

CRITICAL CARE NEWS

The Newsletter of the Section on Critical Care of the American Academy of Pediatrics

Volume 5 Number 2 July, 1998

SECTION ON CRITICAL CARE SCHEDULE OF SECTION EVENTS FOR THE 1998 AAP ANNUAL MEETING SAN FRANCISCO, CALIFORNIA OCTOBER 17-21, 1998

- Executive Committee Meeting Saturday, Oct 17 3-7 pm
- Critical Care Procedures Workshop Sunday, Oct 18 9-Noon
(Dr. Scott Soifer and colleagues)
- H232 Critical Care Abstract Session Sunday, Oct 18 8 am - 5 pm
8:45 am - Noon Abstract presentations
Noon-1:30 pm Business meeting and lunch
1:30 - 2 pm Distinguished Career Award - Dr. George Gregory
2-5 pm Abstracts and Best Abstract Awards
- Please see the detailed abstract session schedule below.**
- H327 End of Life Decision Making (with Bioethics Section) Monday, Oct 19 9 am - Noon
Faculty - Drs. Levetown, Nelson, Frader, Todres and Kodish
- H362 Neurosurgical Issues in the PICU (with Neurology Section) Monday, Oct 19 2-5 pm
Faculty - Drs. Chestnut, James, Bruce and Kochanek
Topics: Brain edema versus brain swelling
Head Trauma
Craniofacial reconstruction, anesthesia, and critical care
The management of intracranial hypertension and cerebral metabolism
- J415 Nonlinear Dynamics in Music & Medicine:
Fractals, Chaos & Complexity at the Bedside Tuesday, Oct 20 2-4 pm
Speaker - Dr. Ary Goldberger
(special presentation sponsored by the Section on Critical Care Medicine)

**SECTION ON CRITICAL CARE
ABSTRACT SESSION
1998 ANNUAL AAP MEETING
OCTOBER 18, 1998 8:45-5:00**

8:45-9:00 Continental Breakfast

9:00-9:15 Introduction and Welcome: Brahm Goldstein, MD

Morning Abstract Session

Moderators: Michele Moss, MD, David Jaimovich, MD

9:15-9:30 Modification of the Brain Injury in Group B Streptococcal Meningitis with 3-Aminobenzamide Inhibitors. J. Irazuzta, MD, FAAP; B. Zingarelli, MD; R. McLaren, MD; D. Mirkin, MD; R. Pretzlaff, MD. Children's Medical Center, Dayton, OH.

9:30-9:45 Role of Magnesium in IL-1b Production by Human Monocytes. M.G. Keating, MD; L.D. Britt, MD. Eastern Virginia Medical school, Norfolk, VA.

9:45-10:00 Intact and denatured bacterial DNA-induced lethality in a murine model of experimental septic shock. A.J. Schwarz, MD; D.C. Morrison, Ph.D.; R. Silverstein, Ph.D. University of Kansas Medical Center, Kansas City, KS.

10:00-10:15 The Use of Bilevel Positive Airway Pressure in Children with Obstructive Airways Disease. P.J. Thill, MD; H.P. Baden, MD; T.P. Green, MD. Children's Memorial Hospital, Chicago, IL.

10:15-10:30 Both Pulmonary Blood Flow and Surface Tension Alter Pulmonary Vascular Resistance Hysteresis. K.M. Creamer, MD; L.L. McCloud, MD; L.E. Fisher, MD, FAAP; I.C. Ehrhart, Ph.D. Medical College of Georgia, Augusta, GA.

10:30-10:45 Coffee Break

Moderators: Tex Kissoon, MD, Stephanie Sturgeon, MD

10:45-11:00 Etiology of Pulmonary Vascular Resistance Hysteresis: Vascular Recruitment or Surface Tension. K.M. Creamer, MD; L.L. McCloud, MD; L.E. Fisher, MD, FAAP; I.C. Ihrhart, Ph.D. Medical College of Georgia, Augusta, GA.

11:00-11:15 Base Deficit Does Not Predict Arterial Lactate Level After Congenital Heart Surgery. A.F. Rossi, MD; H. Seiden, MD; R.P. Gross, RN, MSN; I.A. Parness, MD. The Mount Sinai Medical Center, New York, NY.

11:15-11:30 Outcome of Infants and Children with Moderate to Severe Hyperlactatemia Following Surgery for Congenital Heart Disease. S. Srivastava,

MD, FAAP; H.S. Seiden, MD; R.P. Gross, RN, MSN; A.F. Rossi, MD. The Mount Sinai Medical Center, New York, NY.

11:30-11:45 Nitric Oxide Inhalation Increases the Efficiency of Carbon Dioxide Elimination in a Model of Acute Lung Injury. J.W. Skimming, MD; K. Spalding, MD; M.J. Banner, Ph.D. University of Florida College of Medicine, Gainesville, FL.

11:45-12:00 Use of Hypertonic Saline (3%NaCl) in the Treatment of Resistant Intracranial Hypertension in Pediatric Head Injured Patients. S.K. Khanna, MD; D. Davis, MD; B. Fisher, MD; B. Peterson, MD. Children's Hospital, San Diego, CA.

12:00-1:30 **Lunch and Section Business Meeting**

1:30-2:00 **Presentation of Distinguished Career Award**

Afternoon Abstract Session

Moderators: Harold Amer, MD, Curt Steinhart, MD

2:00-2:15 Stability of Dopamine Infusions up to 84 Hours. N. Ghanayem, MD; L. Yee, MS; J. Neicheril, MS; T. Nelson, RPh; S. Wong, PhD; K. Wendelberger, MD; T. Rice, MD. Medical College of Wisconsin, Wauwatosa, WI.

2:15-2:30 Pulmonary Dysfunction During Lipid Infusion in Sepsis is Medicated by Locally Produced Eicosanoids. M. Kalyanaraman, MD; S. Heidemann, MD; A.P. Sarnaik, MD, FAAP. Wayne State University, School of Medicine, and Children's Hospital of Michigan, Detroit, MI.

2:30-2:45 An in vivo Model of Lung Ischemia-Reperfusion Injury. L.J. Hernan, MD; M.S. Dowhy, MD; A.T. Rotta, MD. State University of New York at Buffalo, Buffalo, NY.

2:45-3:00 Forgoing Life-Sustaining Treatment in the Pediatric Intensive Care Unit (PICU): Parental Perspectives on the Quality of Staff Communication. J. Burns, MD; E.C. Meyer, PhD; C. Walsh, MSHS; M. Geller, CCRN; J. Griffith, PhD; I. D. Todres, MD, FAAP; R. Truog, MD. Harvard Medical School, and Children's Hospital, Boston, MA.

3:00-3:15 Mercaptoethylguanidine (MEG) Modifies Brain Injury in Group B Streptococcal Meningitis. J. Irazuzta, MD, FAAP; B. Zingarelli, MD; K. Milam, MD; M.L. Diaz, MD. University of Cincinnati College of Medicine, The Children's Medical Center, Dayton and Children's Hospital Medical Center, Cincinnati, OH.

3:15-3:45 Coffee Break and Poster Review

Best Abstract Awards - In-Training, Basic Science, and Research

Moderators: Tim Yeh, MD and Brahm Goldstein, MD

3:45-4:00 Best In-Training Abstract

Pentoxifylline Rescue Preserves Lung Function in Acute Lung Injury. K.M. Creamer, MD; L.L. McCloud, MD; Lyle E. Fisher, MD, FAAP; I.C. Ehrhart, PhD. Medical College of Georgia, Augusta, GA.

4:00-4:15 Best In-Training Abstract

Quantification of Pulsus Paradoxus (PP) Using a Pulse Oximeter. J. Clark, MD; K. Raghavan, MD; M. Lieh-Lai, MD, FAAP; R. Thomas, PhD; A. Sarnaik, MD, FAAP. Children's Hospital of Michigan, Wayne State University School of Medicine, Detroit, MI.

4:15-4:30 Best In-Training Abstract

Neutrophils Induce Apoptosis of Alveolar Epithelial Cells Via FAS/FAS Ligand Interaction. K. Serrao, MD; J.D. Fortenberry, MD, FAAP; L.S. Brown, PhD. Eggleston Children's Hospital at Emory University, Atlanta, GA.

4:30-4:45 Best Basic Science Abstract and Best In-Training Abstract

High Frequency Oscillatory Ventilation Attenuates Inflammation and Oxidative Injury to the Lung. A.T. Rotta, MD; B. Gunnarsson, MD; D.M. Steinhorn, MD. The Children's Hospital of Buffalo and SUNY at Buffalo, NY.

4:45-5:00 Best Clinical Abstract and Best In-Training Abstract

Socioeconomic Factors and Emergency PICU Admission. A.L. Naclerio, MD; J.W. Gardner, MD, DrPH; S.R. Keller, MD, FAAP; G.J. Hauser, MD, FAAP; C.C. Corriveau, MD, FAAP; H.S. Patterson, MD, FAAP; M.M. Pollack, MD, FAAP. Children's National Medical Center, Washington, DC.

Abstracts Accepted For Poster Presentations

Albuterol Delivery in a Neonatal Ventilator-Lung Mode. R.A. Lugo, PharmD; J.K. Kenney, PharmD; J. Keenan, BS, RRT; J.W. Salyer, BS, RRT; J. Ballard, BS, RRT; R.M. Ward, MD, FAAP. Primary Children's Medical Center and University of Utah College of Pharmacy and School of Medicine, Salt Lake City, UH.

Treatment of Hypokalemia with Bolus Potassium Infusion in the Pediatric Intensive Care Unit. M.M. Frantz, MD, FAAP; J.J. Mickell, MD, FAAP. Children's Medical Center, Medical College of Virginia, Richmond, VA

Forgoing Life-Sustaining Treatment in the Pediatric Intensive Care Unit: Parental Decision Making and Perceived Sense of Control. E.C. Meyer, PhD; J. Burns, MD; C. Walsh, MSHS; M. Geller, CCRN; J. Griffith, PhD; I. D. Todres, MD, FAAP; R. Truog, MD. Harvard Medical School, Children's Hospital, Boston, MA.

Excitotoxicity after Severe Traumatic Brain Injury (TBI) in Infants and Children: The Role of Child Abuse. R. Ruppel, MD; P. Kochanek, MD, P. D. Adelson, MD; M. Rose, PhD; S. Wisniewski, PhD; M. Bell, MD; R. Clark, MD; M. Whalen, MD; C. Robertson, MD; D. Marion, MD; S. Graham, MD, PhD. Safar Center for Resuscitation Research, and Children's Hospital, University of Pittsburgh School of Medicine, Pittsburgh, PA.

Use of the ONLINEABG System for Arterial Blood Gas Analysis in the Pediatric Intensive Care Unit. K.B. Churchwell, MD, FAAP; J. Forlidas, RN, MSN; P. Lovin, RN; J. Smith, RN; A. Lynch, MD. Vanderbilt University School of Medicine, Nashville, TN.

Isoflurane Therapy for Status Asthmaticus in Children. C.R. Clapp, MD; D.S. Wheeler, MD, M.L. Ponaman, MD, FAAP; H. McEachren, BSN, PNP; W.B. Poss, MD, FAAP. Naval Medical Center, San Diego, CA.

Peripherally Inserted Central Venous Catheters (PICCs): An Alternative to Repeated Peripheral Venous Cannulation. A.K. Sparrow; A. Reeve; P. Habibi; S. Nadel; J. Britto. Imperial College School of Medicine at St. Mary's, London, England.

Myocardial Injury in Children with Respiratory Syncytial Virus Infection. P.A. Checchia, MD; H.J. Appel, MD; D. Callas, PhD; S. Kahn, PhD; F.A. Smith, MD; E. Paul, MD, FAAP; H.P. Baden, MD, FAAP. Children's Memorial Hospital, Northwestern University, Chicago, IL and Loyola University Medical Center, Maywood, IL.

Measurement of Pulmonary Exhaled Nitric Oxide: Relationship to Exhalation Rates and Inline Versus Bag Collection Techniques in Normals and Asthmatics. N. Kisson, MD, FAAP; P. Silkoff, MD; S. Murphey, PhD; K. Blake, MD, L. Duckworth, RNBSN; C. Taylor, MSRRT. University of Florida, Nemours Children's Clinic, and Wolfson Children's Hospital, Jackson, FL.

The Effect of Tricyclic Antidepressant Overdose on Electrocardiographic Repolarization Intervals in Pediatric Patients. A. Stock, MD; J. Clickstein, MD, FAAP; J. Weingarten-Arams, MD, FAAP. Montefiore Medical Center and Albert Einstein College of Medicine, Bronx, NY.

Characteristics of Long-Stay Patients and Their Effect on Institutional Efficiency. J. Marcin, MD; A. Slonim, MD; M.M. Pollack, MD, FAAP. Children's National Medical Center, The George Washington University School of Medicine, Washington DC and the National Institutes of Health, Bethesda, MD.

Validation and Comparison of PRISM and PIM Scores in Prediction of Mortality from Meningococcal Disease. M. Festa, MRCPCH; W. McDermott, RN; J. Britto, MD; P. Habibi, FRCPC, PhD; S. Nadel, FRCPC. St. Mary's Hospital, London, England.

END-OF-LIFE DECISION-MAKING
Joint Session of the AAP Section on Critical Care and the Section on Bioethics
October 19, 1998

On Monday, October 19, 1998 at the Annual Meeting of the AAP in San Francisco, there will be an interactive plenary session jointly sponsored by the Section on Critical Care and the Section on Bioethics entitled "End-of-Life Decision-Making ." The purpose of the session is to begin to build a consensus on how end-of-life decisions are made and to decrease the current idiosyncratic nature of the process. The format will be a brief presentation of cases and their critical issues as identified by the plenary panel, followed by small group discussions involving all participants. The discussions will be facilitated by the panel members and tape-recorded for later transcription (anonymous) to ensure that everyone's voice is heard. The goal is to begin to define a more uniform framework from which to approach such complicated issues, to ensure that families and children are given similar choices and information given similar situations. After small group discussions, the panel members will present the summary of perspectives from small group discussions to the group as a whole for critique. The results of the informal summary and summation of transcripts will be published for wider critique and final submission to the AAP to create standards for approaches to communication and end-of-life decision-making.

Herein we present the cases in advance to allow thoughtful consideration of the issues and to encourage you to come and participate. We look forward to hearing your opinion (in writing if you cannot make the meeting).

Case 1

CE was 14 yrs old when she was dx'd with Ewing's sarcoma of the left distal femur and metastatic pulmonary disease. She was in her usual state of health until 3 mos prior to admission when she first experienced leg pain near her knee which was intermittent and did not interrupt her normal activities. During the next 2 months, the pain worsened, awakening her at night. She began to have pain on inspiration without dyspnea or hemoptysis. CE denied constitutional symptoms such as fever or wt loss. Two weeks prior to admission, an MRI demonstrated a leg mass.

Open bx showed Ewing's sarcoma and a CT of the chest revealed multiple pulmonary lesions. She began intensive, multi-agent chemotherapy and achieved remission after 5 courses. Due to her good response, CE became eligible for a regimen of additional high-dose chemotherapy followed by autologous stem cell transplantation to consolidate her remission. After a 6 week hospitalization for transplantation, CE was discharged.

4 months after discharge, CE developed hemoptysis and was admitted to the PICU. CXR showed recurrent disease. A CT showed a pleural effusion, which was malignant on thoracentesis. She underwent tetracycline sclerotherapy to prevent re accumulation; the procedure was excruciatingly painful. After several days, the chest tube was removed as the drainage subsided.

The oncologist discussed CE's dismal prognosis with the patient and her family and suggested changing to palliative goals of care as well as implementing a DNR order. Though her parents agreed, they did not tell CE, who wanted to "keep on fighting"; she inquired about a second BMT. Her parents asked the oncologist to convince CE to accept palliative care without their help. When asked why they did not want to talk to CE about this, they responded that they did not want her to think they had "given up on her."

One week later, CE developed recurrent hemoptysis and asked for another chest tube and sclerosis procedure. Despite misgivings about the suffering involved, the oncologist admitted her to the PICU for the procedure based on her persistent request for life-sustaining medical therapy.

Issues

1. How do we approach resolution of parent child conflicts, particularly in the case of the "knowing child?" How do we show respect to the emerging autonomy and competency of the teenager?
2. What is the extent of the obligation to prevent pain where possible and treat it aggressively when it occurs?

Case 2

OM was a 9 year old boy with a 6 yr hx of IDDM. He was the eldest of 2 children in a divorced home and was extremely mature for his age. He developed ALL, a dx with a 70% 5 yr survival in normal children on average. Due to the effects of the leukemia and its therapy, OM suffered many complications. Several of these problems were probably exacerbated by his underlying diabetes. Significant problems included typhilitis (neutropenic enterocolitis) with a subsequent intestinal perforation followed by exploratory laparotomy, creation of an ileostomy and fungal peritonitis. This led to a difficult ICU course, including necrotizing fasciitis of his lower abdomen and upper thighs. Many times it was thought that OM would not survive, but each time he overcame adversity with the help of his treatment team and his devoted mother.

Over the course of 6 weeks in the ICU, OM saw his younger brother, with whom he had a very close relationship, one time. He had also been very popular at school, but had not opportunity to visit with his friends.

After 6 weeks of critical illness, OM's nutrition was severely compromised. His albumin dropped to 2 despite aggressive attempts at nutritional intervention. His midline abdominal incision dehiscd and he eviscerated; he realized he was dying and said as much to his mother, who became very distraught. She felt conflicted in her desire for him to live and for him to find relief from his ongoing suffering; she also realized that it was unlikely he would survive. The treatment team did not echo her conflict in their communication with OM's mother: for them, cure remained the singular goal.

OM's treatment team believed that with sufficient nutrition, aggressive chemotherapy and anti-infective therapy, he would recover. His WBC was 0.3, bone marrow bx showed no normal progenitors, he had 2 sites of invasive fungal disease (peritonitis and pyelonephritis) and severe mucositis which he reported as moderately painful (2/5). His abdomen was intensely painful (5/5), but despite diarrhea from his ileostomy, the treatment team was reluctant to begin opioids due to concerns of causing an ileus, further compromising his nutrition. The nurses were literally in tears about the untreated pain. A consultant persuaded them to begin opioids; OM began eating and speaking more, now asking for his favorite foods.

Several nurses complained that the child was being mistreated by the pretense he could be saved; others were waiting to get a signal from the mother. She in turn was waiting for the doctors, despite the fact that she indicated clearly 2 days before he died that she was aware OM might be dying. Five days before his death she asked for advice about bringing OM's music idol in early. (He was scheduled to come in 10 days through a make-a-wish organization.) One physician told her to expedite the process and the singer came when the OM was alert and able to appreciate the visit. There was a family meeting at noon five days after OM predicted his death. His family was informed that OM had fungal endocarditis and was hypotensive (60/20) despite pressors. It was only then that the irreversibility of OM's problems were acknowledged. The agreement was not to escalate pressors (which were 20 mcgs of DA and 2 of epi) and no initiation of new therapies including CPR or other cardioresuscitative measures. However, the monitors were never removed. He died at 2:30 p.m. that same day.

Issues

1. What does it mean to listen to / hear the child? What does assent mean if dissent is not allowed?
2. Can and should a palliative plan of care be interwoven with curative goals early in the course of care of children with life-threatening conditions?
3. What are the merits and problems with maintaining a unified front vs. allowing the family to be aware of differing viewpoints regarding medical information and decisions?

Case 3

An 8 yo girl with AIDS was hospitalized for severe nasopharyngeal bleeding 18 months after her original dx. She had thrombocytopenia and liver dysfunction. Investigation led to the discovery of multiple intrahepatic lesions. Attempted biopsy resulted in life-threatening hemorrhage, requiring ICU interventions. She developed renal insufficiency and pancreatitis. The liver lesions remained undiagnosed.

The patient's mother had AIDS encephalopathy. She abruptly requested that life-sustaining therapy be withdrawn and her child, who was receiving mechanical ventilation and pressor

agents, be allowed to die at home; this was inconsistent with her previous views about life support for her daughter.

The second attempt at liver biopsy was successful, but showed abnormal clusters of cells of uncertain significance. The patient's father, who was the primary caregiver for the child and her siblings, expressed the view that his daughter's condition was deteriorating and perhaps it was time to accept the inevitable. He did not believe that he, his wife, or the other children could tolerate death at home, even if it could be arranged. After a day or 2 of discussion, both parents agreed to forgo CPR or otherwise escalate life support. No intervention was undertaken when the child developed anuria.

Issues

1. What is the relationship between unprecedented / desperate / innovative care and over treatment or futility?
2. In assisting families to make decisions, what is the obligation to affirm competency (is it different if the parents agree with the recommendations or not?); is there an obligation to understand the reasons behind the decisions?
3. Is there an obligation to provide a family-centered death in the place of their choosing and how can / should this be accommodated?
4. How should the patient's overall prognosis impact decisions whether or not to pursue diagnostic testing?

If you find other main issues, please feel free to raise them by correspondence or at the beginning of the plenary session so they may be discussed by all. We look forward to hearing your thoughts.

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DESIGN AWARD FOR NEONATAL AND PEDIATRIC INTENSIVE CARE UNITS

The Society of Critical Care Medicine (SCCM), American Association of Critical-Care Nurses, and the American Institute of Architects Academy on Architecture for Health will sponsor an award of \$1500 for their 1999 ICU Design Citation. This award honors a critical care unit which combines functional ICU design with the humanitarian delivery of critical care, recognizing exceptionally designed units, and disseminates examples of exemplary designs.

Applications for this award must be submitted by August 15, 1998. To receive an application, contact Kim Cantrell at SCM 714-282-6047. The submitted materials of the winning and runner-up entries have

been compiled into the ICU Design Video and Booklet. Each year, additional projects are added. The notebook and video package are valuable tools for ICU design teams looking for ideas ranging from space planning to details. *Critical Care Unit Design and Furnishing* is a guidebook that helps team members make an optimal contribution from conception of the design to its fruition. These products are available from SCCM at 714-282-6000.

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