of congenital heart disease in the operating room using echocardiography.

Noting that anesthesiologists would not be surprised that surgeons are "often overly enthusiastic about the quality of their repairs," he went on to show that there was a 15-percent incidence of technically inadequate repairs that would otherwise have gone undetected or perhaps have been attributed to inadequate myocardial preservation or an inability of the heart to accommodate to acute alterations in physiology.

This last point is also an important one, as difficulty in weaning from bypass may be caused by the creation of new physiologic demands — the first stage of the Norwood operation and the Fontan procedure for complex single ventricles are but two examples. One challenge for the future, he concluded, was to critically evaluate what we do, isolate the important variables, and thus begin to discern the "reality" of what was necessary.

Perioperative Management of Congenital Heart Disease

David L. Wessel, M.D. from the Cardiac Intensive Care Unit at Children's Hospital, Boston, also noted that the inadequacy and long-term morbidity rate associated with many palliative procedures, improved monitoring, anesthetic and CPB techniques, and new surgical approaches have all combined to increase the feasibility and desirability of attempting primary repair of complex congenital cardiac defects in neonates and very young infants.

Despite the technical challenges, advantages include the newborn's tolerance to hypoxia, nervous system plasticity and the enhancement of normal growth and development of the heart, pulmonary blood vessels and lung parenchyma. Early repair may prevent the effects of long-term hypoxia, pulmonary hypoplasia and vascular abnormalities as well as the progressive myocardial dysfunction and dysrhythmias associated with palliation or delayed correction.

Challenges in caring for these patients postoperatively can include assisting their adjustment to new physiologic circumstances; treat-

ing enhanced pulmonary vasoreactivity, excessive pulmonary blood flow or contractile dysfunction; and detecting residual or newly created shunts or obstructive lesions. The Boston group uses aggressive invasive monitoring techniques, including small pulmonary artery catheters that may be placed directly at the time of surgery to assess filling pressures, cardiac output and mixed venous oxygen saturations and to detect residual shunts.

To control catecholamine output and pul-



David L. Wessel, M.D.

monary resistance in many of these patients, they have found it helpful to continue fentanyl infusions and neuromuscular blockade for the first 12-24 hours. Dr. Wessel presented evidence that control of pulmonary hypertension can be assisted by increasing the pH to 7.50-7.55, an effect determined primarily by pH and not by PaCO₂; many of these infants may be resistant to increasing oxygen tensions. Conversely, excessive pulmonary blood flow may be controlled by adjusting pCO₂, airway pressures, O₂ and hematocrit.

Phosphodiesterase inhibitors such as amrinone have been useful to improve cardiac output, reduce afterload and prevent tachycardia. Dr. Wessel also pointed out the benefits to be obtained from maintaining right-to-left shunt at the atrial level in infants with postoperative right ventricular dysfunction and volume overload (e.g., tetralogy), ventricular dysfunction and pulmonary hypertension (e.g., truncus and anomalous veins), and where the repair can compromise systemic ventricular output (e.g., Fontan operation).

The resulting cyanosis is well-tolerated by the neonate and young infant, with the important benefit of preserving systemic ventricular output and tissue perfusion. In extreme cases

with a likelihood of survival, ventricular-assist devices and extracorporeal circulatory support may allow a crucial period of recovery.

Cost and access to these high-tech resources remain unresolved issues that will become increasingly pressing during the next decade.

Afternoon Session

"Unlabeled" Drug Use in Pediatric Anesthesia

Use of unlabeled drugs (drugs not specifically approved for use in pediatric patients or unlabeled indications) was discussed by **Dennis M. Fisher, M.D.** from the University of California, San Francisco, and **D. Ryan Cook, M.D.** from Children's Hospital of Pittsburgh. Both speakers pointed out the lack of testing regulations for drug use in pediatric patients. Table 1 illustrates the age inconsistency observed with unlabeled drugs that are frequently used in pediatric anesthesia.

Dr. Fisher focused on the mechanisms of getting a drug approved by the Federal Drug Administration (FDA), i.e., IND application, phase 1, 2 and 3 studies; creating a package insert; and understanding the concept that unlabeled drugs can be used in appropriate situations. He stressed that the use of drugs not specifically approved for use in children is not prevented or restricted as long as a physician



Dennis M. Fisher, M.D.

feels that use is appropriate. If drug use was restricted to only those indications listed on the package insert, then the practice of anesthesia for infants and children would be severely limited.

Use of an unlabeled drug may constitute appropriate and rational practice; nonetheless, the question of physician liability remains. Dr.

Table 1 — Labeled ("Approved") Indications

Drug	Older Children (13-18 yr)	Younger Children (2-12 yr)	Infants (1-23 mo)	Neonates (1-30 d)
Alfentanil	Yes	No	No	No
Amrinone	No	No	No	No
Atracurium	Yes	Yes	Yes	No
Dolbutamine	No	No	No	No
Dopamine	No	No	No	No
Doxacurium	Yes	Yes	No	No
Etomidate	Yes	No	No	No
Fentanyl	Yes	Yes	No	No
Midazolam	No	No	No	No
Pipecuronium	Yes	Yes	Yes	No
Propofol	No	No	No	No
Sufentanil	Yes	Yes	Yes	No
Vecuronium	Yes	Yes	Yes	No

Fisher noted in a recent article in the *New England Journal of Medicine* (1989; 320:281-288) that David Kessler, M.D., head of the FDA, has stated that unlabeled drug use may place the physician at risk for malpractice. Dr. Fisher maintains that if physicians follow the standard of practice established by the medical community, then malpractice would be unlikely.

Dr. Cook's insights into the issue of



D. Ryan Cook, M.D.

unlabeled drug use were directed to both the physician and pharmaceutical company. He feels that infants and small children should not be therapeutic orphans. Medically accepted indications should not be the norm for drug use in pediatric patients, but rather, appropriately labeled uses should be the standard. Because unlabeled drugs may be potentially hazardous

to children and because the use of such drugs may be difficult to defend in a malpractice suit, the FDA should require pharmaceutical manufacturers to provide scientific evidence regarding the safety and efficacy of drugs in infants and children.

Because it is the clinician who assumes the risk for the use of an unlabeled drug, at present there is no incentive for drug companies to further investigate unlabeled drugs for pediatric patients. Until this changes, physicians caring for children will face the issue of orphan drugs in the practice of pediatric anesthesia.

Complications in Pediatric Regional Anesthesia

Elliott J. Krane, M.D. from Children's Hospital and Medical Center, Seattle, and **Charles B. Berde, M.D.** of Children's Hospital, Boston, discussed the experience of adverse events following regional anesthesia. These speakers presented a preliminary review of a retrospective and prospective analysis from 12 institutions on the risks of pediatric regional anesthesia.

Dr. Krane's presentation focused on the incidence of respiratory depression after spinal axis opioids. Citing papers from the literature, Dr. Krane noted that the reported incidence has been as high as 8 percent. Studies examining ET_{CO}₂, recovery rate and CO₂ response curves have demonstrated that children's ET_{CO}₂ and respiratory rate may not change with spinal axis opioids, but that the CO₂ response curve may be significantly depressed. Dr. Krane noted that respiratory depression was frequently indicated by some-

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Elliott J. Krane, M.D.

nolence or shallow breathing but not by decreased respiratory rates.

He emphasized that there were certain risk factors associated with opioid respiratory depression, namely: 1) infants younger than 12 months; 2) the use of hydrophilic opioids (e.g., morphine and hydromorphone); 3) epidural infusions of morphine exceeding 8-10 µg/kg/hr; 4) the combined use of morphine and local anesthetic agents for comparatively minor surgery on sacral dermatomes; and 5) concurrent administration of systemic opioids.

Dr. Berde discussed the complication of seizures after regional anesthetic techniques with local anesthetics. He noted that in infants and children, single lumbar or caudal epidural injections of bupivacaine in doses from 2-3 mg/kg result in peak plasma concentrations generally less than 2 µg/mL. The pharmacoki-



Charles B. Berde, M.D.

netics of local anesthetics undergo developmental changes compared with adults. The elimination half-life and clearance (normalized per kilogram) are significantly delayed in newborns. These kinetic variables approach adult values by 3-6 months of life.

Dr. Berde also noted that in adults, prolonged continuous infusions of bupivacaine (30 mg/hr, i.e., 0.4-0.5 µg/kg/hr) via both epidural and plexus routes did not produce clinical toxicity, nor did plasma concentrations exceed 2-3 µg/mL. In children, lumbar epidural infusion of bupivacaine 0.25 percent at a rate of 0.08 mL/kg/hr (0.2 mg/kg/hr) was associated with excellent analgesia and plasma concentrations less than 1 µg/mL. In addition, Dr. Berde noted that neuroaxial administration of bupivacaine 0.0625 percent with fentanyl 1 µg/mL (mean rate 0.28 mg/kg/hr = 0.44 mL/kg/hr) or plain bupivacaine 0.125 percent (mean rate 0.68 mg/kg/hr = 0.55 mL/kg/hr) generated plasma concentrations averaging 1 µg/mL and 2 µg/mL, respectively, while interpleural administration of bupivacaine at rates of up to 1-1.5 mg/kg/hr resulted in plasma concentrations from 3-7 µg/mL.

In this retrospective/prospective, multi-institutional study, 10 patients ranging in age from newborn to 8 years (median 2 years) sustained convulsions during the postoperative period. Forty percent of the convulsions occurred with patients receiving interpleural infusions, even though interpleural infusions accounted for less than 6 percent of all regional analgesic administrations. Bupivacaine infusion rates for patients who had convulsions range from 0.4 mg/kg/hr to more than 2.0 mg/kg/hr. Convulsions have not been reported for bupivacaine infusion rates ≤ 0.3 mg/kg/hr.

Almost half the patients with seizures had coexisting or confounding risk factors, e.g., fever and a history of seizures, hypercapnea, hyponatremia, hypocalcemia, and hypomagnesemia. Plasma bupivacaine concentrations obtained in six of the 10 patients ranged from 2-6 µg/mL, and in more than half the patients with convulsions, infusion rates were increased in the hours before the convulsion in response to patient behavior that was interpreted as either pain or agitation.

In summary, both Drs. Berde and Krane noted that the need for further research regarding patient monitoring for drug safety, efficacy and dosing guidelines is warranted.

Panel: Subspecialty Certification in Pediatric Anesthesia

The need for certification in pediatric anesthesia was addressed by a panel moderated by

Alvin Hackel, M.D. of Stanford University Hospital, Palo Alto, California. Pediatric subspecialization has significant practical and financial implications and, if instituted, would significantly affect the present-day practice of pediatric anesthesia. Panel members **Frederic A. Berry, M.D.** of the University of Virginia Medical Center, Charlottesville, and **Alan J. Schwartz, M.D.**, Hahnemann University Hospital, Philadelphia, Pennsylvania, addressed the issue. Although all the speakers and participants agreed there is a need to provide quality care in pediatric anesthesia, there was no consensus on how it could be achieved.

Dr. Berry contended that the best way to achieve subspecialization would be by regionalizing health care. He cited a report on the perioperative mortality rate in England for



Alvin Hackel, M.D.

1989 (Campling EA, Devlin HB, Lunn JN: The report of the National Confidential Enquiry into Perioperative Deaths 1989. NCEPOD, 35-43 Lincoln's Inn Fields, London WC2A 3PN) in which 75 percent of the noncardiac deaths occurred in children younger than 3 years of age, and a 1990 editorial in *Lancet* (1990; 1:1498-1500), which recommended the transfer of patients younger than 3 years of age to regional centers, thereby ensuring against the undertaking of occasional pediatric practice by surgeons and anesthesiologists. Dr. Berry opined that in the United States, subspecialization could best be achieved through regionalization of pediatric care, and he noted that regionalization has already occurred in some areas of medicine, e.g., obstetrics. Obstetrical care has now resulted in the development of three levels of hospital care where the intensity level is defined by the

hospital's staff and the available hospital specialists and resources.

Dr. Schwartz, however, felt that subspecialization of pediatrics must come through a clearly defined curriculum in which physicians are trained. Once the pediatric anesthesiology curriculum is defined, it would serve as the basis in which trainees could be evaluated for certification. Although accreditation of training programs would provide a standard for training, individual accreditation would be necessary to ensure that the standards of the training program are being met by the practitioners.

As a member of the audience, George Gregory, M.D. from the University of California at San Francisco, pointed out a number of practical reasons why now is not the time for



Frederic A. Berry, M.D.

pediatric subspecialization. Presently, most anesthesia for pediatric patients is provided in nonpediatric centers by anesthesiologists who have no specialized training in pediatrics.

Many of these anesthesiologists, however, do provide excellent medical care for most of the pediatric patients. Secondly, the number of eligible candidates to be subspecialized would not be sufficient to fill the demand for pediatric anesthesia. Consequently, there still would be a significant number of children anesthetized by nonpediatric anesthesiologists. Also, surgeons and hospitals would continue to admit and operate on pediatric patients, even without Board-certified pediatric anesthesiologists, thus placing these anesthesiologists at increased risk for medical malpractice.

Dr. Gregory also emphasized that before one addresses the need for subspecialization, one must be certain that a problem exists.

Otherwise, there will be no incentive on the part of surgeons and hospital administrators to change their practices. Surgeons and administrators will point out, as they now do, that millions of surgical procedures are done each year on pediatric patients in nonpediatric centers without problems. They will further point out that there is no evidence that more complications occur when relatively healthy pediatric patients are anesthetized by nonpediatric than by pediatric anesthesiologists.

Thus, in order for our specialty to reach a consensus on which procedures and patients require the expertise of a pediatric center (i.e., centers where pediatric personnel and technology exist), quality assessment data with respect to morbidity and mortality of pediatric patients undergoing anesthesia and surgery in hospitals with and without pediatric expertise must be undertaken. Only if a difference in morbidity, mortality or cost can be demonstrated will there be a need for regionalization of pediatric care and subspecialty certification.

Dr. Hackel summarized the issue, noting the perception in the public and health care communities that the mortality and morbidity associated with anesthesia in infants and children are less when anesthesia is provided by anesthesiologists with special training and experience in pediatric anesthesia. Within anesthesiology, there is a group that believes our specialty has become so broad that we are headed inexorably for subspecialization.

Data substantiating the need for subspe-



Alan J. Schwartz, M.D.

cialization in pediatric anesthesia are scarce, although there is ample evidence that the most difficult pediatric anesthesia cases are performed in pediatric centers by anesthesiologists whose practices are limited to infants and children. There is an intuitive belief, partially substantiated by anecdotal malpractice experience, that catastrophic events in the administration of anesthesia to infants and children, particularly in community hospitals, could be avoided by subspecialization.

Smith, Motoyama and others have published information concerning the most frequent anesthesia problems in infants and chil-

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Discussing the treatment of congenital heart disease in pediatric anesthesiology were panel members, from left: Drs. David Wessel, James E. Lock, Ross M. Ungerleider, William J. Greeley and David Teitel.

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dren as compared with adult patients, demonstrating the increased risk of the likelihood of these events occurring in the pediatric age group. Keehan, in a recent article in the *Journal of Clinical Anesthesia* (1991; 3:433-437) demonstrated a difference in the rate of cardiac arrest in children younger than 1 year of age in a single hospital setting when treated by pediatric anesthesiologists or nonpediatric anesthesiologists.

In a recent issue of *Pediatric News*, Bergman and Rivara, in an article concerning the formation of new pediatric subspecialties, stated that "a subspecialty must possess a unique scientific body of knowledge and/or require technical skills far beyond the scope of the generalist." Within the confines of those requirements, a case can be made for subspecialization in pediatric anesthesia, particularly if pediatric anesthesia is defined as the care of infants and critically ill children at increased risk for the administration of anesthesia.

Before the issue of subspecialization can be addressed adequately, there is basic work to be done. As noted previously, a subspecialty definition of pediatric anesthesia is required.

"a subspecialty must possess a unique scientific body of knowledge and/or require technical skills far beyond the scope of the generalist."

An educational plan for acquiring the body of knowledge and technical skills is needed. Pediatric anesthesia training centers capable of carrying out the educational plan would have to be identified.

A parallel effort is necessary to study the impact of the subspecialization on manpower

issues in anesthesiology. Depending on the definition of pediatric anesthesia, there could be a significant, and possibly unmanageable, impact on the community practice of anesthesiology and surgery. Does the definition encompass all patients 17 years or younger, or is it limited to critically ill infants and children usually cared for in pediatric centers?

Presuming the goal of subspecialization would be to improve the anesthesia care of infants and children and reduce catastrophic occurrences from anesthesia in the same age group, a strong case can be made for a concomitant effort to improve the hospital environment of pediatric patients requiring anesthesia.

The present discussion concerning subspecialization is a positive step in improving the anesthesia care of infants and children. The answer to pediatric subspecialization will require further evaluation of the requirements for subspecialization, the development of guidelines for the hospital pediatric anesthesia environment, and an enhancement of the teaching of anesthesia management of infants and children in anesthesiology residency programs. □

COMMENTS FROM THE READERSHIP

Gentlemen:

I was interested in the article appearing in the SPA Newsletter (July, 1991) concerning the use of lignocaine in ameliorating pain associated with injections of propofol.

I have been adding 60 milligrams of 2 percent Xylocaine® to a 20 ml syringe of propofol with near excellent results as concerns pain on injection. This dose of lignocaine coupled with the anesthetic property of propofol appears to be very safe.

Besides the addition of local anesthetics to the injectate, vein size and rapidity of injection should be considered.

Donald R. Salmon, M.D.
Las Vegas, Nevada

LITERATURE REVIEW

Effect of lignocaine on pain during injection of propofol

Stafford MA, Hull CJ and Wagstaff A. *Brit J Anaesth* 66:406, 1991.

Optimal dose of lignocaine for preventing pain on injection of propofol

Gehan G, Karoubi P, Quinet F, LeRoy A, Rathat C and Pourriat JL. *Brit J Anaesth* 66: 324-326, 1991.

These two studies attempted to quantify the minimum effective dose of lidocaine necessary to prevent pain upon injection. Both studies mixed lidocaine with propofol in a syringe prior to injection. The minimum dose was 0.1 mg/kg in the study by Gehan et al.; minimum concentration of 0.025 percent (0.5

percent lidocaine 1 ml in 19 ml propofol) was effective in the study by Stafford et al. In practical terms, 1 ml of lidocaine (0.5-2 percent) can be added to propofol, thus minimizing pain on injection without concern of administering toxic doses of local anesthetic. - RMS

Review was done by Robert M. Spear, M.D. and is reprinted from the SPA Newsletter; 4(2):10, 1991.

JOINT SPA/APSA MEETING

Colorado Springs, Colorado

May 15-16, 1992

It is with great pleasure that we announce the tentative program for the first joint meeting of the Society for Pediatric Anesthesia (SPA) and the American Pediatric Surgical Association (APSA), which will be held at The Broadmoor Hotel, Colorado Springs, Colorado on May 15 and 16, 1992.

The purpose of this meeting is to provide a forum in which pediatric anesthesiologists and surgeons can discuss areas of

mutual interest, debate controversial subjects and explore new concepts facing those of us charged with the care of children in the operating room and intensive care unit.

Further information regarding this meeting may be obtained by calling Karin Flynn at (818) 915-5884. Continuing medical education credits will be available from the University of Colorado.

Tentative Program

Friday, May 15, 1992

1:00-3:00 p.m.

CONTROVERSIES AND DILEMMAS (Section A)

Moderators:

Surgeon: Richard G. Azizkhan, M.D.
University of North Carolina
Chapel Hill, North Carolina

Anesthesiologist: Aubrey Maze, M.B.
Valley Anesthesia Associates
Phoenix, Arizona

1. The premature infant with an inguinal hernia: Does it make a difference when surgery is scheduled?

Surgeon: Joseph Zarella, M.D.
Phoenix Children's Hospital
Phoenix, Arizona

Anesthesiologist: Dr. Maze

2. Caudal/epidural regional anesthesia

Anesthesiologist: Myron Yaster, M.D.
The Johns Hopkins Hospital
Baltimore, Maryland

3. PCA: Pediatric or parent controlled anesthesia

Anesthesiologist: David E. Cohen, M.D.
Children's Hospital of Philadelphia
Philadelphia, Pennsylvania

PANEL DISCUSSION

3:00-5:00 p.m.

WHAT'S NEW? (Section B)

Moderators:

Surgeon: Charles J.H. Stolar, M.D.
Babies Hospital
Columbia Presbyterian Medical Center
New York, New York

Anesthesiologist: Charles H. Lockhart, M.D.
Children's Hospital
Denver, Colorado

1. Intraoperative transfusion: Controlled hemodilution and cell savers

Surgeon: Thomas E. Lobe, M.D.
Lebonheur Children's Hospital
Memphis, Tennessee

Anesthesiologist: Jerrold Lerman, M.D.
Hospital for Sick Children
Toronto, Ontario, Canada

2. ECMO: When/where/how

Surgeon: Robert Bartlett, M.D.
University of Michigan
Ann Arbor, Michigan

Anesthesiologist: Anne Marie Lynn, M.D.
Children's Hospital and Medical Center
Seattle, Washington

3. In utero corrective surgery

Surgeon: Michael Harrison, M.D.
University of California
San Francisco, California

Saturday, May 16, 1992

9:00 a.m.-12 noon

ABSTRACT PRESENTATIONS

Moderator:

Anesthesiologist: Jerrold Lerman, M.D.
Hospital for Sick Children
Toronto, Ontario, Canada

RESEARCH SUPPORT FOR PEDIATRIC ANESTHESIOLOGY

By Barbara W. Brandom, M.D.

We recognize that there are many unanswered questions of interest to the practice of pediatric anesthesiology. One of the challenges facing the specialty of anesthesiology is how to support continued research in areas which will contribute to the growth of our discipline.

The Foundation for Anesthesia Education and Research (FAER) has become a major avenue through which we can contribute to this process. More than 35 Component Societies of the American Society of Anesthesiologists (ASA), the Association of University Anesthesiologists and industry sources contribute funds to FAER. A portion of the ASA dues also has been contributed to FAER.

Proposals submitted to FAER are peer-reviewed by the ASA Committee on Research in four categories: Anesthesiology Young Investigator Award, Anesthesiology Research Fellowship, Research Starter Grant, and Educational Research Grant.

The Board of Directors of the Society of Pediatric Anesthesia (SPA) has voted to donate \$5,000 to the general fund of FAER with the understanding that this be applied to a Research Starter Grant relevant to pediatric anesthesiology. These awards are for beginning investigators who are members of ASA.

The contribution made by SPA will be supplemented by FAER to allow a maximum of \$15,000 support to initiate the project.

With this contribution, SPA marks its commitment to the growth of knowledge in the practice of anesthesiology. It is our expectation that we as pediatric anesthesiologists will participate in both the benefits and the responsibilities of such efforts.

The deadline for application is **July 31**. Application guidelines are available from:

Martin Helrich, M.D.
Executive Director
FAER
10 South Pine Street
Baltimore, Maryland 21201
(301) 328-8222 ☐



FAER Executive Director Martin Helrich, M.D. accepts SPA's grant contribution from Barbara W. Brandom, M.D. and SPA President Aubrey Maze, M.B.

BUSINESS MEETING NOTES

☐ There will be a special combined meeting of SPA with the American Pediatric Surgery Association at The Broadmoor Hotel, Colorado Springs, Colorado on May 15-16, 1992.

☐ The next SPA Annual Meeting will be held in conjunction with our European pediatric anesthesia colleagues and the Section on Anesthesia of the American Academy of Pediatrics.

This will take place in New Orleans on Friday, October 16, 1992 (the Friday preceding the beginning of the ASA Annual Meeting). More information will be included in the Summer-Fall SPA Newsletter.

☐ SPA Treasurer Mark A. Rockoff, M.D. summarized the organization's finances at the October, 1991 meeting. Although corporate donations have increased, 90 percent of operating revenues continue to come from membership dues. Expenses for the annual meeting come to approximately \$40,000.

The Society remains solvent but has substantially lower reserves than other ASA affiliated societies. For the upcoming year, membership dues will be \$100 for active members; \$25 for residents and fellows.

☐ Members of the SPA Board of Trustees have successfully completed discussions with members of the Foundation for Anesthesia Education and Research (FAER) that will establish an award intended to recognize and promote research in pediatric anesthesia.

This award, part of the Research Starter Grant program, will be administered by FAER. The award will be called the SPA-FAER Award. The amount of the award will be \$15,000. SPA will contribute \$5,000 and FAER will contribute \$10,000. It is anticipated that the first SPA-FAER Award will be granted in 1992. ☐

Application for Membership

Please print or use typewriter. Check (U.S. funds only) must accompany application.

I hereby make application for:

Active Membership (M.D./M.B./D.O. anesthesiologist) _____ \$100

Resident Membership _____ \$25



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Pediatric
Anesthesia**

515 BUSSE HIGHWAY
PARK RIDGE, IL 60068-3189
(708) 825-5586

1. Name _____

2. Preferred Mailing Address _____

3. Business Phone (Include area code) _____

4. Hospital Appointment _____

5. Name of Hospital(s) _____

6. Hospital Address _____

7. Percent of Time Involved in Pediatric Anesthesia _____

8. Percent of Time Involved in Pediatric Critical Care _____

9. Percent of Time Involved in Other (List) _____

10. Professional Certification _____

11. Research Areas _____

12. _____

Signature of Applicant

Date

Resident membership requires endorsement by Program Director

Date of completion of residency _____

Signature of Program Director _____



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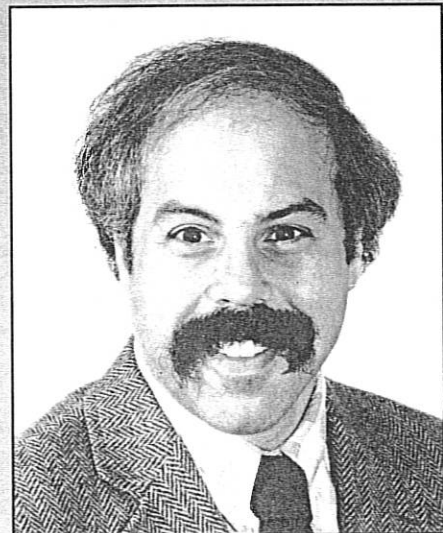
NEWSLETTER ANNOUNCEMENT

After four years of excellent service, Randall C. Wetzel, M.D. has stepped down from the editorial duties of the newsletter, announced SPA President Aubrey Maze, M.B. Serving as Editor will be Peter J. Davis, M.D.

Dr. Davis stated: "I would like to thank Francis X. McGowan, M.D. for his assistance in helping me with this edition of the newsletter. Dr. McGowan will be serving as an associate editor for the SPA Newsletter.

"In addition, I would like to encourage anyone else interested in joining the newsletter staff or anyone else with suggestions for newsletter material to contact me."

Peter J. Davis, M.D.
Department of Anesthesiology
Children's Hospital of Pittsburgh
3705 Fifth Avenue at DeSoto Street
Pittsburgh, Pennsylvania 15213-2583 □



Peter J. Davis, M.D.