Society for Pediatric Anesthesia
NEWSLETTER

Volume 7 Number 2 Summer-Fall, 1994

PRESIDENT'S MESSAGE

By Charles H. Lockhart, M.D.

This is the last Newsletter published during my two-year tenure as President of the Society for Pediatric Anesthesia (SPA). Looking back, the Society has grown to more than 1,500 members. Financially, we now have resources in excess of one year's operating budget, a reasonable goal for any nonprofit service organization. Our annual meeting has been enthusiastically endorsed by record numbers of attendees. The Board of Directors has, and will, vigorously continue to strengthen present activities and services as well as develop new services for our membership.

Looking to the future, many plans are on the horizon. The most exciting plans are in response to our colleagues who have pointed out that an additional educational/scientific meeting could benefit members unable to attend the fall SPA Annual Meeting. The executive committees of SPA and the American Academy of Pediatrics (AAP) Section on Anesthesiology met earlier this year and decided to plan and co-sponsor a spring meeting. The first SPA-AAP spring meeting is planned for February 16-19, 1995. It will be held at the Pointe Hilton Resort at Squaw Peak, Phoenix, Arizona. Although the program is being finalized, the preliminary program is included in this Newsletter (see pages 8-9).

When I took office almost two years ago, I was immediately impressed that the time commitment for the fulfillment of presidential responsibilities was much greater than anticipated. Being of semi-sound mind and wishing to spend more of my potential spare time on the golf course or a trout stream, I recruited support of the organization's Officers and Directors as well as members of the organization.

Charles H. Lockhart, M.D.

I wish I could list all of the individuals who have made contributions, but that would be impossible in the space allowed; however, I would like to highlight the activities of the following committees and

(Continued on page 3)

UPCOMING MEETING ANNOUNCEMENTS

By Francis X. McGowan, Jr., M.D. and William J. Greeley, M.D.

Annual Meeting
SPA Eighth Annual Meeting
October 14, 1994
San Francisco, California

The Eighth Annual Meeting of the Society for Pediatric Anesthesia (SPA) will be held on Friday, October 14, 1994 at the San Francisco Hilton and Towers in San Francisco, California. As in past years, a continental breakfast will be provided for participants of the meeting. Registration and breakfast will be at 7:00 a.m., and the meeting will commence at 8:00 a.m.

The objective of the meeting is to educate attendees on the central nervous system and pediatric anesthesia. The morning scientific session will be devoted to neurologic issues in pediatric anesthesia.

SPA President **Charles H. Lockhart, M.D.,** Clinical Professor of Anesthesiology and Pediatrics, University of Colorado School of Medicine, Denver, Colorado, will offer introductory remarks. Moderating will be **Mark A. Rockoff, M.D.,** Associate Professor of Anesthesiology (Pediatrics), Harvard Medical School, Boston, Massachusetts.

Michael Johnston, M.D., Professor of Pediatric Neurology at Johns Hopkins University, Baltimore, Maryland, will discuss the developing brain. **Philip G. Morgan, M.D.**, Assistant Professor of Anesthesia at Case Western Reserve, Cleveland, Ohio, will discuss the developmental aspects of the mechanisms of

(Continued on page 4)

SPA Contents

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.

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SLATE OF OFFICER AND

In keeping with the bylaws of the Society, it is time to elect three new members to the SPA Board of Directors and to elect a new Treasurer of the organization. The following are biographical sketches of the nominees and the positions they seek.

In electing new members, it becomes important for the Society to acknowledge the contributions of our retiring Board members: Frederic A. Berry, M.D., Charlottesville, Virginia; Jerrold Lerman, M.D., Toronto, Ontario, Canada; and Anne M. Lynn, M.D., Seattle, Washington.

SPA is indeed grateful for their time, patience and commitment in helping SPA to achieve and maintain its goals.

J. Michael Badgwell, M.D.

Linda Jo Rice, M.D.

J. Michael Badgwell, M.D. (Treasurer)
Chief, Pediatric Anesthesia, Children's Hospital at Texas Tech University Medical Center, Lubbock, Texas; Associate Professor of Anesthesiology and Pediatrics, Texas Tech University; Residency (Pediatrics): University of California, San Francisco, California; Residency (Anesthesiology): Stanford University, Palo Alto, California, and Texas Tech University; Fellowship (Pediatric Anesthesiology): Hospital for Sick Children, Toronto, Ontario, Canada.

Linda Jo Rice, M.D. (Treasurer)
Director, Anesthesia Research, Hartford Hospital and the Newington Children's Hospital, Hartford, Connecticut; Residency (Anesthesiology): Naval Hospital, Portsmouth, Virginia; Fellowship (Pediatric Anesthesiology): Children's National Medical Center, Washington, D.C.; Fellowship (Regional Anesthesia and Pain): Naval Hospital, San Diego, California.

Charlotte Bell, M.D. (Director)
Attending Anesthesiologist, Yale-New Haven Hospital, New Haven, Connecticut; Associate Professor of Anesthesiology, Yale University; Residency (Anesthesiology): Yale University; Fellowship (Pediatric Anesthesiology): Yale University.

Raeford E. Brown, Jr., M.D. (Director)
Chief, Division of Pediatric Anesthesia, Co-Director, Pediatric Pain Management Program, Arkansas Children's Hospital, Little Rock, Arkansas; Associate Professor of Anesthesia and Pediatrics, Vice-Chair, Department of Anesthesia, University of Arkansas for Medical Sciences, Little Rock, Arkansas; Residency (Pediatrics): Children's Hospital National Medical Center, Washington, D.C.; Residency (Anesthesiology): University of Virginia Medical Center, Charlottesville, Virginia; Fellowship (Pediatric Anesthesiology and Critical Care Medicine): Children's Hospital National Medical Center.

Charlotte Bell, M.D.

Raeford E. Brown, Jr., M.D.

DIRECTOR CANDIDATES

Gerald V. Goresky, M.D. (Director)
Director, Department of Anaesthesia, Alberta Children's Hospital; Professor of Anaesthesia and Pediatrics, University of Calgary, Alberta, Canada; Residency (Anesthesiology): University of Toronto, Ontario, Canada; Fellowship (Anesthesiology): University of California, San Francisco, California; Fellowship (Intensive Care Medicine): Massachusetts General Hospital, Boston, Massachusetts.

Constance S. Houck, M.D. (Director)
Associate Director, Pain Treatment Service, Boston Children's Hospital; Instructor in Anaesthesia (Pediatrics), Harvard Medical School, Boston, Massachusetts; Residency (Pediatrics): University of Kansas Medical Center; Chief Resident (Pediatrics): University of Kansas Medical Center, Kansas City, Kansas; Residency (Anesthesiology): Georgetown University Hospital, Washington, D.C.; Fellowship (Pediatric Anesthesiology and Critical Care Medicine): Children's National Medical Center, Washington, D.C.

Kristen L. Johnson, M.D. (Director)
Director, Department of Anesthesia, Children's Hospital of Oakland, California; Assistant Clinical Professor of Anesthesiology, Stanford University, Palo Alto, California; Residency (Pediatrics): University of California, San Diego, California; Residency (Anesthesiology): Stanford University; Fellowship (Pediatric Anesthesiology): Children's Hospital of Boston, Massachusetts.

David G. Nichols, M.D. (Director)
Director of Pediatric Intensive Care, Johns Hopkins Hospital; Associate Professor of Anesthesia, Critical Care and Pediatrics, Johns Hopkins University, Baltimore, Maryland; Residency (Pediatrics): Children's Hospital of Philadelphia; Chief Resident (Pediatrics): Children's Hospital of Philadelphia; Residency (Anesthesiology): University of Pennsylvania Hospital; Fellowship (Pediatric Anesthesiology/CCM): Children's Hospital of Philadelphia, Philadelphia, Pennsylvania.

James P. Viney, M.D. (Director)
Chair, Department of Anesthesia, Primary Children's Medical Center, Salt Lake City, Utah; Clinical Associate Professor/Anesthesia, University of Utah; Clinical Assistant Professor/Pediatrics, University of Utah; Residency (Pediatrics): University of California, San Diego, California; Residency (Anesthesiology): University of California, San Diego; Fellowship (Pediatric Anesthesiology/Critical Care): Children's Hospital of Philadelphia, Pennsylvania. □

Elections will be held at the Society's Annual Business Meeting, which begins at 4:45 p.m. Friday, October 14, 1994 at the San Francisco Hilton and Towers. All active SPA members are urged to attend the meeting and cast ballots.


Gerald V. Goresky, M.D.


Constance S. Houck, M.D.


Kristen L. Johnson, M.D.


David G. Nichols, M.D.


James P. Viney, M.D.

PRESIDENT'S MESSAGE

(Continued from page 1)

committee chairs: Education—William J. Greeley, M.D., Durham, North Carolina; Finance—Steven C. Hall, M.D., Chicago, Illinois; Membership—Mark A. Rockoff, M.D., Boston, Massachusetts; Publications—Peter J. Davis, M.D., Pittsburgh, Pennsylvania; Nominating—Aubrey Maze, M.B., Phoenix, Arizona; and Research—Frederic A. Berry, M.D., Charlottesville, Virginia.

I want you to know how dependable, enthusiastic and capable these individuals have been in contributing to SPA and how they have made my job less time-consuming and more productive and rewarding. Their successes are apparent throughout this message as well as the rest of the Newsletter.

Thank you all. It has been a privilege to be associated with you while serving on behalf of the Society. □

UPCOMING MEETING ANNOUNCEMENTS

(Continued from page 1)

anesthesia, while **Jayant K. Deshpande, M.D.**, Associate Professor of Anesthesia and Pediatrics at Vanderbilt University, Nashville, Tennessee, will discuss mechanisms of brain injury and brain protection during cerebral ischemia.

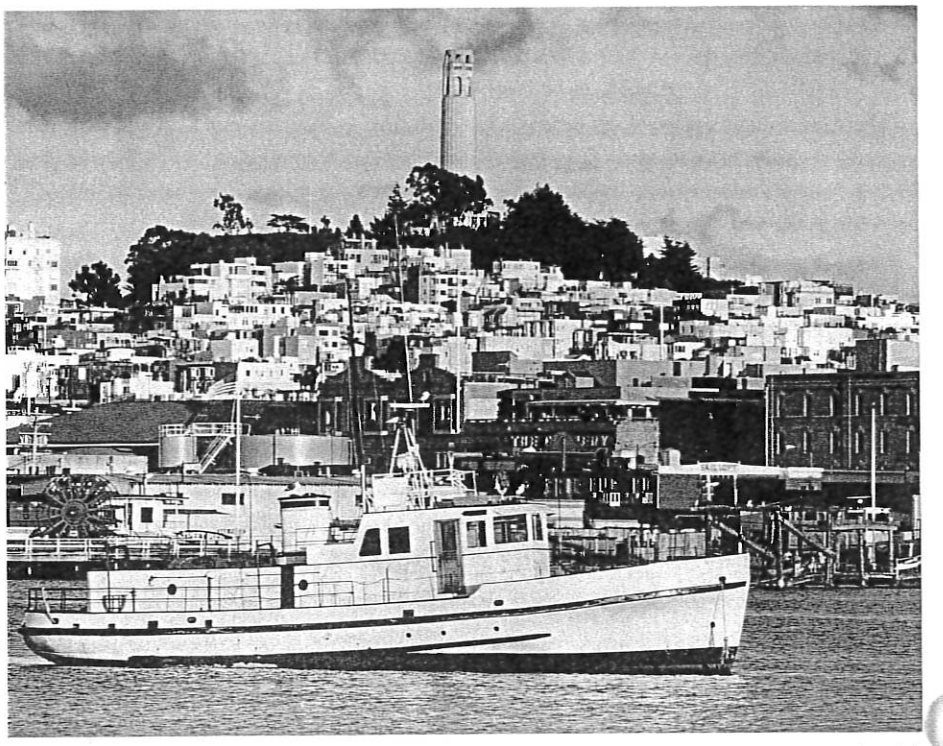
During the second half of the morning program, **Jeffrey Morray, M.D.,** Chief of Pediatric Anesthesia, Children's Orthopedic Hospital, Seattle, Washington, will serve as moderator.

Frank H. Kern, M.D., Assistant Professor of Anesthesia and Pediatrics at Duke University, Durham, North Carolina, will address issues of intraoperative brain monitoring, and **Henry L. Bennett, Ph.D.**, Associate Professor of Clinical Anesthesia from the University of California-Davis, Sacramento, California, will present information on ways to know if our patients are asleep.

The afternoon session will feature the traditional point-counterpoint discussions. The moderator will be **S.R. (Sal) Goodwin, M.D.,** Chief of Pediatric Anesthesiology, University of Florida, Gainesville, Florida.

Topics for discussion include foreign body aspiration and its anesthetic management. The discussants will be **Peter T. Rothstein, M.D.**, Associate Professor of Anesthesia and Pediatrics at Columbia University, New York, New York, and **Frederic A. Berry, M.D.**, Professor of Anesthesia at the University of Virginia, Charlottesville, Virginia. Issues regarding pediatric regional anesthesia will also be discussed in a point-counterpoint format by **Ann G. Bailey, M.D.**, Associate Professor of Anesthesia and Pediatrics at the University of North Carolina, Chapel Hill, North Carolina, and **Raeford E. Brown, Jr., M.D.**, Associate Professor of Anesthesia and Pediatrics at the University of Arkansas, Little Rock, Arkansas.

In the second session of the afternoon, issues of anesthesia practice in Europe and developing countries will be addressed by moderator **Linda Jo Rice, M.D.**, Director, Anesthesia Research, Hartford Hospital and Newington Children's Hospital, Hartford, Connecticut; **Claude Ecoffey, M.D.**, Staff Anaesthesiologist at Hopitel Salpetriere, Paris, France; **Anneke E. Meursing, M.B., Ph.D.**, Senior Consultant at Sophia Children's Hospital in Rotterdam, The Netherlands; and **Robert K. Crone, M.D.,** Medical Director, Project HOPE, Millwood, Virginia.



Plan to be onboard when the SPA Eighth Annual Meeting sails into San Francisco on October 14, 1994. The full-day program (see pages 6-7) will include panel discussions with time for questions and answers, followed by the SPA Business Meeting and a buffet reception at the San Francisco Museum of Modern Art. (Photo courtesy of the San Francisco Convention & Visitors Bureau.)

The last session of the afternoon will be moderated by **Myron Yaster, M.D.,** Director of Pediatric Pain Service, Johns Hopkins University, Baltimore, Maryland, and will focus on health care reform in the United States. **Mark C. Rogers, M.D.**, Vice Chancellor and Executive Director of Duke Hospital at Duke University, Durham, North Carolina, will discuss "Hillary or Hilarity?"

The day's events will conclude with the Society's annual social event and dinner at the San Francisco Museum of Modern Art. This buffet reception will be co-sponsored by SPA and the Bay Area Pediatric Anesthesia Consortium and will be held from 7:30 p.m. to 10:00 p.m.

The SPA 1994 Annual Meeting is co-sponsored by the American Society of Anesthesiologists (ASA). ASA is approved by the Accreditation Council for Continuing Medical Education to sponsor continuing medical education for physicians. ASA designates this continuing medical education program for 6 credit hours in category 1 of the Physician's Recognition Award of the American Medical Association.

Registration fees are $100 for SPA members and $200 for non-SPA members (which includes $100 registration fee and $100 immediate SPA membership for qualified physicians). Meeting registration includes admission to the buffet reception. Tickets for spouses or guests may be purchased in advance at a cost of $35 per person.

SPA-AAP JOINT MEETING

* * *

Spring Meeting
SPA-AAP Joint Meeting
February 16-19, 1995
Phoenix, Arizona

New for 1995 is "Pediatric Anesthesiology - 1995," a joint meeting co-sponsored by both SPA and the American Academy of Pediatrics (AAP) Section on Anesthesiology. The meeting will be held on February 16-19 (Presidents' Day Weekend) at the Pointe Hilton Resort at Squaw Peak in Phoenix, Arizona. It is hoped that this will be the first of many spring meetings devoted to clinical, educational and research issues in pediatric anesthesiology.

The program includes: 1) a scientific plenary session on transplantation in children; 2) panel discussions on controversies such as conscious sedation of pediatric patients by nonanesthesiologists, credentialing and training in pediatric anesthesiology and the impact of health care system reform on pediatric anesthesia; 3) oral and poster discussion presentations of original clinical and laboratory research projects; 4) a panel on academic development that will address issues such as study design, medical writing and the journal editorial review process; 5) hands-on workshops on the laryngeal mask airway, perioperative respiratory support, cardiopulmonary resuscitation, noncaudal regional anesthesia techniques and the nuts and bolts of running a pediatric pain service.

The abstract deadline for the 1995 SPA-AAP spring meeting is November 15, 1994. Only work not previously presented at a major anesthesia meeting is eligible.

Throughout the meeting, real-time computerized audience balloting will be available to survey practice patterns.

The Pointe Hilton Resort should provide a nice opportunity to escape the ravages of harsh weather for a few days, and it is also an ideal site for a family vacation. The meeting and social program will provide multiple opportunities for socializing with colleagues. Another goal of this meeting, to be expanded in the future, is to facilitate the development of collaborative ventures.

The preliminary programs for both meetings are included in this Newsletter. More detailed information will be forthcoming.

The abstract deadline for the 1995 combined SPA-AAP spring meeting is **November 15, 1994**. All new work or work in progress that has *not previously* been presented at a major anesthesia meeting (e.g., ASA, New York Postgraduate Assembly, International Anesthesia Research Society) is eligible. Abstracts will be reviewed and notification of acceptance will be sent by **December 1, 1994**. □

COMMITTEE REPORTS

Committee on Membership Report

By Mark A. Rockoff, M.D.
SPA Secretary and Committee Chair

Our membership continues to increase annually and was 1,525 as of April 1, 1994. Of these members, 133 were residents and fellows. Efforts have been made to inform trainees as well as pediatric anesthesiologists from abroad about SPA and to encourage their involvement in our Society.

An updated edition of the membership directory was distributed recently to all members. In order to facilitate communication among colleagues, this version includes telephone and fax numbers as well as addresses.

Currently, a directory is being compiled of all training programs in the United States and Canada that offer pediatric anesthesiology fellowships. An extensive questionnaire was distributed to all residency training programs and children's hospitals, enabling them to describe any pediatric fellowship opportunities. This will be made available to all SPA members as well as all anesthesiology residents and their program directors.

Committee on Governmental Affairs Report

By Juan F. Gutierrez-Mazorra, M.D.
Committee Chair

The Pediatric Anesthesia Practice Cost Survey has been completed, and the results will be available soon.

In May, the American Society of Anesthesiologists (ASA) mailed a managed care booklet and videotape to ASA active and resident members. If you have not reviewed it yet, please do so. Managed care is the future, and we must be prepared. □

SPA EIGHTH ANNUAL MEETING SCHEDULE

San Francisco Hilton and Towers
San Francisco, California
Friday, October 14, 1994

PRELIMINARY PROGRAM

7:00 a.m. - 4:00 p.m.
REGISTRATION
Continental Ballroom Foyer

7:00 a.m. - 8:00 a.m
CONTINENTAL BREAKFAST
Imperial Ballroom

8:00 a.m. - 8:05 a.m.
Welcome and Introductory Remarks
Charles H. Lockhart, M.D., President
Continental Ballrooms 5 & 6

8:05 a.m. - 10:15 a.m.
The Central Nervous System and Pediatric Anesthesia (Part 1)
Moderator: Mark A. Rockoff, M.D.
Continental Ballrooms 5 & 6

8:05 a.m.
The Developing Brain: Ontogenic Events, Receptors, and Synapses
Michael Johnston, M.D.

8:50 a.m.
Mechanisms of Anesthesia: Developmental Aspects
Philip G. Morgan, M.D.

9:20 a.m.
Cerebral Ischemia: Mechanisms of Injury and Brain Protection
Jayant K. Deshpande, M.D.

10:00 a.m.
Questions and Answers

10:15 a.m. - 10:45 a.m.
COFFEE BREAK

10:45 a.m. - 12:00 noon
The Central Nervous System and Pediatric Anesthesia (Part 2)
Moderator: Jeffrey Morray, M.D.

10:45 a.m.
Intraoperative Monitoring of the Brain
Frank H. Kern, M.D.

11:15 a.m.
Are Our Patients Asleep?
Henry L. Bennett, Ph.D.

11:45 a.m.
Questions and Answers

12:00 noon - 1:30 p.m.
LUNCHEON
Imperial Ballroom

1:30 p.m. - 2:30 p.m.
Controversies in Pediatric Anesthesia
Moderator: S. R. (Sal) Goodwin, M.D.
Continental Ballrooms 5 & 6

1:30 p.m.
Foreign Body Aspiration: Rapid Sequence Induction Is Best
Peter T. Rothstein, M.D.

Foreign Body Aspiration: Inhalation Induction Is Best
Frederic A. Berry, M.D.

Audience Rebuttal

2:00 p.m.
Pediatric Regional Anesthesia for Postoperative Pain Management - What's The Big Deal?

Pro
Ann G. Bailey, M.D.

Con
Raeford E. Brown, Jr., M.D.

Audience Rebuttal

2:30 p.m. - 3:30 p.m.
Pediatric Anesthesia Practice and Health Care Delivery
Moderator: Linda Jo Rice, M.D.
Continental Ballrooms 5 & 6

2:30 p.m.
France
Claude Ecoffey, M.D.

2:45 p.m.
The Netherlands
Anneke E. Meursing, M.B., Ph.D.

3:00 p.m.
Developing Countries
Robert K. Crone, M.D.

3:20 p.m.
Questions and Answers

3:30 p.m. - 4:00 p.m.
COFFEE BREAK

4:00 p.m. - 4:45 p.m.
Health Care Reform
Moderator: Myron Yaster, M.D.

4:00 p.m.
Health Care Reform: Hillary or Hilarity?
Mark C. Rogers, M.D.

4:45 p.m. - 5:30 p.m.
Business Meeting
Election of Officers and Directors

7:30 p.m. - 10:00 p.m.
BAY PAC/SPA BUFFET RECEPTION
San Francisco Museum of Modern Art

Society for Pediatric Anesthesia
1994 ANNUAL MEETING REGISTRATION FORM
San Francisco Hilton and Towers, San Francisco, California
October 14, 1994

SPA 1994 Annual Meeting registration fees are: SPA Members - $100; Non-SPA Members - $200 (includes $100 meeting registration and $100 immediate SPA membership to qualified individuals). Extra buffet reception tickets for spouses or guests may be purchased in advance at a cost of $35 per person.

PLEASE PRINT OR TYPE INFORMATION

Name _____

Address (Check Preference): ( ) Home ( ) Business:

_____

City _____ *State* _____ *ZIP Code* _____

Hospital Affiliation _____

Business Telephone ( ) _____

Home Telephone ( ) _____

BAY PAC/SPA BUFFET RECEPTION REGISTRATION

☐ I plan to attend the BAY PAC/SPA Buffet Reception.

☐ I plan to bring ____ guest(s) with me to the Buffet Reception.

REGISTRATION FEES:

SPA Members ($100) _____
Non-SPA Members ($200) _____
Extra Buffet Reception Ticket ($35 each) _____
TOTAL _____

Make check payable to the **Society for Pediatric Anesthesia** and mail to:

Society for Pediatric Anesthesia
520 N. Northwest Highway
Park Ridge, Illinois 60068-2573

SPA-AAP SPRING MEETING:

Pointe Hilton Resort at Squaw Peak
Phoenix, Arizona
Friday-Sunday, February 17-19, 1995

PRELIMINARY PROGRAM
Thursday, February 16, 1995

3:00 - 5:30 p.m.
Early Registration

5:30 - 8:00 p.m.
Welcoming Reception

Friday, February 17, 1995

7:00 - 8:00 a.m.
Continental Breakfast

8:00 - 5:00 p.m.
Registration

8:00 - 8:10 a.m.
Welcome and Introductory Remarks
J. Michael Badgwell, M.D., William J. Greeley, M.D.

8:10 - 10:00 a.m.
Transplantation in Children
Moderator: D. Ryan Cook, M.D.

Heart-Lung Transplantation
Francis X. McGowan, Jr., M.D.

Liver Transplantation
J. Lance Lichtor, M.D.

Surgeon's Perspective
David Tapper, M.D.

Ethical Issues
Alan Johnson, Ph.D.

10:00 - 10:30 a.m.
Break - Exhibits and Scientific Posters

10:30 - 12:45 p.m.
Oral Abstract Presentations
Moderator: David G. Nichols, M.D.

12:45 - 2:00 p.m.
Lunch - Exhibits and Scientific Posters

2:00 - 4:00 p.m.
Session A: Poster Discussion
Moderator: Jayant K. Deshpande, M.D.

Discussants: Joseph R. Tobin, M.D., Dennis M. Fisher, M.D.

Session B: Workshops
Laryngeal Mask Airway
Lynne R. Ferrari, M.D., Mehernoor F. Watcha, M.D., Guy D. Dear, M.D.

Optimizing Perioperative Respiratory Support
Frank H. Kern, M.D., Jon N. Meliones, M.D., Barbara Wilson, RRT

Cardiopulmonary Resuscitation (CPR)
Hal Schaffner, M.D., Charles L. Schleien, M.D., Eugene B. Fried, M.D., Joseph R. Tobin, M.D.

Noncaudal Regional Anesthetic Techniques
Linda Jo Rice, M.D., Joelle F. Desparmet, M.D., Joseph D. Tobias, M.D., Thomas R. Vetter, M.D.

Pain Service Procedures, Protocols and Billing
Myron Yaster, M.D., Deborah K. Rasch, M.D., Robert D. Valley, M.D., Corrie T.M. Anderson, M.D., David E. Cohen, M.D.

4:00 - 5:00 p.m.
Anesthesia Practice Trend Survey
Moderators: Raeford E. Brown, Jr., M.D., David A. Lowe, M.D.

Anesthesia Practice Trends: Real-Time, Computerized Survey, Participant Survey, Audience Questions and Immediate Answers

5:30 - 7:00 p.m.
Scientific Poster Review/Wine and Cheese Reception

Saturday, February 18, 1995

7:00 - 8:00 a.m.
Continental Breakfast

8:00 - 10:00 a.m.
Changing Patterns of Anesthesia Practice in Children
Moderator: J. Michael Badgwell, M.D.

Halothane Is Sufficient
Charles J. Coté, M.D.

Newer Agents Are Needed
Peter J. Davis, M.D.

Controversies in Conscious Sedation of Children
Applying the AAP Guidelines: Educational Perspectives
Alan S. Klein, M.D.

Applying the AAP Guidelines in Private Practice
Robert J. Moynihan, M.D.

Drugs Created for Pediatric Analgesia and Sedation
Richard F. Kaplan, M.D.

Pediatric Sedation: The FDA Perspective
Curtis Wright, Ph.D.

PEDIATRIC ANESTHESIOLOGY - 1995

10:00 - 10:30 a.m.
Break - Exhibits and Scientific Posters

10:30 - 1:00 p.m.
Session A: Academic Development
Moderator: Elliot J. Krane, M.D.

Review of Previous Day's Abstracts
James L. Robotham, M.D.

Study Design and Statistical Analysis
Dennis M. Fisher, M.D.

Medical Writing, Journal Review and Beyond
Paul R. Hickey, M.D.

Presentation Techniques
Mark S. Schreiner, M.D.

Award Presentations:
SPA/FAER Research Grant Award - Abstract Presentation
AAP Junior Investigator Awards
AAP Robert M. Smith Award

Session B: Workshops - (repeat of Friday's workshop presentations)

1:00 p.m.
Adjournment for the Day

Sunday, February 19, 1995

7:00 - 8:00 a.m.
Continental Breakfast

8:00 - 10:00 a.m.
Capitation or Decapitation?
Survival Tactics
Moderator: William J. Greeley, M.D.

Current State of Health Care Reform
Stephen J. Thomas, M.D.

Positioning Children's Care in a Competitive Market
Phillip Balderstron, M.B.A.

Marketing Strategies for Physician Groups
George Viglotti

Practice Analysis
William J. Greeley, M.D.

10:00 - 10:30 a.m.
Break - Exhibits

10:30 - 12:00 noon
What is a Pediatric Anesthesiologist?
Training, Practicing and Credentialing
Moderator: Jeffrey Morray, M.D.

Practice Perspective
Jay Shapiro, M.D.

ABA Perspective
Myer H. Rosenthal, M.D.

Legal Perspective
Steven Kern, Esq.

Synthesis
John J. Downes, Jr., M.D.

12:00 - 1:00 p.m.
Grand Rounds Case Presentation
Moderator: Mark A. Rockoff, M.D.

Discussants: Aubrey Maze, M.B., Lynda J. Means, M.D., Charles H. Lockhart, M.D.

1:00 p.m.
Adjournment

SPA/FAER GRANT AVAILABLE

The Foundation for Anesthesia Education and Research (FAER) offers exciting opportunities for young anesthesiologists. SPA supports a research starter grant through FAER, which 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. For application information for the SPA/FAER Research Starter Grant, contact Martin Helrich, M.D., FAER Executive Director, 3701 Old Court Road, Suite 24, Baltimore, Maryland 21208-3901; or call (410) 486-6935.

Applications are closed for 1994, but applications are being accepted for next year.

Deadline for 1995: July 31. □

REMINDER NOTICE

The journal, *Paediatric Anaesthesia,* is available at a 25-percent discount for all SPA members. Members can now pay by credit card.

Contact: Stuart Taylor, M.D., *Paediatric Anaesthesia*, Blackwell Scientific Publications, 25 John Street, London, WC1N 2BL, U.K. □

LITERATURE REVIEWS

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

Local anesthetics in the management of acute pain in children.

Yaster M, Tobin JR, et al. *Pediatrics* 1994; 124:165-176.

Reviewed by ***Alan S. Klein, M.D.***

This review is aimed at nonanesthesiologists, but clearly is a useful addition to anybody's teaching library. The authors state their purpose as "to provide a physiologic, pharmacokinetic and pharmacodynamic framework regarding the use of local anesthetic agents in children, and to establish guidelines for the effective use of specific nerve blocks..." The review serves those purposes well. They remind us that "a resting nerve is less sensitive to local anesthetic-induced conduction blockade than a nerve that is being repetitively stimulated; the process of myelinization of the central nervous system is not completed until approximately 18 months of age; local anesthetic drugs increase their own uptake; patients with right-to-left intracardiac shunts may be more vulnerable to the toxicity of local anesthetics; neonates and infants up to 6 months of age have low levels of plasma cholinesterase; and all newborn infants have decreased levels of alpha-1 acid glycoproteins." They review the use of TAC solution and the performance of digital nerve blocks, penile nerve blocks, femoral nerve blocks and intercostal nerve blocks.

Anaesthesia and myotonia.

Russell SH, Hirsch NP. *Br J Anaesth* 1994; 72:210-216.

Reviewed by ***Alan S. Klein, M.D.***

This is a brief but excellent review of a constellation of different clinical entities grouped together under the title myotonias. This review is worth reading as the myotonias present a distinct clinical challenge to the use of anesthetics. Exaggerated responses to most anesthetic agents are seen. Individual responses of the various subgroups of the myotonias are described and, thus, the practitioner needs to be aware of the specific diagnosis before initiating an anesthetic. Even subtle things such as surgical manipulation or electrocautery can produce myotonic contractions, which can become major management problems.

A decade of experience with neonatal extracorporeal membrane oxygenation (ECMO).

Kanto WP. *Pediatrics* 1994; 124:335-347.

Reviewed by ***Alan S. Klein, M.D.***

ECMO has been used in neonates for 10 years. For those of us involved in critical care or only in the cannulation or decannulation of ECMO patients, this comes as a timely review. There is an accompanying editorial (Neonatal ECMO: Iron lung of the 1990s?).

A policy regarding research in healthy children.

Gidding SS, Camp D, et al. *Pediatrics* 1993; 123:852-855.

Reviewed by ***Alan S. Klein, M.D.***

This special article was written by members of the Children's Memorial Hospital Institutional Review Board (IRB) in Chicago. The guidelines "are meant to help investigators develop protocols that conform to the review board's current opinions regarding specific ethical issues that arise in research involving healthy children." Guidelines like these may be set up at your individual institution. There are several interesting remarks in the guidelines. For example, the IRB expects that a research project should be discussed with all children older than four years of age in developmentally appropriate language.

Opioid tolerance and dependence in infants and children.

Anand KJS, Arnold JH. *Crit Care Med* 1994; 22:334-342.

Reviewed by ***Anne E. Dickison, M.D.***

The objectives of this review article were to consider the definitions and scientific bases for opioid tolerance and dependence in neonates and older children; to assess objective methods for the clinical evaluation of the opioid abstinence syndromes in this age group; and to suggest therapeutic strategies for the treatment of opioid abstinence in critically ill neonates and children. The article was a source of many practical points of information and was backed by an extensive bibliography. As the evidence becomes more and more abundant, it is clear that the use of pharmacologic agents to achieve sedation and analgesia in neonatal and pediatric intensive care units is not only more humane, but also serves a variety of purposes to favorably influence physiology and physics, and has, therefore, been linked to better outcomes and decreased morbidity and mortality in the critically ill pediatric patient. As summarized by Anand and Arnold, clinical and experimental data suggest that the duration of opioid receptor occupancy is an important factor in the development of tolerance and dependence, and that continuous administration of opioids may produce tolerance more rapidly than intermittent therapy. Selective tolerance can be induced by selective agonists for all opioid receptor subtypes, without any cross-tolerance developing between the different receptor subtypes. The complex relationship between different subtypes and between opioid and N-methyl D-aspartate (NMDA), and the uncoupling of the receptor-activated potassium channel from its guanine nucleotide binding protein are all interactions that determine aspects of both tolerance and withdrawal and offer a number of sites for potential therapeutic intervention. The neonatal abstinence syndrome includes *neurologic excitability* (high-pitched crying, irritability, poor sleep, hyperactive deep tendon reflexes, increased muscle tone, trem-

ors, exaggerated startle, frequent yawning and sneezing, tachypnea, fever, seizures), *gastrointestinal dysfunction* (poor feeding, poorly coordinated and constant sucking, vomiting, diarrhea), *autonomic signs* (increased sweating, nasal stuffiness, fever, mottling, dehydration), *poor weight gain* and *skin excoriations* from constant motion and excessive rubbing. There are also a variety of endocrine abnormalities, altered evoked potentials to auditory and visual stimuli, increased REM sleep, disordered sleep patterns and an alteration in sucking behavior. Once an abstinence state has been recognized (and quantified, using one of the withdrawal indices), the focus turns to treatment. Common nonpharmacologic methods (e.g., swaddling, rocking, frequent feedings, decreased environmental stimulation) are widely employed but have little supporting data from clinical trials. Pharmacologic agents for withdrawal have included opioids (morphine, fentanyl, methadone, tincture of opium, paregoric); benzodiazepines (diazepam, midazolam, lorazepam); barbiturates (phenobarbital, pentobarbital); and other agents such as clonidine or chlorpromazine. The goal of treatment is to decrease (to a clinically tolerable degree) the severity of the abstinence syndrome so that the patient does not experience irritability, vomiting or diarrhea, and is able to sleep without being overly sedated. Opioids are the mainstay of pharmacologic treatment, either alone or in combination with other drugs. The remainder of the article was dedicated to the specifics of treatment including doses, intervals, frequency and rapidity of tapering, and side effects of the various drugs employed. Since benzodiazepines are not cross-tolerant with opioids, they are best utilized as sedative adjuncts for addressing the irritability issues. According to this article, midazolam is not recommended for the treatment of opioid withdrawal. Additionally, it was advised that because phenobarbital does not control the vomiting and diarrhea associated with opioid withdrawal, the authors do not recommend it as a primary agent in the management of opioid abstinence. The clinical efficacy of clonidine in ameliorating the symptoms of opioid withdrawal has been described in neonates (Hoder EL, Leckman JF, Ehrenkranz R, et al. Clonidine in neonatal narcotic-abstinence syndrome. *N Engl J Med* 1981; 305:1284) as well as adults. In oral doses of 3-4 μg/kg, clonidine produces a dramatic reduction in the severity of neonatal symptoms. Patients may then be weaned from these doses over one or two weeks. The authors conclude that careful attention to the process of opioid weaning, coupled with routine use of one of the withdrawal assessment scores, is the most effective strategy in the management of opioid abstinence in critically ill pediatric patients. They maintain that in general, pediatric patients who have received low-to-moderate doses of opioids for < 1 week can be weaned from the drug in less than 72 hours, decreasing the dose initially by 25-50 percent and later by 20 percent every six to eight hours. At the other end of the spectrum, patients who have been receiving continuous high-dose opioid infusions require two to three weeks to wean from the medication, and may occasionally manifest symptoms of opioid abstinence. It is recommended that a gradual decrease of the intravenous infusion rate should take place, initially by 20 percent and later by 10 percent every 12 to 24 hours. Ultimately, a change to an opioid which can be given orally or rectally is recommended. Opioids are the most popular agents used in neonatal and pediatric intensive care units to provide sedation, analgesia and pharmacologic restraints for the patient. Prolonged administration is associated with increased dose requirements over time, and discontinuation can result in increased central nervous system excitability as well as nutritional and metabolic disadvantages. Patient comfort and clinical outcome can be influenced by careful attention to the adopted pharmacologic regimens.

Primary mediastinal masses: A comparison of adult and pediatric populations.

Azarow KS, Pearl RH, Xurcher R, Edwards FH, Cohen AJ. *J Thorac Cardiovasc Surg* 1993; 106:67-72.

Reviewed by ***Stephen Rimar, M.D.***

Sixty-two pediatric patients with primary cysts and tumors of the mediastinum were compared to a group of 195 adult patients with similar diagnosis. The most common etiology was neurogenic tumors in childhood versus lymphoma in adults. There was no difference in the prevalence of symptomatic patients, but the tumor size, location and presence of symptoms were predictive of malignancy in adults but not children. No difference existed in mortality and morbidity between the groups. All three pediatric deaths reported were directly related to loss of airway control as a result of mass effect from the tumor. All adult deaths, however, were attributable to uncontrolled malignancy in the postoperative period, once again emphasizing the dangers of inducing anesthesia in children with mediastinal masses.

Analysis of a cluster of surgical failures.

de Leval MR, Francois K, Bull C, Brawn W, Spiegelhalter D. *J Thorac Cardiovasc Surg* 1994; 107:914-924.

Reviewed by ***Stephen Rimar, M.D.***

This very interesting article analyzes a cluster of failures in the experience of one surgeon with the arterial switch operation for transposition of the great arteries. Using techniques developed for monitoring quality on a production line, the authors conclude: 1) a system of continuous monitoring of surgical performance can be used to allow early detection of unfavorable trends; 2) outcome measures other than death can be used as a refinement of quality control methods; and 3) retraining can reset the failure rate to a low level. The paper is unique in that it not only addresses in a sensitive fashion the difficult problem of evaluating surgical performance, but uses proven quality control techniques to determine the factors involved in an increased failure rate and demonstrates how to use quality control methods to influence outcome.

Cardiopulmonary bypass significantly reduces surfactant activity in children.
McGowan FX, Ikegami M, del Nido P, Motoyama EK, Kurland G, Davis PJ, Siewers RD. *J Thorac Cardiovasc Surg* 1993; 106:968-977.
Reviewed by ***Stephen Rimar, M.D.***

Pulmonary dysfunction following cardiopulmonary bypass (CPB) is an important problem in infants, patients with existing lung disease and those in whom cardiopulmonary bypass is prolonged. The purpose of this study was to examine surfactant before and after bypass in children. Twelve acyanotic patients ages 2-12 years underwent intraoperative pulmonary function testing followed by bronchoalveolar lavage before incision and one hour after separation from CPB. Following CPB, the biochemical nature of the surfactant changed significantly. This surfactant change was accompanied by reductions in forced vital capacity, inspiratory capacity and small airway flow rates. The post-CPB lavage fluid contained a fivefold increase in alveolar polymorphonuclear leukocyte content. The results suggest that in healthy children, CPB even of moderate duration is associated with surfactant changes that are similar to those observed in experimental lung injury models.

Relation of pH strategy and developmental outcome after hypothermic circulatory arrest.
Jonas RA, Bellinger DC, Rappaport LA, Wernovsky G, Hickey PR, Farrell DM, Newburger JW. *J Thorac Cardiovasc Surg* 1993; 106:362-368.
Reviewed by ***Stephen Rimar, M.D.***

Sixteen children with transposition of the great arteries underwent a Senning procedure in infancy between 1983-88. The pH management during cardiopulmonary bypass changed from pH-stat to alpha-stat in 1985, resulting in a wide range of pH values in carbon dioxide tensions during the study period. Development of these children was assessed at median age 48 months with the Bayley or McCarthy Scales. Lower carbon dioxide tension (alpha-stat) before onset of circulatory arrest was associated with worst developmental outcome. This relationship remained highly significant even when sociodemographic and intraoperative variables, including duration of circulatory arrest, were controlled. The authors conclude that when rapid core cooling is used to achieve hypothermia before circulatory arrest in young infants, alpha-stat may result in less effective cerebral protection. This study highlights once again the fact that prospective clinical studies are needed to determine the neurologic effects of PCO_2 management during heart surgery in children.

Classification of positive inotropic agents.
Feldman AM. *J Am Coll Cardiol* 1993; 22:1223-1227.
Reviewed by ***Stephen Rimar, M.D.***

Development of new inotropic agents in the past few years has lead to potential confusion regarding the role of each of these agents in the treatment of heart failure. Since these agents are not all alike, this review proposes a classification of inotropic agents based on their mechanisms of action. The author suggests three classifications: 1) those agents that augment contractility by increasing intracellular levels of cAMP; 2) those agents that affect ion channels or pumps; 3) those agents that modulate intracellular calcium regulation; and 4) agents that augment contractility through multiple pathways. While the classification system does not suggest which classes of therapies might be most beneficial in different varieties of heart failure, this brief, very readable review does help one sort out the different drugs available and provides a better framework for understanding both current and future inotropic drugs.

Venous thromboembolic complications in children.
David M, Andrew M. *Pediatrics* 1993; 123:337-346.
Reviewed by ***Alan S. Klein, M.D.***

This review "summarizes available information on clinical findings, diagnostic evaluation, therapeutic interventions and clinical outcome of extracranial deep vein thrombosis (DVT) and pulmonary embolism in children." This information is especially important to those of us responsible for the placement of central venous canulas in children. It is notable that 26 percent of DVT cases in children was reported in the upper vascular access system as compared to an incidence of 1-2 percent of DVT cases in adults. They note that the clinical diagnosis of DVT in children is probably as nonspecific as in adults. They further note that there is no evidence that prophylactic anticoagulant therapy is warranted in pediatric patients undergoing surgical procedures that are considered to carry high risk in adults. Guidelines for treatment of thrombotic complications in children are presented.

Ambulatory pediatric tonsillectomy identification of high risk sub-groups.
Rothschild MA, et. al. *Otolaryngol Head Neck Surg* 1994; 110(2):203-210.
Reviewed by ***Howard B. Gutstein, M.D.***

This paper is the latest in a series that attempts to identify prospective risk factors for tonsillectomy that require inpatient admission. This series, while rather small, showed that about 7 percent of patients with diagnosis of obstructive sleep apnea showed significant airway compromise postoperatively. Also, there was delay prior to oral intake and discharge in children under 4 years of age. The authors concluded that patients under 3 years of age are at high risk of prolonged inability to tolerate oral feedings, and patients with obstructive sleep apnea are at increased risk for postoperative airway difficulties.

Postoperative respiratory compromise in children with obstructive sleep apnea syndrome: Can it be anticipated?
Rosen GM, Muckle RP, et al. *Pediatrics* 1994;93:784-788.
Reviewed by ***Mehernoor F. Watcha, M.D.***

This article describes the postoperative respiratory complications after tonsillectomy and adenoidectomy in 37 children with obstructive sleep apnea syndrome that had been documented by polysomnography. Ten out of these 37

had significant postoperative respiratory compromise, ranging from O_2 desaturation to respiratory failure. The authors recommend overnight observation with an apnea monitor and pulse oximeter for children with obstructive sleep apnea who have undergone a tonsillo-adenoidectomy if they are: 1) <2 years of age; 2) have associated craniofacial anomalies (e.g., micrognathia, midfacial hypoplasia); 3) failure to thrive; 4) hypotonia; 5) cor pulmonale; 6) morbid obesity; and 7) previous upper airway trauma. In addition, patients whose polysomonogram reveals a respiratory distress index >40 or an oxygen saturation nadir <70 percent should also be admitted. This very high risk group may require nasal CPAP or bilevel CPAP to manage the postoperative upper airway obstruction. These children should not be considered candidates for outpatient surgery as the problems with apnea occur up to 18 hours after the operation.

Tracheobronchomalacia in children.
Jacobs IN, et. al. *Arch Otolaryngol Head Neck Surg* 1994; 120:154-158.
Reviewed by ***Howard B. Gutstein, M.D.***

This interesting paper represents one of the first attempts to examine the natural history of tracheobronchomalacia (TBM) and to evaluate coincident risk factors. The study had some limitations, in that it was a retrospective chart review, and the cases did not seem to include many sick children, but the conclusions drawn by this article remain valuable. Their retrospective review of 50 patients revealed that TBM is a relatively common airway abnormality and is found in 15 percent of all bronchoscopies in infants. Coincident risk factors include prematurity, low birth rate, BPD and prolonged ventilation. Associated congenital abnormalities include genetic syndromes such as VATER, laryngeal clefts, TEF, omphalocele and congenital heart disease. In most patients, symptoms resolved by age 2. Presenting symptoms were shown to be apneic spells (in both intubated and nonintubated patients), stridor, tachypnea, failure to thrive, wheezing and cough. Management strategy varied, based on the size of the child. The review showed that 75 percent of premature infants required tracheostomy, but only about one-third of all full-term infants required tracheostomy. Interestingly, all the patients who did not require tracheostomy improved over time and required no further therapy. Many of the patients who did receive tracheostomy were successfully decannulated within two years. In patients requiring tracheostomy, CPAP was also used.

Brachial plexus injury after median sternotomy: An unexpected liability for anesthesiologists.
Stoelting RK. *J Cardiothorac Vasc Anesth* 1994; 8:2-4.
Reviewed by ***Brian J. Gronert, M.D.***

In this editorial, Dr. Stoelting reviews the literature regarding brachial plexus injury after cardiac surgery requiring median sternotomy. The anesthesiologist may be falsely implicated as the responsible physician for a presumed "position-related" nerve injury. Brachial plexus injury occurs with an incidence of 2-38 percent in patients undergoing surgery requiring median sternotomy. Careful analysis of the published literature suggests the most likely etiology is compression or stretch of the brachial plexus produced by sternal separation. Nevertheless, the literature is not consistent in implicating a specific sternal retractor, width or duration of sternal separation. In addition, brachial plexus injury after cardiac surgery is not predictably related to the patient's arm position during surgery (palm up or palm down) or site of internal jugular vein catheterization. Furthermore, injury may occur despite padding of the patient's elbows. Thus, the most likely cause or causes of this problem seems, at present, to be beyond the control ("liability") of the anesthesiologist.

Magnetic resonance imaging of airway obstruction resulting in vascular anomalies.
Mahboubi S. et. al. *Int J Pediatr Otorhinolaryngol* 1994; 28:111-123.
Reviewed by ***Howard B. Gutstein, M.D.***

This paper reviews the imaging modalities employed in the diagnosis and management of airway disorders in infants and children. The authors conclude that many anomalies, especially vascular anomalies, can be adequately diagnosed by MRI scanning without the need for invasive procedures such as angiography. Helpful MRI scans of typical lesions are included.

High frequency jet ventilation: Intraoperative application in infants.
Greenspan JS, Davis DA, Russo P, Antunes MJ, Spitzer AR, Wolfson MR. *Pediat Pulmon* 1994; 17:155-160.
Reviewed by ***Brian J. Gronert, M.D.***

These authors compared conventional ventilation (CV) and high frequency jet ventilation (HFJV) in nine infants undergoing Blalock-Taussig shunt procedure. Infants were randomized to each mode of ventilation with the inspiratory and expiratory pressures and supplemental oxygen held constant. Heart rate, blood pressure, arterial blood gases, pulmonary mechanics (lung compliance and resistance) and functional residual capacity were compared after 10 minutes of stabilization of each ventilation mode, with the infants in the thoracotomy position and the surgical field adequately exposed. There was no difference in vital signs, pulmonary mechanics, FRC or PaO_2 on HFJV when compared to CV. Arterial $PaCO_2$ was lower with a lower mean airway pressure on HFJV when compared with CV. The surgical team subjectively observed a diminished need for lung manipulation and improved ease of access to the surgical field with HFJV.

A comparison of wound instillation and caudal block for analgesia following pediatric inguinal herniorrhaphy.
Conroy J, Othersen Jr HB, Dorman BH, Gottesman JD, Wallace CT, Brahen N. *J Pediatr Surg* 1993; 28(4):565-567.
Reviewed by ***Lawrence H. Feld, M.D.***

The authors performed a prospective, randomized study comparing the efficacy of caudal block versus wound infiltration versus placebo in 70 ASA physical status 1 and 2 patients ages 2 months to 10 years

undergoing inguinal hernia repairs. They evaluated the following parameters: total O.R. time, time to extubation, postoperative objective pain scores and analgesic requirements. The investigators noted that patients who received a caudal block preoperatively had significantly decreased emergence times, fewer pain related behaviors and required less narcotics postoperatively. At first glance, this study seems to document a clear advantage of caudal block over wound infiltration with respect to the above mentioned parameters. Unfortunately, the design of the study was such that wound infiltration occurred after the ligation of the hernia sac. The caudal was placed prior to incision and after intubation. What this study really found was the superiority of preemptive analgesia over other techniques. The study does not demonstrate the superiority of caudal analgesia/general anesthesia over wound infiltration of local anesthetics/general anesthesia.

Regional anesthesia in pediatric surgery—complications and postoperative comfort level in 174 children.

Pietropaoli JA, Keller MS, Smail DF, Abajian JC, Kreutz J, Vane D. *J Pediatr Surg* 1993; 28(4):560-564.

Reviewed by ***Lawrence H. Feld, M.D.***

This retrospective study reviews a 29-month experience with 174 children <18 years of age who received regional postoperative pain control (PPC) through indwelling catheters. Catheter placement included 40 thoracic and 100 lumbar epidural, 27 caudal and seven pleural catheters. These catheters were utilized for 0.5-8 days. There were 140 children (85 percent) who required no additional supplemental pain medications; 30 patients required supplemental analgesia. Eight patients required reduction of their medications, seven had mechanical failure of the catheters, three developed nausea and vomiting, two developed pruritus and one patient developed an epidural abscess requiring postoperative drainage. The authors believe that these techniques are safe and eliminate the need for postoperative narcotics in most children. This study points out the many advantages of preemptive analgesia that have already been clearly recognized by anesthesiologists. Unfortunately, this study is retrospective and suffers from many drawbacks, one of which includes the lack of standard pain scales to judge adequacy of pain control. (They judge pain control by the use of supplemental analgesics.) One also wonders if an abscess rate of 1 in 174 for pain control is safe.

Oral premedication for paediatric ambulatory anesthesia: A comparison of midazolam and ketamine.

Alderson PJ, Lerman J. *Can J Anaesth* 1994; 141(3):221-226.

Reviewed by ***Lawrence H. Feld, M.D.***

This study compares two oral premedicants, midazolam and ketamine, in 40 healthy children, ages 1-6 years undergoing ambulatory surgery. The patients were randomized to receive either ketamine 5.0 mg/kg or midazolam 0.5 mg /kg in a double-blind, randomized, but not placebo-controlled study. Both drugs were effective in sedating the children within 20 minutes of administration. Ten percent of the midazolam group and 20 percent of the ketamine group became tearful upon separation from their parents; 20 percent of the midazolam group and 35 percent of the ketamine group became tearful when the face mask was applied. No important side effects were noted. There was no significant difference in discharge times or emergence phenomenon noted. Midazolam and ketamine offer similar clinical characteristics when used as an oral premedication for children undergoing ambulatory surgery, although the time to discharge from the hospital may be more rapid after midazolam. The need for postoperative pain control was surprisingly more in the ketamine group versus the midazolam group in that eight patients in the ketamine group required additional postoperative analgesia versus four patients in the midazolam group.

Airway endoscopy and the diagnosis and treatment of bacterial tracheitis in children.

Eckel EG, et. al. *Int J Pediatr Otorhinolaryngol* 1993; 27:147-157.

Reviewed by ***Howard B. Gutstein, M.D.***

Remember platform shoes and bell-bottom pants? Remember a disease called pseudomembranous croup? This disease appears to be back in style, now known as bacterial tracheitis (BT). It continues to be a relatively rare condition, with diagnostic signs and symptoms indistinguishable from those of viral laryngotracheobronchitis (croup). The only symptoms consistently present in BT were stridor and respiratory distress. The presence of cough, fever and drooling were either inconsistent or not present at all. White blood cell count was variable, as were chest X-ray findings. The only procedure of diagnostic significance was rigid bronchoscopy. Typical features noted were normal supraglottic and glottic anatomy, and membranous inflammation and mucopurulent secretions in the trachea with significant subglottic edema. It used to be recommended that these children undergo early tracheotomy. But now, they can be managed successfully by nasotracheal intubation. The longest intubation time was just more than two weeks. There were also no fatalities or long-term morbidity noted. It appears that the bacterial pathogenesis of this disease is also changing. Previously, S. *aureus* was the most common bacterium to be cultured. Currently, more mixed infections are being discovered, with P. *aeruginosa* being the main additional culprit.

Inhaled nitric oxide in the management of a premature newborn with severe respiratory distress and pulmonary hypertension.

Abman SH, Kinsella JP, Schaffer MS, Wilkening RB. *Pediatrics* 1994; 93:606-609.

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

This report has demonstrated that inhaled nitric oxide is successful in treating severe primary pulmonary hypertension

and marked hypoxemia in the premature infant. The risks and benefits of inhalational nitric oxide therapy and its relative clinical role in managing the sick premature newborn with respiratory failure will require further study.

Comparison of intra-arterial with continuous noninvasive blood pressure measurement in postoperative pediatric patients.

Triedman JK, Saul JP. *J Clin Monit* 1994; 10(1):11-20.

Reviewed by ***Scott R. Schulman, M.D.***

The authors of this study compared blood pressure values measured by a continuous noninvasive device (Finapres, Ohmeda, Englewood, CO) to blood pressure values obtained by an intra-arterial catheter in 27 pediatric patients after cardiac surgery. The difference between the noninvasive and the invasive measurement was defined as bias. There was a substantial negative bias for both systolic and diastolic blood pressure values in the noninvasive group. The noninvasive signal was lower by an average of 18.5 ±13.3 mm Hg in systole and 13.4 ±9.7 mm Hg in diastole than the invasively measured signal. Signal quality was poor in infants less than 11 kg body weight. The conclusions state that "continuous noninvasive blood pressure accurately tracks intra-arterial pressure over the short term" and "may provide adequate short-term monitoring of blood pressure in situations where intra-arterial catheter placement is impossible or undesirable." This reviewer knows of no situations in pediatric anesthesia where intra-arterial pressure monitoring might be considered "undesirable." On those occasions where access to the arterial circulation is impossible, clinicians would be better served using an automated oscillo-metric device (Dinamap) set on the "stat" mode than the Finapres.

Comparison of oxygenation measurements in pediatric patients during sickle cell crises.

Craft JA, Alessandrini E. *Pediatrics* 1994; 124:93-95.

Reviewed by ***Alan S. Klein, M.D.***

This study looked at pulse oximetry and co-oximetry in 24 children with sickle cell hemoglobinopathy and clinical symptoms of hypoxemia. They found that SpO_2 measurements significantly overestimated co-oximeter measured SaO_2. The mean bias of 6.9 percent was more than three times the accepted 2 percent accuracy of error of the (Nellcor) pulse oximeter. The observed SpO_2 overestimation bias has important clinical implications regarding the administration of oxygen in these patients in whom crises may be prolonged or worsened in the face of continuing hypoxemia. The overestimation of bias of SpO_2 and calculated SaO_2 compared with co-oximeter measured SaO_2 can largely be explained by altered arterial COHb content. When the authors applied the COHb correction to SpO_2, the mean bias was decreased to 2 percent, which is very close to the accuracy of the pulse oximeter device. Beware of false saturation readings.

Effects of acid on the larynx of the maturing rabbit and their possible significance to sudden infant death syndrome.

Wetmore RF. *Laryngoscope* 1993; 103: 1242-1254.

Reviewed by ***Howard B. Gutstein, M.D.***

This article is an excellent review of etiology and pathophysiology relevant to laryngospasm and sudden infant death syndrome (SIDS). The paper begins by outlining risk factors for SIDS. The author then goes on to detail theories underlying the etiology of SIDS, including airway obstruction, apnea and gastroesophageal reflux (GER) related apnea. GER related apnea has been shown to represent approximately 10 percent of all patients with infant apnea. The author details several case reports and reviews laryngeal anatomy and laryngeal and pharyngeal reflex neuroanatomy. In addition to direct laryngeal stimulation, laryngospasm and glottic closure are facilitated by the expiratory phase of respiration, decrease in arterial carbon dioxide, increase in arterial oxygen and negative intrathoracic pressure. The take-home message from this part of review is that both laryngospasm and the glottic closure reflex have the superior laryngeal nerve as the afferent component and the recurrent laryngeal nerve as the efferent component of the responses. Central reflex apnea also appears to be mediated by the superior laryngeal nerve, but the phrenic nerve is the efferent nerve. Sectioning of the superior laryngeal nerve appeared to abolish central apnea in young animals. The experiments further described laryngeal responses to installation of acid and the apneic responses observed as obstructive, central and mixed. Wetmore's results are compatible with those of earlier studies, showing that mixed apnea is the most common type in young animals. Additional related articles: *Laryngoscope* 1993; 103: 623-630, and *Laryngoscope* 1994; 104: 209-215.

The role of gentle ventilation for prevention of subglottic stenosis in the newborn.

Gaynor EB, Danoff SJ. *Otolaryngol Head Neck Surg* 1993; 109 (4):701-706.

Reviewed by ***Howard B. Gutstein, M.D.***

This article investigates the effects of a novel method of ventilatory support in infants weighing less than 1500 grams. It is well-known that prolonged endotracheal intubation and mechanical ventilation in these patients is associated with bronchopulmonary dysplasia (BPD), infection, intracranial hemorrhage, laryngeal and tracheal trauma, and subglottic stenosis. At the authors' institution, nasal CPAP at 5 cm of H_2O is established shortly after birth in every infant weighing less than 1500 grams. The device used is described in the article. Only half of the patients in this series required positive pressure ventilation (average of 5.6 days), then requiring a subsequent 10.6 days of nasal CPAP. Pneumothorax was the main complication observed with an incidence of about 6 percent, which is low when compared to other studies. The incidence of BPD and IVH were also reduced, and the authors have not yet had any cases of subglottic stenosis in their patients. This study suffers from the lack of a control group.

Acute epiglottiditis—changing epidemiologic patterns.

Franz TD, Rasgon BM. *Otolaryngol Head Neck Surg* 1993; 109(3):457-460.

Reviewed by ***Howard B. Gutstein, M.D.***

Epiglottiditis has been classically described as a disease of children caused by H. influenza type B. This article examines the relative incidence of acute epiglottiditis in a large population of children and adults over an 11-year period from 1980-90. The annual incidence of epiglottiditis in adults remained relatively stable over this time period. However, the annual incidence in children decreased markedly, from 3.5 cases per 100,000 in the 1980s to approximately 0.5 case per 100,000 children in 1990. It is possible that this changing epidemiologic pattern may be the effect of the H. influenza type B vaccine, which was first given in 1985. It appears that acute epiglottiditis, classically considered a disease of children, is now becoming a disease of adults.

Postoperative extradural analgesia in children: Comparison of morphine with fentanyl.

Lejus C, Roussiere G, et al. *Brit J Anaesth* 1994; 72:156-159.

Reviewed by ***Alan S. Klein, M.D.***

The authors studied 30 children, mean age 5.7 years, who underwent a wide range of orthopedic abdominal and thoracic procedures. Under general anesthesia with isoflurane, the children received an extradural bolus of 0.5 percent bupivacaine, 0.75 ml/kg with epinephrine for intraoperative analgesia. Children in group F were given an extradural dose of fentanyl 2 μg/kg (not exceeding 100 μg). Children in group M were given an extradural dose of morphine 75 μg/kg (not exceeding 3 mg). The opioids were diluted in saline to a volume of 1 cc for children weighing 20 kg or less and to a volume of 3 cc for those greater than 20 kg. Four hours later, a continuous extra-dural infusion was started with fentanyl 5 μg/kg/day (not exceeding 300 μg/day) in group F and saline in group M. The infusion was maintained at the same rate for 48 hours. At 24 hours, the children in group M were given a second dose of morphine 75 μg/kg; those in group F received saline. No opioid was administered to children by any route other than extradural. If analgesia was inadequate, an I.V. bolus of paracetamol 25 mg/kg was administered. Several pain scores were used to evaluate the children including the often quoted "Krane pain score." The authors found no significant difference in pain scores between the two groups. Pain relief was rated as good in 80 percent of patients. Analgesia was graded equally by parents and nurse. Remarkably (given the low infusion rate of fentanyl), 40 percent of patients in group F and 53 percent in group M did not need additional analgesics for the first 48 hours after operation. My own experience dictates that children often require more than 1 mg/kg/hour of fentanyl extradurally, and the duration of action of extradural morphine is closer to 12 hours than 24. If we believe that the study indicates equal analgesia between morphine and fentanyl, then one would be swayed by the frequency of side effects seen in group M toward the use of fentanyl. Nausea and vomiting occurred 53 percent in group M versus 20 percent in group F, pruritus 33 percent versus 0 percent.

Comparison of patient-controlled analgesia with and without a background infusion after lower abdominal surgery in children.

Doyle E, Robinson D, et al. *Brit J Anaesth* 1993; 71:670-673.

Reviewed by ***Alan S. Klein, M.D.***

In this study, the authors looked at 40 children ages 6-12 years undergoing appendectomy who randomly received either morphine patient-controlled analgesia (PCA) with a bolus dose of 20 μg/kg and lockout of five minutes or the same PCA with a background infusion of morphine of 20 μg/kg/hr. The patients breathed room air and were monitored with pulse oximetry. Their study found that the use of a background infusion of morphine in a PCA regimen for children undergoing lower abdominal surgery produced a significant increase in morphine consumption without improving pain relief; a significant increase in the incidence of side effects was seen as well (respiratory depression, increased sedation, nausea and vomiting). The patients who received the background infusion did spend more time asleep at night than those who did not, and this might be perceived as a good side effect. In this study, hypoxemia was defined as SpO_2 less than 94 percent. The lowest SpO_2 measured in any patient was 83 percent. There were 143 incidences of desaturation in the background infusion group versus 94 in the PCA-only group. This study makes a strong case for the abandonment of background infusions in children at least for post appendectomy pain.

Tracheal tube leak test—is there interobserver agreement?

Schwartz R, Stayer S, Pasquariello C. *Brit J Anaesth* 1993; 40(11):1049-1052.

Reviewed by ***Lawrence H. Feld, M.D.***

Two hundred forty-two patients ranging in age from newborns to 10-year-olds were studied using uncuffed endotracheal tubes. Muscle relaxants were used in all patients, and all endotracheal tubes were placed in the mid trachea. Two leak tests were performed by two different independent, experienced observers. No pressure greater than 50 cm H_2O was allowed to occur. The endotracheal tubes were changed if a leak did not occur with airway pressures greater than 40 cm H_2O. Statistical findings showed poor agreement between each pair of observers. It is the authors' opinion that because of the considerable variation between two experienced observers in assessing leak pressures (especially at high pressures), it is unreasonable to set a rigid upper limit of leak pressure for changing an endotracheal tube.

Predictive factors for spontaneous closure of atrial septal defects diagnosed in the first 3 months of life.

Radzik D, Davignon A, van Doesburg N, Fournier A, Marchand T, Ducharme G. *J Am Coll Cardiol* 1993; 22:851-853.

Reviewed by ***Stephen Rimar, M.D.***

Little is known about the natural his-

tory of atrial septal defects (ASDs) diagnosed in infancy. In order to establish the rate of spontaneous closure of ASDs diagnosed before 3 months, 101 infants were followed for an average of 265 ±190 days. The results suggest that infants with an ASD less than 3 mm need not be followed as 100 percent of these defects closed by 18 months of age. Those with a defect 3-8 mm should be evaluated by the end of the 15th month when greater than 80 percent of these defects will close. An ASD with a diameter > 8 mm has little chance of closing spontaneously, and surgical correction should be considered. Defects < 3 mm probably do not constitute a cardiac malformation in light of their natural evolution.

Propofol anaesthesia reduces early postoperative emesis after paediatric strabismus surgery.

Reimer EJ, Montgomery CJ, Bevan JC, Blackstock D, Popovic V. *Brit J Anaesth* 1993; 40(10):927-933.

Reviewed by ***Lawrence H. Feld, M.D.***

The authors compared the incidence of emesis after propofol anesthesia in the presence and absence of nitrous oxide compared to patients anesthetized with Pentothal, halothane and nitrous oxide. Seventy-five ASA physical status 1 or 2 unpremedicated patients, 2-12 years of age were studied, and the incidence of emesis was recorded for 24 hours. In all patients, vecuronium was administered and morphine was given as needed for postoperative pain. Emesis in the hospital in both the propofol with nitrous oxide (4 percent) and without nitrous oxide (4 percent) was less than in the halothane anesthetized patients (32 percent). However, the overall incidence of emesis after surgery upon discharge and 24 hours post discharge was no different. Vomiting could not be correlated to narcotic use postoperatively. The authors conclude that propofol with and without N_2O decreased only early emesis supporting the concept of a short-acting, specific antiemetic effect of propofol. They go on to discuss that propofol might not be enough to rely on to meet the antiemetic challenge of a car ride, oral intake, etc. that is seen late in the postoperative period. The authors review the literature concerning postoperative emesis and propofol use in a cohesive manner offering explanation for the wide variation in the incidence of emesis reported in this finite group of pediatric patients.

Postoperative analgesics for children and adolescents: Prescription and administration.

Tesler MD, Wilkie DJ, Holzemer WL, Savedra MC. *J Pain Symptom Manage 1994*; 9(2):85.

Reviewed by ***David E. Cohen, M.D.***

This study followed 131 children and adolescents for five postoperative days. Only 1.5 percent did not have analgesic orders. Clinically significant pain noted over the five days had a weak correlation to the amount of analgesic given. Prescribed and administered opioid doses were often less than recommended doses. Dosing intervals were often more prolonged than appropriate for adequate pain control. The authors conclude that children continue to be undertreated.

Cognitive-behavioral interventions for children's distress during bone marrow aspirations and lumbar punctures: A critical review.

Ellis J, Spanos N. *J Pain Symptom Manage* 1994; 9(2):96.

Reviewed by ***David E. Cohen, M.D.***

This article nicely reviews behavioral interventions for procedural pain. How one integrates nonpharmacologic and pharmacologic interventions are not addressed.

Antinociception following implantation of mouse B16 melanoma cells in mouse and rat spinal cord.

Wu H, Lester B, Sun Z, Wilcox G. *Pain* 1994; 56:203.

Reviewed by ***David E. Cohen, M.D.***

Catecholamine secreting cells were implanted around mouse spinal cord. Animals receiving these cells showed resistance behavior changes induced by intrathecal injection of Substance P. This effect was antagonized by an alpha adrenergic antagonist. Morphine was tenfold more potent in the mice transplanted with the catecholamine secreting cells. This effect could be blocked by naloxone or an alpha adrenergic antagonist. Tolerance to alpha adrenergic agonists were noted after five days. The implantation of the cells were lethal after 47 days. The authors speculate that implantation in dialyzing containers may be efficacious as a therapy for chronic intractable pain.

Age-related response to lidocaine-prilocaine (EMLA) emulsion and effect of music distraction on the pain of intravenous cannulation.

Arts SE, Abu-Saad HH, Champion GD, et al. *Pediatrics* 1994; 93:797-801.

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

This study compared the efficacy of local anesthetic cream and music distraction in reducing or preventing pain from needle puncture in children using a self-report and behavioral scores. Younger children reported significantly more pain than older children. The lidocaine-prilocaine emulsion was highly effective in preventing pain from venipunctures in young children, the group in most need of this therapy. In the 4-6 year age group, the local anesthetic emulsion had a maximum effect, almost eliminating pain-related behavior.

Acetaminophen analgesia in neonatal circumcision: The effect on pain.

Howard CR, Howard FM, Weitzman ML. *Pediatrics* 1994; 93:641-645.

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

This randomized, double-blind study of acetaminophen analgesia in 44 neonates undergoing circumcision confirmed previous studies that this operation causes severe and persistent pain. Acetaminophen was not found to ameliorate the intraoperative or immediate postoperative pain of circumcision.

Risk factors for gastrointestinal bleeding in critically ill patients.

Cook DJ, Fuller HD, Guyatt GH, Marshall JC, Leasa D, Hall R, Winton TL, Rutledge F, Todd TJR, Roy P, Lacroix J, Griffith L,

Willan A, for the Canadian Critical Care Trials Group. *N Engl J Med* 1994; 330: 377-381.

Reviewed by ***Anne E. Dickison, M.D.***

The efficacy of prophylaxis against stress ulcers in preventing gastrointestinal bleeding in critically ill patients has led to its widespread use. The side effects and cost of prophylaxis, however, necessitate targeting preventive therapy to those patients most likely to benefit. A prospective, multicenter cohort study evaluated potential risk factors for stress ulceration in patients admitted to intensive care units and documented the occurrence of clinically important gastrointestinal (GI) bleeding (defined as overt bleeding in association with hemodynamic compromise or need for bleed transfusion). Of 2,252 patients, 33 (1.5 percent; 95 percent confidence interval, 1.0 to 2.1 percent) had clinically important bleeding. Two strong independent risk factors for bleeding were identified: respiratory failure (odds ratio, 15.6) and coagulopathy (odds ratio, 4.3). Of 847 patients who had one or both of these risk factors, 31 (3.7 percent; 95 percent confidence interval, 2.5 to 5.2 percent) had clinically important bleeding. Of 1,405 patients without these risk factors, 2 (0.1 percent) had clinically important bleeding. The mortality rate was 48.5 percent in the group with bleeding and 9.1 percent in the group without bleeding ($p < 0.001$). Few critically ill patients have clinically important GI bleeding, and therefore, prophylaxis against stress ulcers can be safely withheld from critically ill patients unless they have a coagulopathy or require mechanical ventilation. GI bleeding is a significant cause of morbidity and mortality in pediatric as well as adult critical care units. As supported by the positive results of numerous randomized trials, prophylactic measures such as neutralization of gastric acid, reduction of gastric acid secretion or cytoprotective methods are commonly prescribed. Another recent study (Cook et al. Stress ulcer prophylaxis in the critically ill: A meta-analysis. *Am J Med* 1991; 91:670) reported a 50-percent reduction of relative risk of clinically important bleeding among intensive care patients given stress ulcer prophylaxis. These pharmacologic interventions, though proven effective for reducing the risk, are expensive and may have adverse side effects. Even though this Canadian Critical Care Trials Group study was of adult patients (older than 16 years of age), it is presented here to heighten awareness that GI bleeding risks in intensive care unit (ICU) patients may vary with certain predictable circumstances, and to suggest that as a cost-effective measure, prophylaxis might be prescribed more selectively. Intensive care unit patients were excluded from this June, 1990 to July, 1991 study if they presented with upper GI bleeding or developed it within 24 hours of admission, if they died or were discharged within 24 hours of ICU admission, or if they had had a previous gastrectomy, facial trauma or epistaxis, or brain death. Prophylaxis against stress ulcers was withheld in all patients except those with head injury, burns over more than 30 percent of the body surface area, organ transplants, an endoscopic or radiologic diagnosis of peptic ulcer, gastritis or clinical GI bleeding in the preceding six weeks. Of the 674 of 2,252 patients who did receive stress ulcer prophylaxis, the method was an H2-receptor antagonist in 71.8 percent, sucralfate in 7 percent, antacids in 4.9 percent, a prostaglandin in 0.6 percent, omeprazole in 0.3 percent and a combination of drugs in 15.4 percent. The age, sex and APACHE scores were similar in patients who developed GI bleeding and those who did not. The mortality rate among the patients with clinically important bleeding was 48.5 percent as compared to 9.1 percent for all other patients ($P<0.001$). Coagulopathy and respiratory failure requiring mechanical ventilation for more than 48 hours were the only two independent risk factors for GI bleeding that were identified by a multiple regression analysis. The incidence of clinically important bleeding in critically ill or injured patients has been determined to be approximately 2 percent in this and many other studies and trials. One study in children (Lacroix J et al. Frequency of upper gastrointestinal bleeding in a pediatric intensive care unit. *Crit Care Med* 1992; 20:35-42) has also supported the finding that coagulopathy and respiratory failure are the two major independent risk factors involved in GI bleeding. The Canadian Critical Care Trials Group study supports the view that the risk of bleeding in patients without these two risk factors is low enough so that prophylaxis can be safely withheld, but that in the subgroup of critically ill patients who have respiratory failure of more than 48 hours in duration and/or a coagulopathy, there is a cost-effective and reduction of risk benefit from the use of stress ulcer prophylaxis.

Predictors of postoperative respiratory complications in premature infants after inguinal herniorrhaphy.

Gollin G, Bell C, Dubose R, Toulokian R, Seashore J, Hughes C, Oh T, Fleming J, O'Connor T. *J Pediatr Surg* 1993: 28(2):244-247.

Reviewed by ***Lawrence H. Feld, M.D.***

This is a retrospective study looking at the records of 47 premature infants (mean gestational age 30.3 weeks) undergoing bilateral inguinal hernia repair. The authors tried to identify conditions that are independent risk factors for respiratory complications. The incidence of complication was 43 percent (postoperative ventilation 34 percent, apnea/bradycardia 23 percent, emesis/cyanosis with first feeding 6 percent, postoperative reintubation 4 percent). Through statistical analysis, the authors identified that low gestational age and postconceptual age at operation, low birth weight for gestational age and preoperative ventilatory assistance were significantly associated with postoperative complications but only a history of RDS/BPD, PDA and low absolute weight at operation were independent risk factors for postoperative complications. They conclude by stating that a history of respiratory dysfunction and the size at surgery may be more important predictors of postoperative respiratory dysfunction in preterm infants. It might turn out that a history of respiratory dysfunction in the

(Continued on page 20)

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USP TO EXPAND PEDIATRIC DRUG DATA

The United States Pharmacopeia (USP) has initiated a major effort to augment the pediatric drug use and dosage information within its drug information (DI) database. Based on recommendations of its Pediatric Advisory Panel, which worked in conjunction with specialists on USP's other medical specialty panels, guidelines and pediatric use precautions will be developed and integrated into the USP DI database. Drugs used in pediatric anesthesiology will be the first focus of this initiative.

Charles J. Coté, M.D., Children's Memorial Hospital, Chicago, Illinois, will lead the working group with responsibility for the pediatric anesthesia drug project. Other members include: **J. Michael Badgwell, M.D.**, Lubbock, Texas; **Barbara W. Brandom, M.D.**, Pittsburgh, Pennsylvania; **D. Ryan Cook, M.D.**, Pittsburgh, Pennsylvania; **John J. Downes, Jr., M.D.**, Philadelphia, Pennsylvania; **Dennis M. Fisher, M.D.**, San Francisco, California; **John E. Forestner, M.D.**, Fort Worth, Texas; **Helen W. Karl, M.D.**, Seattle, Washington; **Harry G.G. Kingston, M.B.**, Portland, Oregon; **Anne M. Lynn, M.D.**, Seattle, Washington; **Mark S. Schreiner, M.D.**, Philadelphia, Pennsylvania; **Victoria J. Simpson, M.D.**, Louisville, Colorado; and **Mehernoor F. Watcha, M.D.**, Dallas, Texas.

Pediatric drug and dosing guidelines will be developed by the group, verified by USP consensus panels and then become part of the USP *Advice for Health Care Professionals.*

Editorial Comment: This obviously represents an important undertaking and a major step forward. However, one worries that it also encourages the lack of effort by pharmaceutical companies to support appropriate pediatric studies of drugs that they know in their corporate hearts will be widely used in children. — *FXM, PJD* □

LITERATURE REVIEWS

(Continued from page 18)

hernia size at surgery may, in fact, be more important predictors of postoperative respiratory dysfunction. However, one cannot base these conclusions on a retrospective study such as this. A retrospective study is weak with respect to documentation of all respiratory complications; i.e., were all incidences of apnea and bradycardia documented? Anesthetic techniques and criteria for extubation were not controlled. Postoperative medications were also not given according to a single criteria. The authors also use "episodes of apnea with bradycardia (80 bpm) requiring stimulus" as one of the criteria for postanesthetic respiratory complications. This definition does not include episodes of apnea without bradycardia or apnea with HR<100 or any problems of apnea with decreased oxygen saturation. □