SECTION ON CRITICAL CARE

American Academy of Pediatrics



May 2004



A Note from the Chair by Michele Moss, MD

One of hottest discussions ever on the PICU listserv has been the ongoing issue of JCAHO and the Rule of Sixes. Many of you responded to David Jaimovich's brief survey on the use of the Rule of Sixes. Now you can also respond to a formal IRB approved survey on how drug infusions are



calculated in our PICUs. The survey is available on the Section on Critical Care listserv. Please contribute to this survey as the data will be useful as we try to deal with this issue. The AAP has contacted a representative from JCAHO, and they have agreed to a conference call concerning this topic. The Section on Critical Care will be represented on the call which will be later in May.

As a follow-up to the Critical Care Coding Course, the Section on Critical Care has developed a Pediatric Critical Care Practice Management Course. The goal of the course is to help practitioners learn how to run a critical care practice. There will be experts discussing how a PICU exists in the scheme of the hospital as a whole, how to deal with the nursing shortage, and how to deal with the business side of practice including the development of business plans. The one day course will be offered for the first time at the end of the Pediatric Critical Care Colloquium on October 2, 2004 in New York City. Look out for a brochure coming your way soon.

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The Executive Committee has started the investigative process of developing a continuing medical education program for Pediatric Critical Care specialists along the lines of the AAP Pedialink program. The plan is for this on-line CME experience to support the ongoing education piece of the American Board of Pediatrics Sub-board of Critical Care recertification component. This will take quite a bit of time to develop but the process has begun. There will be a great need in the future for authors to write various sections of the course. Anyone interested in helping with the development of the program or in being an author please let me know.

The 2004 Section on Critical Care Program will be held in San Francisco in conjunction with the AAP National Conference and Exhibition, October 10th and 11th. In addition to abstract presentations and the presentation of the Career Award, the educational sessions will focus on Patient Safety in the PICU and new updates in organ transplantation. So mark you calendars now for a trip to lovely San Francisco.

The Life in Academics Course designed for academic fellows in training for all pediatric medical and surgical subspecialties will be held again at the 2005 NCE in Washington, DC. Those of you who have fellowship programs may want to plan on sending your fellows. Much of the educational information at this course addresses the administration curriculum required by the ACGME.

Look for the Admission and Discharge Guidelines for Intermediate Care Units to be published in May. They will appear in both the journals, *Pediatrics* and *Critical Care Medicine*. The Revised Guidelines and Levels of Care for PICUs should be published later this year.

The Executive Committee met this past February during the SCCM Critical Care Congress and will be holding a conference call this summer. Please let me know if you have any issues that we need to address. I can be reached via email: mossmichele@uams.edu.

Hope the rest of the spring is full of flowers and not showers and that your summer is restful.

Sincerely,

Michele Moss, MD, FAAP



SAN FRANCISCO 2004 National Conference & Exhibition October 9–13

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Target Audience

Pediatric critical care practitioners, including trainees and experienced clinicians.

Advanced practice nurses, hospital and intensive care unit administrators.

Nurse managers or nursing administrators.

Course Format

This course combines a variety of educational formats, including didactic presentations, highly interactive case-based presentations and time for questions and answers.

Faculty

Alice Ackerman, MD Thomas Bojko, MD Peter Gilbert Bruce Greenwald, MD A Marc Harrison, MD Maureen Madden, MSN, CCRN, PCCNP Vicki Montgomery, MD Michele Moss, MD Linda Palkoski, RN Linda Snelling, MD, FAAP

CME Credits

Earn a maximum of 5.5 category 1 credits toward the AMA Physician's Recognition Award

PEDIATRIC CRITICAL CARE PRACTICE MANAGEMENT COURSE

Held in Conjunction with the Pediatric Critical Care Colloquium

October 2, 2004 Park Central Hotel New York, New York

Program Schedule

- Introduction "What is Practice Management?"
- PICU and the Department/Hospital "An Administrator's View"
- Update on Billing and Coding
- Developing a Quality Management Program
- Panel Discussion
- Program Development I "How to Build a Business"
- Program Development II "Lessons Learned From Procedural Sedation"
- Faculty Recruitment/Retention
- Nursing Recruitment/Retention
- Measuring Intensivist Productivity
- PICU Intensivist Staffing Models
- Advanced Practice Nurses: Role
- Advanced Practice Nurses: Cost, Funding
- Panel Discussion



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Sponsored by the AAP Section on Critical Care and the American Academy of Pediatrics

Coding Corner

In the newest edition of Current Procedural Terminology from the AMA, several new codes for central venous line insertion were presented, acknowledging the wider variety and methods of insertion of central venous access devices. The *CPT 2004* acknowledges that venous access devices may be "centrally inserted or peripherally inserted. The device may be accessed for use either via exposed catheter, via a subcutaneous port or via a subcutaneous pump."

The CPT 2004 lists five categories for the central venous device procedures :

- 1. Insertion placement of catheter through a new site.
- 2. Repair fixing the device without replacement, not pharmacologic intervention.
- 3. Partial replacement only the catheter component associated with a pump/port but not the entire device.
- 4. Complete replacement of entire device through the same site.
- 5. Removal of entire device.

There are now 27 new codes addressing these issues. As there was previously, there is no longer a distinction between access achieved by **percutaneous** versus **cutdown** technique or based on size of the catheter. The age of the patient has also changed from the previous 2 yr old cutoff to 5 yr old with different codes for patients less than and greater than 5 years old. The definition of **central venous catheter** means that the tip of the catheter must reside in the subclavian, innominate or iliac veins, the inferior vena cava/superior vena cava, or right atrium. The definition of **central venous insertion** means that the catheter is inserted through the jugular, subclavian, femoral vein, or IVC entry site.

The codes most commonly applicable to PICU practice are the following:

36555	Insertion of non-tunneled centrally inserted central venous catheter under 5 years of age
36556	Same for 5 years old and greater
36557	Insertion of a tunneled centrally inserted CVC without pump or port, under 5 years under 5 years of age
36558	Same, 5 years old and greater
36568	Insertion of peripherally inserted CVC (PICC) without subcutaneous port or pump, under 5 years of age
36569	Same for 5 years old and greater

The other codes in this new section (36555-36597) refer to insertion of CVC with ports or pumps, repair or partial replacement of CVC, complete replacement through the same site, and removal of CVCs that are tunneled. Please see the CPT 2004 manual for complete information regarding these new codes. *CPT 2004* and *Coding for Pediatrics 2004* are both available through the AAP Bookstore at www.aap.org/bst/index.cfm?DID=15.

In addition, there has been confusion about when the "Initial Day" of critical care for neonates and pediatric patients < 2 yrs old actually begins. The manual CPT 2004 does not start specifically when that day is but some payors have interpreted that day should be the day of admission to the hospital. This is not stated in CPT 2004. The AAP Committee on Coding and Nomenclature has discussed this issue. They feel that the initial day of critical care is the first day the patient is critical, which is not necessarily the day of admission. This concept will be reflected in the AAP book, *Coding for Pediatrics* 2005 edition. In the interim if you have problems with your payors, respond to them directly and remind them the first day of critical illness is not necessarily the day of admission.

Drug Update - Spring 2004

I. MEDICATION ERRORS

1. A bottle of Hemocult^R drops used to test stools for blood was mistaken for eye drops.

2. Roxanol^R is a concentrated preparation of morphine: lack of knowledge regarding this preparation resulted in a patient being given 100 mg instead of 5 mg of morphine.

3. A mix-up: Protonix^R (pantroprazole) was mistaken for Protamine.

4. A child receiving TPN at home developed hypokalemia. The physician prescribed KCl for addition to the TPN. KCl was sent to the home in syringes, which the mom later mistook as saline flush. The child received a KCl bolus and suffered a cardiac arrest from which she was successfully resuscitated.

II. WARNINGS

1. The use of multi-channel IV pumps: IV tubing from different medication infusions may be switched and incorrect doses given. In one instance, a solution containing heparin for anticoagulation was inserted into the channel programmed to deliver a 0.9% NaCl bolus.

2. Use of Broselow tapes: these are used to facilitate drug dosing during CPR in children. The purpose of these tapes is to avoid the complexity of calculating the amount (volume) of drug needed during resuscitation. However, the fact that the "end product" is a unit expressed as volume (mL) of a drug, errors have been reported with medications that have more than one concentration available.

3. The FDA recently issued a warning on the use of absorbable hemostatic agents in surgery. Since 1996, 110 adverse events have been reported where patients developed paralysis or other neurologic complications associated with the use of these agents in a bony or neural space. The material swells and exerts pressure on the spinal cord or other neural structures.

III. MISCELLANEOUS

MEDWATCH

1. The FDA issued a warning regarding the use of all bone cement and bone void fillers used to treat compression fractures of the spine. These products have not cleared for this particular usage. Leakage of bone cement can result in soft tissue damage, nerve root pain and compression, and even pulmonary embolism, respiratory and cardiac failure, abdominal intrusions and death.

2. Abbott Laboratories has received approval from the FDA to reintroduce Abbokinase^R (urokinase) into the market.

JCAHO

According to JCAHO, the following abbreviations will no longer be permitted. Institutions should enforce ways to comply:

DangerousAbbreviation/ DoseIntended MeaningDesignation		Misinterpretation	Recommendation	
U or IU	Units or international units	mistaken as a zero or a four when poorly written, resulting in overdose (4U seen as "40" or 4U seen as "44")	use "units"	
μg	micrograms	mistaken for "mg" when handwritten, resulting in overdose	use "mcg" or "micrograms"	
Lack of leading zero (.5 mg)	0.5 mg	decimal overlooked and mistaken for 5 mg (10-fold over dose)	always use leading zeros when the dose is less than a whole unit (0.5 mg)	
Use of trailing zero (5.0 mg)	5 mg	decimal overlooked and mistaken for 50 mg (10-fold over dose)	never use trailing zeros for doses expressed in whole numbers	
TIW	three times a week	misinterpreted as "three times a day" or "twice a week"	use "three times a week"	
° symbol	hours	misinterpreted as zero (q3° misinterpreted as every 30 minutes)	use "hour, hr or hrs"	
Q.D., Q.O.D.	every day, every other day	mistaken for one another; period after the Q mistaken for an "i"	use "daily" and "every other" day	
MS, MSO4, MgSO4	morphine sulfate, magnesium sulfate	mistaken for one another	write out "morphine sulfate" or "magnesium sulfate"	

IV. NEW AND INTERESTING DRUG STUDIES

1. Lebovitz DJ, Smith PG, O'Riordan MA and Reed MD: Pharmacokinetic properties and tolerability of single-dose terbutaline in patients with severe asthma treated in the PICU. Curr Ther Res, 2004:65:98-109.

56 children were enrolled. Single-dose IV terbutaline was well tolerated. Elimination was more rapid in those children who more severe illness. The PK suggest that for IV use, a bolus should be given, followed by a continuous infusion.

2. Martelli A, Strada P, Cagliani I and Brambilla G: Guidelines for the clinical use of albumin: comparison of use in two Italian hospitals and a third hospital without guidelines. Curr Ther Res; 2004; 64:676-683.

The adoption of strict guidelines for the use of albumin, and regulation of albumin use by the transfusion service resulted in a marked decrease of albumin use (up to 77% in one hospital) and significant cost savings. The guidelines listed a number of disease processes including hemorrhagic shock, maldistributive shock, major surgery, thermal injury, cerebral ischemia, cardiac surgery, neonatal hyperbilirubinemia, organ transplantation, plasmapheresis, cirrhosis, nephrotic syndrome, hemodialysis and nutritional intervention. The guidelines recommended the use of crystalloids for first-line therapy in most of the processes. Mean time to discharge and mortality rate did not change after the institution of the guidelines.

V. MISCELLANEOUS

1. New formulation: 10% metoclopromide nasal spray – used for chemotherapy-induced emesis. Preservatives included methylparaben and proplyparaben. The mixture is stable for up to 6 months.

2. Ferrone M: Pharmacotherapeutic options to prevent radiovontrast-induced acute renal failure. Formulary, 2004; 39:163-185. Radiocontrast-induced acute renal failure: is the 3rd most common cause of acute renal failure in hospital settings. The incidence increases with the following risk factors: pre-existing renal insufficiency; dehydration, hypotension, nephrotic syndrome, and congestive heart failure. Mechanisms include renal vasoconstriction due to release of endothelin, high osmolality of the contrast agent and possibly, direct cytotoxic effects of radiocontrast and decreased activity of protective antioxidant enzymes. Various strategies for prevention include oral acetylcysteine, furosemide, dopamine, mannitol, and more recently, fenoldopam. Data from multiple studies are inconclusive. The best approach is to identify those patients with risk factors for the development of acute renal failure; ensure adequate hydration; and to avoid medications that could potentiate the toxicity of contrast agents.

MEDWATCH

1. The FDA issued a warning regarding the use of all bone cement and bone void fillers used to treat compression fractures of the spine. These products have not cleared for this particular usage. Leakage of bone cement can result in soft tissue damage, nerve root pain and compression, and even pulmonary embolism, respiratory and cardiac failure, abdominal intrusions and death.

Grand Rounds. Noon Conference. Morning Report

Of all the conferences given in academic institutions, the one that is probably most readily identified with the PICU is Morbidity and Mortality (M & M). As pediatric intensivists, we conduct M & M to review cases in excruciating detail and identify any aspects of the care we provide that can be changed or improved. Medical students and residents often seem to leave this conference feeling overwhelmed with the complexity of decision-making and discouraged both by the tragedy in these cases and our disappointment with the outcomes. As time and responsibilities march on, we do little to counteract this impression. However, in the PICU we also have an incredible number of wonderful, and sometimes, unexpected outcomes. We all have fond memories of children who did not appear to have a chance when they arrived at our doorstep, but surprised everyone and made remarkable recoveries. Yet these miracles and their lessons are often lost on those whom we train. The housestaff are bogged down in the day-to-day management of parenteral nutrition, electrolyte abnormalities, transfusions and test results. Even the progress represented by patients who recover and are transferred out of the PICU is obscured by transfer orders, sign-out summaries and the need to return to the care of the patients who remain in the PICU. The only organized review of patient care, overall management and the results of our work focuses on bad outcome in the form of morbidity and mortality conferences. I propose that we change our traditional M & M to something more positive - the M³: "Morbidity, Mortality and Miracles." Reviewing case histories with unfortunate outcomes has irreplaceable value for improving future practice. But let us not stop there. Let's spend some time discussing what worked well. Let us review a chart of a patient who did better than expected and discuss what we did well. Did a resident propose a novel therapy that was effective? Did the nurse notice something that changed or improved care? Did a medical student contribute some important piece of the history that was overlooked? Did a consultant take a special interest in the patient that led to some diagnostic or therapeutic improvement? We can learn as much from cases with good outcomes as from cases that resulted in death or disability.

In the happiest of circumstances, we can provide critically ill children with the best care we know how, and return them to their families. What our patients and families recognize as miracles, we often seem to forget. We should take the time to remind ourselves and our trainees of the children who get better despite what seem like insurmountable odds, and hopefully, because of the care we provide. Our patients offer us important lessons that we must learn, whether they are good or bad. *Richard Salerno*, *MD*

Rule of Six versus Standard Drips: The Ongoing Debate

Mohamed Gaffoor, MD Vinay Vaidya, MD

In the recent years, perhaps no other subject has caused more controversy than the current debate regarding the **rule of six** (weight-based) method versus the standardized concentration method for ordering continuous medication infusions. The debate has intensified since the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) mandated that all institutions use the standard concentration method instead of the rule of six method.

The rule of six was originally designed to provide an easy method for nurses to initiate infusions at the correct rate and to easily change the infusion rate correctly whenever the dose needed to be titrated. This is accomplished by adjusting the concentration of the continuous infusion such that a dose of 1 mcg/kg/min always equals an infusion rate of 1 mL1/hour. It thus follows that 5 mcg/kg/min = 5mL/hour, 7.5 mcg/kg/min = 7.5 mL/hour and so on. This intuitive and clearly obvious one-to-one relationship between the dose and the infusion rate explains the reason for the widespread acceptance of this method. The mathematical formula needed to achieve the above concentration is defined by the equation; six times the body weight in kilograms equals the amount of drug (in mg) to be added to 100 ml of carrier fluid, and hence the name, rule of six.

Standardized concentration method

An alternate method to compound continuous infusions is the "standardized concentration method" which is the most prevalent method in adult intensive care units. Unlike the rule of six method, the standardized concentration method uses a limited number of fixed, concentrations which are predetermined and do not vary with the patient's weight. About 10% of the commonly used medications are available as commercially pre-mixed solutions, while the remainder requires compounding in the pharmacy. Pre-mixed, commercially available infusions provide safety against compounding errors and their immediate availability is a useful feature during emergencies. Since the intuitive relationship between dose and infusion rate no longer exists when using standard concentrations, the use of "smart" infusion pumps and/or dosing tables are needed to determine the correct infusion rate.

National Patient Safety Goal 3b and JCAHO's mandate

In July of 2002, the JCAHO released a set of six national patient safety goals. Goal 3b required hospitals to "standardize and limit the number of high-alert medication concentrations." This recommendation is based on sentinel events that were observed with the use of certain high alert medications such as heparin, concentrated potassium etc. Serious and even fatal dosing errors were reported as a result of mistakenly selecting the wrong concentration of a high alert drug. These sentinel events were attributed to the availability of multiple concentrations of the drug vials within a hospital.

Since the rule of six is a weight-based method that results in an unlimited number of concentrations, pediatric hospitals were unsure if the use of rule of six was in compliance with Goal 3b. Weightbased infusions are compounded uniquely for each patient, and unlike vials of high alert drugs they are not stocked together in patient care areas at all times. For this reason, many providers were of the opinion that continuous infusions may not be subject to the same errors that are associated with the use of multiple concentrations of vials of high alert drugs. In October 2003 JCAHO clarified this issue by formally stating that standardization and limitation of concentration should also apply to continuous medication infusions. Any institution that continued using the rule of six or its variants would not be in compliance of Goal 3b and would receive a Type I citation. Initially organizations were required to be compliant with Goal 3b by July of 2004. However, in response to numerous requests from multiple pediatric organizations, JCAHO has recently postponed this requirement to January 1, 2005, pending further discussion and an in-depth analysis of the subject.

Response of Healthcare Organizations to the JCAHO mandate

While some organizations had been using the standardized concentration method prior to the JCAHO mandate, an estimated 20 to 30% of hospitals have recently changed to the standardized concentrations in order to comply with the requirement. The remaining majority of pediatric hospitals are either scrambling to meet the deadline and comply with the JCAHO mandate or are expressing strong opposition against the mandate in various forums. Many providers are questioning the appropriateness of using standardized concentrations in the pediatric population where weights can vary 200 fold (from 0.5kg to 100 kg), and where weight-based dosing is a universal practice. On the other hand, some of the hospitals that have changed to standardized drips are reporting a reduction in errors and costs, and an increase in user satisfaction. These organizations also report and demonstrate the feasibility of using standardized concentrations across a wide range of patient weights typically seen in the pediatric population. (Ref: Pineherio)

Reasons for the controversy

One of the major reasons for the ongoing controversy is the paucity of published evidence, clearly demonstrating the safety of one method over the other. Unlike the sentinel events reported with the use of high-alert drugs, it has been difficult to conclusively attribute the errors associated with the use of continuous infusions solely to the use of one particular method. For example, one of the oftenstated safety benefits of using standardized drips is that drips compounded in the pharmacy are less error-prone than those mixed by at the bedside. While this may be true, the method used to compound drips has no bearing on where these are compounded. Thus, by insisting on pharmacy-compounded drips, irrespective of the method used, hospitals could enhance the safety of either method. Another benefit often quoted by users of standardized drips is the decreased requirement for manual calculations. However, many rule of six users have overcome this apparent drawback by the using Excel spreadsheet solutions or Computerized Physician Order Entry systems.

A few institutions have employed Failure Mode Effects Analysis (FMEA) to compare the two methods. However, this fails to resolve the controversy since the FMEA is primarily designed to prospectively identify system failures and not to objectively compare two different methods. A few small surveys have been conducted and reported through various e-mail listservs. In a listserv survey conducted by pharmacists from the University of Iowa 9 of 27 surveyed institutions have recently changed to standardized drips. All nine of these institutions found standardized drips to be an effective method for administering continuous infusions. At the University of Maryland Hospital for Children, we have launched an online national survey to better understand the current practices and opinions of healthcare providers on this issue. More than one

thousand health care providers have completed the survey and the analysis is expected to be complete by the fall of 2004. In addition, we have created a web site (www.icudrips.org) to serve as a discussion forum and provide updated information on this important subject.

Implications of change

In comparison to Goal 3b, the majority of National Patient Safety Goals are relatively simple to implement. For example, both the goals to eliminate dangerous abbreviations (Goal 2b) and to eliminate wrong site surgery (Goal 4) require relatively minimal changes for compliance. In contrast, the change from rule of six to standardized infusions is a complex, time and resource consuming undertaking that can take several months. In order to implement the necessary changes to comply with Goal 3b an institution needs to retrain physicians, pharmacists, and nurses, develop standardized concentrations, and purchase new infusion pumps if needed. Many hospitals are concerned that making a dramatic change from their existing, longstanding practices in a time-limited fashion will increase rather than decrease errors.

Conclusions

Although the controversy has certainly evoked strong responses and arguments, it has played a very important role in stimulating a national debate and in focusing attention on patient safety. With the currently available information it is difficult to categorically identify one method as superior to the other. Perhaps the answer is not to unequivocally mandate a single method but rather to develop strategies that would maximize patient safety for either method, allowing individual hospitals to select their method of choice. Perhaps Goal 3b could be modified to separately evaluate each of the two methods to ensure compliance with safety criteria. In the future, prospective collection of sentinel events and detailed root cause analysis along with clinical trials comparing the two methods could help identify the safer method.

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In Memorium

C. Robert Chambliss, MD A Tribute

"The child in Dr C Robert Chambliss endeared him to his intensive care pediatric patients. When one critically-ill child had a craving, Dr Chambliss brought her her favorite ice cream. A child with a severe degenerative disease loved helicopters, and Dr Chambliss arranged for him to visit a helipad and take a ride in a helicopter" said his partner, Dr Jim Fortenberry.

Dr Chambliss graduated from the Morehouse School of Medicine in Atlanta, and subsequently completed a residency and chief residency in pediatrics at Howard University and DC General Hospitals in 1990. After completing a fellowship in Critical Care Medicine at Harbor/ UCLA Medical Center in 1993, he joined the faculty at Emory University School of Medicine and the medical staff at Children's Healthcare of Atlanta (formerly Egleston Children's Hospital). Dr Chambliss was concerned by the lack of a dedicated pediatric transport service for the children in the Atlanta area, and immediately began working to establish a pediatric transport program. Until his death, he continued to direct and build the pediatric transport program which was renamed Children's Response, into a highly successful program, providing over 2500 ground and helicopter transports each year. As part of his dedication to this area of medicine, he was actively involved with the AAP Transport Section, serving on conference planning committees and leadership conferences. He published numerous articles in the American Journal of Respiratory and Critical Care Medicine, Pediatric Critical Care, Critical Care Medicine and Pediatrics. He co-authored several chapters in critical care textbooks. Dr Chambliss lectured on topics related to management of pain in children, and the transport of critically-ill children.

"His specialty brought Dr Chambliss great sorrow and joy. He loved critical care. It was hard when it didn't work, and a joy when it did work," said his wife Dana Franklin Chambliss. Dr Chambliss passed away at the age of 43 on July 4, 2003 following a yearlong battle with colon cancer. His family, patients, and friends remember him fondly. His colleagues in pediatric critical care will miss his devotion to critically-ill children and his work in intensive care and transport medicine.



American Academy of Pediatrics National Conference & Exhibition October 10 - 11, 2004 San Francisco, CA SECTION ON CRITICAL CARE MEDICINE PROGRAM SCHEDULE

Sunday, October 10, 2004

8:00 – 8:15 pm	Continental Breakfast Introduction and Welcome James D. Fortenberry, MD
8:15 – 9:45 am	Abstract Session I Moderators: Alice Ackerman, MD, FAAP and Barry Markovitz, MD, MPH, FAAP
9:45 – 10:00 am	Coffee Break and Poster Review
10:00 - 11:20 am	Abstract Session II Moderators: Michele Moss, MD, FAAP and Mary Lieh-Lai, MD, FAAP
11:20 - 11:50 am	Presentation of Distinguished Career Award
12:00 - 1:00 pm	Lunch & SOCC Business Meeting M. Michele Moss, MD, FAAP
1:00 - 4:30 pm	"Patient Safety in the Pediatric ICU"
1:00 - 1:05 pm	Introduction Moderator: James Fortenberry, MD, FAAP
1:05 - 1:40 pm	Patient Safety in the PICU: An Overview Vicki Montgomery, MD, FAAP
1:40 - 2:10 pm	The Cost of Patient Safety Fiona Levy, MD, FAAP
2:10 - 2:40 pm	The Impact of Information Technology on PICU Patient Safety Matt Scanlon, MD, FAAP
2:40 - 2:50 pm	Break
2:50 - 3:20 pm	Disclosing Medical Errors: The Problem and Approaches John Straumanis, MD, FAAP
3:20 - 3:50 pm	The Impact of Physician and Nurse Workload on PICU Safety Vicki Montgomery, MD, FAAP
3:50 - 4:30 pm	Identifying and Responding to Safety Issues: Practical Experiences John Straumanis, MD, FAAP; Fiona Levy, MD, FAAP and Matt Scanlon, MD, FAAP
4:30 - 4:45 pm	Best Abstract/Physician-in-Training Awards Presentation
Monday, October 11, 2004	National Conference & Exhibition
8:30 - 11:30 am	"Intensive Care Issues in Organ Transplantation"
8:30 - 8:45 am	Welcome and Introduction James Fortenberry, MD, FAAP
8:45 - 9:15 am	Transplant Immunology and Pharmacology: A Primer Maite DeLaMorena, MD, FAAP
9:15 - 9:45 am	What's New in Pediatric BMT For the Intensivist? Jeffrey Schmidt, MD, FAAP
9:45 - 10:00 am	Coffee Break
10:00 - 10:45 am	Mechanical Ventilation and Advanced Technology in BMT Patients with Respiratory Failure: Two Perspectives Sam Shemie, MD and Jeffrey Schmidt, MD, FAAP
10:45 - 11:30 am	The Intensivist as Organ Donor Specialist: Ethical and Practical Issues Sam Shemie, MD

Ann E. Thompson, MD Distinguished Career Award Acceptance Speech November 2003



I want to thank the Academy and the Section on Critical Care Medicine for this honor-it is truly a very special moment in my life. To be in the company of the previous recipients of this award-all of them legendary to me, several of them my

personal mentors, and many of them dear friends-is a wonderful gift. Thank you all.

Receiving a Distinguished Career Award is a bit of an awakening, however. It's the sort of recognition that other people get. And such pleasures don't come when you are a young person in the field. Events like this provide the time and incentive to take stock-has this been the right way to spend 25 years of my life? I hope you will allow me to tell a bit of my story in critical care and my thoughts about where we are now, what I celebrate, and where I hope we will go.

I remember being an intern and resident at the Boston Floating Hospital. We had no intensivist, in fact, no neonatologist until my second year. The management of the sickest patients was up to the interns, residents, and chief resident. I remember the arrival of the first nasal CPAP cannulae-a "cool" addition to the care of babies with RDS. Our first CAT scanner came about the same time, and we stopped putting air into kids' heads to make CNS diagnoses. On the other hand, I watched a leukemic with pseudomonas sepsis die without a clue how to intervene when antibiotics had no apparent impact-it seems impossible, but I don't remember using vasoactive drugs at all-could that be true? We did our very best-and I have to say that we had a good time doing our best-but I'm not so sure the patients were in the best hands. Or perhaps they were, for that era, in that hospital-we were enthusiastic; we cared greatly; we had a lot of energy-all ingredients that are essential to good intensive care. But we were not trained and we were not guided by much knowledge or anyone with much experience. It may, however, have turned me into an intensivist-it was a kind of medicine I loved, but I didn't know that anyone could do it for a living.

I moved from there to Children's Hospital of Philadelphia in my third year and was for the first time exposed to organized intensive care. Although I knew that it was all new and exciting to me, I don't think I realized how new it was to the world. The PICU was less than 10 years old, and it was the first in the nation. I met Jack Downes and Russ Raphaely and saw for the first time what experts in this field could do for children. I am amazed as I remember the CHOP PICU in those days how much they had already set the standard for excellence in the organization of care. The close collaboration between nurses, respiratory therapists, pharmacists, and other members of the multidisciplinary team was already a given in that environment. So was the continuous presence of the intensivist. We take it so much for granted today that the revolutionary nature of that organization is often not recognized.

I also remember that the care provided was not altogether appreciated. There were two attendings in the unit every day: an intensivist and a pediatrician-the latter's primary job was to protect the children from the intensivists. The care was often viewed as an assault on children, too fragile to tolerate it, much less benefit from it. In the years I was there I watched the transition from this uneasy suspicion and marginal tolerance to acceptance and even admiration. Today my fellows sometimes complain that they feel like they're treated as if they're the only doctors in the hospital-the "goto" source of help, reassurance, and rescue for every sick patient in the hospital. I think it's hard for them to recognize what a privileged position that is to hold in the hospital. We are surely no longer marginalized-we have in many ways become the core of the modern hospital-truly critical to the good outcomes expected for most of our patients. If there is a risk today, it is that our colleagues and the public (and even some of us) have come to believe we can save every child.

After a year on the faculty, I left Philadelphia to take a position in Pittsburgh-an offer that was too good to refuse. I was given the opportunity to direct the PICU there, an exciting and somewhat scary opportunity one year out of fellowship. You should understand that the primary reason I was made that offer was that there were barely a dozen people senior to me in the field-and they were all happy where they were. Most of them are the previous recipients of this award. Their contentedness in their respective institutions gave me the opportunity of a lifetime. In addition, I was joining what was arguably the strongest intensive care community in the world, completely adult-focused at that time to be sure, but anxious to support pediatric intensive care as well. Again, my naivete about the people around me was stupendous-I came to understand the department's role in history only later. Peter Safar, Ake Grenvik, Peter Winter, and others had long since established a world-class critical care program and welcomed me and my ideals to do the same for pediatrics-with enthusiasm and support that never waned.

I have now been in Pittsburgh for 22 years, and it has been a very rich two decades. I've already mentioned the astonishing and wonderful community I entered in 1981. Nonetheless, Pittsburgh was a sleepy medical community in many ways at that time-an excellent clinical center, but not an academic powerhouse overall. I arrived a few months after Dr. Thomas Starzl started a liver transplantation program-he'd thought he'd do 10-20 liver transplants a year, to start, but in the first year of the program, he did 50 and soon we'd reached 120 a year. On the adult side they were doing 4-5 times that many. Pittsburgh became a national "phenom"- and the needs of these patients spawned growth in many other specialties and subspecialties. There was money for research in clinical and basic science. Success in one area promoted success in many others. Even after transplantation became a routine part of modern medicine, moved on to other institutions, and our numbers became much more reasonable, the institution had been transformed into a world-class academic medical center. We in Pediatric Critical Care helped make it happen and were the beneficiaries of the transformation: the unit grew from 10 to 16 to 23 to now a 59 bed complex. The faculty expanded from 2 to 10; the fellows from 2 to 11. With the growth of clinical activity we could attract new faculty-with new faculty came the time, talent, and training to develop a research program. With clinical and bench research has come improved patient care. I have had the good fortune of recruiting and working with a wonderful group: In the early days Dick Orr put together a transport team that gets astonishingly sick patients to us safely.

Brad Fuhrman brought the first strong science and wonderful humor. Pat Kochanek came to work hard, laugh long, and turn everything he touched to gold. Each successive additional person has brought new richness and talent. There have been battles outside the department to be sure-I've kept a lesson from Jack Downes in mind for years: "Hold on till your finger tips turn white and everyone else drops off." Sometimes I rely on a shorter version: "I'll be here when you're gone."

I was reading Dan Levin's acceptance speech for this award last year recently, and I realize (with both a bit of regret and a little relief) that I really am part of the second wave of pediatric intensivists. I missed the thrill and excitement of creating a unit from whole cloth-from nothing. I got to stand on the shoulders of the first giants. The pleasures of the second wave are different, but the period has been a good and important one in the development of our specialty.

In those first years the focus was on the organization of care, the extension of life support out of the OR to more general medical care, the application of physiology, pharmacology, and technology to recognize and manage acute, potentially reversible life threatening illness. These were truly remarkable accomplishments. They served as the foundation for work that will probably never be finished. On that foundation, in the period I have known, critical care has been able to develop into a much more mature specialty.

Diseases have come and gone: Reye syndrome, which filled my fellowship, has vanished. Epiglottitis is practically mythical. Other H. flu disease has retreated. On the other hand congenital heart surgery has been transformed-children just don't die after Tet repairs any more. Solid organ transplantation is routine and improving. ECMO has risen and retreated and may rise again. Ventilation is kinder and gentler, and fellows no longer put in dozens of chest tubes in their whole fellowship, much less on single patients. Non-invasive monitoring is so much a part of intensive care one could imagine patients have pulse oximeters just waiting to be expressed when the critical illness genes are switched on. Our ability to treat shock and multiple organ failure has improved greatly.

Critical care has been recognized as a subspecialty by medicine, surgery, anesthesiology, and pediatrics. Training programs have structure and clear goals and requirements. We are no longer simply giving our trainees a set of technical and cognitive tools to keep patients alive-we are working hard to give them the tools to create new knowledge to advance the field and further improve our patients' outcome. Within the critical care community are first class scientists advancing our knowledge of the organ system injuries that underlie the need for intensive care. One of the delights of the field is that no matter what your interest, there is a need for further understanding. We now have investigators examining neurologic injury, sepsis, respiratory failure, myocardial dysfunction, etc. etc. etc. And the quality of the science has advanced dramatically to include well-recognized and wellfunded scientists who compete well with the best in other subspecialties. We have our own journal and through the World Federation are connecting with pediatric intensivists around the world.

I am thrilled at the progress we are making in the understanding and management of complex, life-threatening, multisystem disease. There is exciting stuff going on everywhere you look. But I also think that substantial improvement can be made in patient care, simply by applying reliably what we already know, and I want to come back to that for a moment.

There has been a lot of attention paid in the medical and lay press in the last few years to patient safety and medical errors. It is clear that ICUs are places where things go wrong even more often than on routine patient care units, not because we are worse at what we do, but because the systems are so complex and the opportunity for error so great. In general, I've considered myself very receptive to this issue. Nonetheless, I have to admit that I wondered if some of the concerns were exaggerated and some of the expectations too high. I was a bit impatient with some of the criticism. Until recently.

Some of you have heard me talk about a family experience with health care, including intensive care, I had last year. I hope you'll bear with me if I tell you a bit about it. My mother was hospitalized for nearly three months after surgery that was supposed to be fairly straightforward. Following an early complication (about which I feel only mild distress), she went to the OR 8 or 10 times, was in the ICU 5 times, and had countless invasive procedures. She became suicidal. Fortunately, after a million dollars worth of care, the ultimate outcome was good and she is back to living a normal active life. But I learned a lot during those months, and not too much of it is stuff I wanted to know.

I saw substantive errors in her recorded medical history-giving her multiple chronic diseases she didn't have. I watched cultures being drawn without the skin prepped; central catheters entered repeatedly without clean, much less sterile, technique; jejunostomy tubes dislodged, or clogged, because of repeated failures to follow orders or protocols. On shift after shift nurses repeated the errors of the previous shift unless one of my family intervened. Already malnourished, she went for five weeks without significant nutrition because of these problems and failure of physicians to attend to the issue. She got C. diff and MRSA. One night she nearly bled to death from a surgical wound while a resident was placing a PA catheter to assess her cardiac function rather than taking her back to the OR. Her care was disjointed, until rescued by a consultant who chose to be an excellent generalist.

Having watched with the eyes of a family member, I see things in a new light. I've learned that it's not just another (ho-hum) blood stream infection-it's the fear that this will be the complication that kills the person you love. I learned about the terror and dismay these glitches in care arouse, and the anxiety about becoming the "family from hell" if you draw them to staff attention. I have been convinced to my bones that, even in the excellent hospital where she was a patient, error and unnecessary risk to patients is horrifyingly routine and dangerous.

That new view of the world came back to Children's with me-while the particular glitches vary with individual patients, the general problem is the same. There are failures everywhere I look. They are not related to things we don't know enough about-I don't consider that sort of weakness a failure-but rather to things we know full well. Simple attention to detail about what we already know may go as far or farther to improve outcome than many of the millions devoted to research.

I am truly convinced that we need to heighten our efforts to develop a culture of safety. We all believe that we are practicing good medicine, that we are doing our best. But we also know that errors occur. We quote Alexander Pope (and the IOM), "To err is human," but to solve problems is also human. Recognizing our imperfections and developing systems that weave a safety net around our patients is one of the most important tasks for our future. We need to develop failsafe mechanisms and safety valves that protect patients from our human fallibility. To quote Peter Safar, "Perfection is not optional".

The other component of my mother's illness was the extent to which we felt unwelcome at her bedside no matter how much we needed to be there, or she needed us. In general I think we are much better in pediatrics at dealing with families, but there is lots of room to make things better for families. As we become more and more knowledgeable about the science of critical care and capable of intervening successfully, it's essential that we also maintain and improve our focus on our patients' and their families' experience of their illness.

Over the last 25 years I believe we have made substantial progress in becoming more family- and patient-centered. But, as important as that component of care has always been to me, some of my fellows have made it clear recently that they don't feel they are adequately taught about it-too often when conversations with families about their experience, about their values, about important decisions are occurring the fellows and residents are putting out fires and excluded from the interactions. As work hours regulations limit the time trainees spend in patient care, it would be easy for this element of care to be pushed further to the back-it's essential that we not let this happen.

We need to devote as much time and attention to developing our own (and our trainees) listening and "connection" skills as we have given ourselves to learning to titrate ventilation and circulatory support or investigate the mechanisms of lung injury. There is a paradox in medicine, and perhaps especially in critical care. "No one cares how much you know, until they know how much your care." It is a cliché in medical legal circles that being the best technical professional in the world is less important than being perceived as caring, as compassionate. Finding ways to teach these skills to our next generation more consistently than we have so far is essential. It is not only important to our patients and their families, but I believe it is one way to promote the longevity of intensivists in the field.

Over the past two decades, I have been astonished and moved by the access patients and their families and friends give us to their most deeply held feelings and beliefs. I have learned that whenever I take the time to listen, they will share just about anything important to them. They will tell about a child's triumphs and troublemaking. They share their terror, their sense of responsibility for the child's illness. They talk about what in their families helps them and what burdens them. To me, this access to their private lives and feelings is an astonishing privilege. What we can learn about ourselves, what we are given in return for our care, can nourish us in a way I believe is very special and deeply sustaining.

Hearing their stories, we learn about what is important to them, how they make decisions, what other experiences have shaped their thinking. When there is conflict between family and staff, we can often understand what lies beneath it and be more successful in addressing the issues. When major decisions need to be made, we know something of what matters to them and what they value, and we can approach them in a way that makes our recommendations make more sense.

Twenty some years ago, when I was interviewing for the job I still hold today, I was asked why I had chosen intensive care. My answer was that I loved the mix of fast-paced, complex and highly technological care, combined with the opportunity to support patients and families through what is necessarily one of the most difficult and frightening periods in their lives. To this day I feel the same. The science has become more and more interesting, the opportunity to intervene successfully much greater, and the chance to share patients' and families' hopes, fears, joy or sorrow such a privilege, where could there be better work? It has surely been the right way to spend 25 years. Being in the company of my mentors in receiving this award is a wonderful experience for me. Such recognition only comes with the help of many people. In addition to those mentioned already, I want to thank my faculty colleagues whose hard work, creativity, and friendship have surrounded me with excellence and inspiration and helped build a program and contribute to a field. Thanks also go to fellows, past and present, whose energy, talent, and humor makes facing the next struggle worth it every day. And to patients and parents who teach me again and again the importance of what we do and how we do it. And finally to all of you, friends in a very special community in medicine.

Thank you.

Fellowship Update

The fellowship directors met in Orlando at the SCCM meetings this winter in full force. The newly appointed chair of this committee is Jeff Burns, MD from the Children's Hospital of Boston. Jeff has started a newsletter for fellowship directors on line to keep everyone up to date on issues. He can be reached by email at Jeffrey.Burns@childrens.harvard.edu. There was a great deal of discussion regarding the 80-hour work week for trainees and educational issues especially as they relate to medication and other errors related to patient care. The impact of the 80-hour work week and the impact of this on the need for in-house attendings were discussed as well.

The dates for the upcoming Pediatric Critical Care Medicine match are as follows. Registration for the match begins on July 7, 2004 at 12 noon EDT. The process will again be entirely electronic. Rank order lists can be submitted from September 8 at 12 noon EDT through October 13, 2004 at 11:59 PM EDT. Please make sure that you double check the numbers of slots submitted for your program and that you have successfully completed the ranking process. Match date is November 10, 2004 at 12 noon EDT.





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If you are a physician, nurse, respiratory therapist, paramedic, emergency medical technician, or administrator of a neonatal or pediatric transport team, plan on being a part of the

2004 Course on Neonatal and Pediatric Critical Care Transport Medicine, which is scheduled for October 10th to 12th in San Francisco! Since the Course will be held within the schedule of the American Academy of Pediatrics National Conference Exhibition (NCE), by registering for the Course participants will have access to other sessions offered during the NCE!

After June 1st you can register online or download the registration and hotel forms at www.aap.org/nce

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CALENDAR OF EVENTS

http://www.pedsccm.org/

Meeting Title	Meeting Dates	Location	Contact
3rd International Conference on Pediatric Continuous Renal Replacement Therapy	6/24 - 26/04	Orlando, FL	http://www.pcrrt.com
Pediatric Critical Care Nursing	9/09 - 12/04	Las Vegas, NV	http://www.contemporaryforums.com/ m617/bene.asp
15th Annual Critical Care Colloquium	9/30 - 10/02/04	New York, NY	htt://www.pedsccm.wustl.edu/ organizations.html#pccc98
Pediatric Critical Care Practice Management Course	10/02/04	New York, NY	htt://www.aap.org/sections/critcare/
AAP National Conference and Exhibition	10/09 - 13/04	San Francisco, CA	http://www.aap.org
2004 Course on Neonatal and Pediatric Critical Care Transport Medicine	10/10 - 12/04	San Francisco, CA	htt://www.aap.org/sections/transmed/ course.htm
5th International Symposium on Pediatric Cardiac Intensive Care	12/01 - 04/04	Miami, FL	http://www.pcicsymposium.org

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Section on Critical Care Web site

Visit <u>http://www.aap.org/sections/critcare</u> for important information about upcoming events and Section related activities.

Section on Critical Care E-mail List

The E-mail list allows the AAP Staff and SOCC Executive Committee to communicate with members through periodic e-mail messages.

If you would like to join the E-mail list, simply: e-mail Sue Tellez at <u>stellez@aap.org</u> with "SOCC LISTSERV" in the subject line.

****Be sure to include your name and contact information.**

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Membership Directory On-Line!



The AAP has added a link to the section membership roster on the Section's home page on the Members Only Channel. The roster will first appear as an alphabetical listing, and

each member's name links to more detailed information about that person. Be sure to contact the Membership Department at membership@aap.org should any of your information change, such as name, address, phone, fax or e-mail address.

You may also make the changes on-line on the Members Only Channel. Just follow the link on the Section's home page!



Moving to electronic distribution!

Would you like a paper copy?

We hope you enjoy this edition of the Section on Critical Care newsletter. The Section Executive Committee has decided to move to electronic distribution of the newsletter for future editions.

If you would like to continue to receive a paper copy of the newsletter, please contact Sandie Prondzinski at <u>sprondzinski@aap.org</u> or fax your request to Sandie Prondzinski at 847/434-8000.

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