



Mark Your Calendar for a CME Event in Nashville!

Please join us at the third annual collaborative statewide conference entitled "Advancing the Frontiers of Pediatric Emergency Care in Tennessee" to be hosted by Vanderbilt Children's Hospital on September 17th-18th, 2004 at the Willis Conference Center in Nashville.

Earn CME credits focused on cutting edge urgent and emergent pediatric issues that include: Assessment of the Ill Child, The Newborn in the ED, Sports Medicine, Radiology Review, The Difficult Airway, Update in Toxicology, Hematology/Oncology Complications, Pediatric Sedation,

and more. The course will include lectures and small breakout sessions for hands on experience. There will also be a separate track for nurses involved in the care of ill children.

Call 615-322-4030 or 877-CME-VUMC for more information.

Gary Schwartz, MD
Conference Chairman

Acetaminophen Poisoning: An Update on Treatment

A 14 yo female is brought to the Pediatric Emergency Department by her parents after ingesting a "handful" of acetaminophen tablets six hours ago.

Although the patient has had several episodes of emesis since admission to the ED, you find her physical exam to be unremarkable. You order an acetaminophen level, urine drug screen, and pregnancy test as well as Ondansetron 4mg IV for management of nausea and vomiting.

The patient's 7 hour acetaminophen level returns at 175 mcg/mL, which falls in the "probable hepatic toxicity" category on the Rumack-Matthew nomogram. The urine drug screen and pregnancy test are negative. The patient's nurse informs you the patient is continuing to complain of nausea. Her parents report the patient has "always had a nervous stomach."

What is your next step? (select one)

A. Give metoclopramide 10 mg IV, drop a nasogastric tube, and slowly drip 140 mg/kg of oral n-acetylcysteine via the nasogastric tube.

B. Repeat IV Ondansetron 4 mg, give oral n-acetylcysteine and hope for the best.

C. Try the newly FDA-approved intravenous n-acetylcysteine. (Acetadote®).

In this case, answer (C), intravenous n-acetylcysteine, is the best option for several reasons. As an antidote for

acetaminophen poisoning, n-acetylcysteine is most efficacious when given 8-10 hours after ingestion. This patient is rapidly approaching 8 hours post ingestion, and it is imperative to give the full dose of n-acetylcysteine as soon as possible. Secondly, oral n-acetylcysteine is well known to cause nausea and vomiting, and in this setting, would most likely cause vomiting uncontrolled by the best of antiemetics.

The dose of IV n-acetylcysteine is given as a loading dose of 150 mg/kg in 200 mL of 5% dextrose infused over 15-30 min. The maintenance dose is 50 mg/kg in 500 mL of 5% dextrose infused over 4 hours followed by 100 mg/kg in 1000 mL of 5% dextrose infused over the next 16 hours. Oral n-acetylcysteine preparations can be given intravenously if Acetadote® is not available. (Note—oral n-acetylcysteine preparations must be administered through a standard TPN filter when given intravenously.)

Adverse reactions to intravenously administered n-acetylcysteine do occur occasionally (reported from 0.2-20%) and range from flushing and erythema of the skin to anaphylactoid reactions (hypotension, wheezing, and rash). These reactions are dose-related, and most commonly occur during the loading dose. Adverse reactions are more common in patients with a history of asthma; therefore, it is recommended that IV n-

acetylcysteine be used with caution in patients with a history of wheezing and bronchospasm. Simple flushing and erythema of the skin can be managed by slowing the infusion rate. In addition to slowing or temporarily stopping the infusion, patients suffering from an anaphylactoid reaction should receive antihistamines, and in severe cases, epinephrine. If the anaphylactoid reaction recurs after restarting the infusion, the intravenous n-acetylcysteine should be discontinued, and a toxicologist consulted for further patient management.

Intravenous n-acetylcysteine therapy has been used with great success in the United Kingdom for over 20 years. It has been shown to be safe in a wide variety of patients, including children and pregnant women. The intravenous form of n-acetylcysteine should be considered in any patient with vomiting uncontrolled by emetics, patients presenting 8 hours or later after ingestion, pregnant patients, and patients with fulminant liver failure. Total time of treatment when intravenous n-acetylcysteine is used is 20 hours, which has an added benefit of shortening hospital stays and, when appropriate, expediting psychiatric referral.

For additional information contact the Tennessee Poison Center at 1-800-222-1222.

Laurie Lawrence, MD, Pediatric
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The Bottom Line



When I made the decision to pursue a career in medicine way back when, I invoked reasons that are all-too-familiar if you pick up any med school applicant's personal statement: my desire to connect with and help people; a fascination with science and how application of its principles could be translated into care, comfort and sometimes cure; and the personal assessment that I just wasn't cut out for a life in, say, the business world, with its emphasis on sales, negotiation, marketing, and finance. Boy, was I in for a shock.

There's not a day that goes by in which I don't engage in some sort of "business" transaction in the pediatric ED: I'm selling a parent on the idea that they don't need antibiotics for that viral infection; negotiating with physicians on the phone over who should admit or follow up this child's care; marketing my skills to that mom who wants a plastic surgeon to sew up her daughter's centimeter-long facial laceration; and weighing the cost-benefit of getting that CT scan on the kid who hit his head and has vomited twice. Scientific principles are not often the guiding force in deciding these issues—perception (on the part of the patient, family, and PCP) of satisfaction with the ED experience often plays a major role, even in an "academic" milieu. With layers of residents, mountains of paperwork, and diagnostic technology interposing themselves between me and the children I treat, it's easy to lose track of what I went into this for in the first place. And in a setting in which positive feedback for a job well-done is scarce and Monday-morning quarterbacking of decisions is the rule, I sometimes go home at the end of a shift wondering whether my goal of helping people was met or not.

Perhaps some of my discomfort with the business of daily practice stems from my lack of exposure to the principles and techniques it requires. Let's face it—we as physicians are trained to be autocratic decision-makers, not to

negotiate. Independent thinking, and not the ability to "play well with others," is actively sought in selecting candidates for a career in medicine, and cultivated during training. We are taught to act, not to build consensus; to be decisive even in the face of ambiguity—"sometimes wrong but never in doubt." It is little wonder that physicians feel the constant internal pressure to "do something," and are frustrated by illnesses and situations in which nothing can be done. We are, by virtue of our environs, impatient people.

No wonder, then, that we surround ourselves with the trappings of authority and attach importance to constructs that highlight territorial claims—academic titles, tenure, and clinical "turf." We engage in frequent battles over who removes the ingested foreign bodies; who admits the patient with a head injury *and* a leg fracture; and who sews up the complicated facial lacerations. Honestly, though we pay lip service to the concept, what's best for the *patient* is seldom a primary consideration in deciding these issues. Considerations of tradition and ego can sometimes prevail over common sense. There's always some bald head nearby, ready to proclaim that old saw about "how we do things around here." (Because we always have done it that way, of course. . . .)

I have to daily remind myself: we're all in this for the *kids*. My training should not be static, but open to new and better ways of treating disease, of delivering care, of enhancing the patients' ED experience. My goal should be the best care for my young patients, whether or not my opinion or "authority" gets trumped in the process. I must force myself to look at the demanding parent as a positive force in his or her child's life—an advocate and ally—rather than a nuisance. And I've got to keep in mind that "Billy," and not "the asthmatic on his third neb," is in room four.

We could learn a lot in this regard from our colleagues in the business world—about the importance of good service, about thinking win-win in negotiation, about subordinating personal desires for the good of the organization. And about keeping focus on the *customer*—which, to our good fortune, is a child. One way in which businesspeople break down barriers and smooth transactions is by becoming active in civic enterprises beyond their daily jobs, socializing, networking and forming alliances. It's a lot more difficult to speak negatively or complain about someone if he's become your buddy.

Now is a great time to re-dedicate ourselves to the business of caring for children. Step outside of the lines of your daily routine. Examine the perspectives of some of your colleagues who also care for kids, albeit in a different way. Get involved beyond the door of your office or department. Forge some alliances, open your eyes and ears to new ideas and approaches, and get back to the service ideal. How, you ask? Got a suggestion for you.

The Tennessee Chapter of the American Academy of Pediatrics (TNAAP) has numerous ways in which you can impact the care of children in Tennessee—by becoming a legislative advocate; participating in educational efforts in your community or throughout the state; serving on a committee to develop programs to assist colleagues who care for kids; helping at a safety fair or other injury prevention effort. It's a great way to get back in touch with the reasons that led us down this path in the first place. And interacting with other folks who bring their enthusiasm and energy to a group like TNAAP reinforces our belief that caring for kids is simply the best darn job out there.

C'mon—what are you waiting for? *Do it for the kids!*

Tim Givens, MD
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Fellows Corner

Commentaries provided by the Pediatric Emergency Medicine Fellows and Faculty at Vanderbilt Children's Hospital.

Rapid Identification of Adenoviral Infection in Children

Rapid direct fluorescent assay (DFA) for adenovirus (ADV), as part of a viral respiratory panel, has been used at Primary Children's Medical Center (Salt Lake City, Utah) since December 2000. The authors of this study retrospectively evaluated the charts of all children who had nasal wash specimens for viral respiratory testing collected during the time period December 2000 to September 2001 to determine both the frequency of ADV infection and the impact of rapid virus detection among subsequent clinical care.

During the study period there was no protocol in place determining who had viral respiratory panel testing and all testing was performed solely at the discretion of the treating physician. All nasal wash DFA specimens in this study were cultured and culture results were used as the gold standard to ascertain sensitivity (62.5%) and specificity (100%) of the rapid DFA test. Of 1901 patients positive for respiratory viruses on the virus panel, 143 (7.5%) were positive for ADV by DFA or subsequent culture. The mean age of ADV positive children in this case series was 23 months and 90% were less than 60 months old.

Rapid DFA test results in most cases were known within 4 hours and the authors found that 36% of the ADV positive children had a change in management based on positive ADV DFA. The two most common management changes documented were discontinuation of antibiotics and/or discharge from the hospital.

The authors conclude that adenovirus is a common infection in young children and that its rapid identification can favorably impact care. (Rocholl C et al: Pediatrics. 2004 Jan;113(1 Pt 1):e51-6.)

Commentary:, The 7.5% rate of ADV infection in this study is similar to previously published data and helps to confirm that ADV is a frequent (and possibly under diagnosed) pathogen among children. In the absence of a control group of children with similar

respiratory symptomatology not undergoing rapid testing, it is difficult to quantitate how much of a "management impact" the test itself truly had, if any. Given the rapid test's limited sensitivity but excellent specificity its most appropriate use is likely to be found in "ruling in" the diagnosis of adenovirus when the current diagnosis is uncertain. In these equivocal cases, a rapid ADV positive test result may indeed allow a clinician to feel more confident in the withholding of antibiotics or additional testing in the nontoxic child. In the absence of prospective data, however, clinicians practicing in areas where this test is available should not yet completely dismiss the possibility of other concomitant bacterial illnesses in the child whose ADV DFA is positive.

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Car Seats: Helping Parents Understand the New Law

On July 1 of this year, a new law will go into effect in Tennessee that will prevent a significant number of injuries and deaths to children in vehicles . . . but only if parents are made aware of the new law and its requirements.

You may recall when TNAAP worked endlessly with the CRPCs, several state departments and other groups last year to pass this legislation, touted as the most significant change to the car seat law in 20 years (since our own Dr. Bob Sanders, a.k.a. Dr. Seatbelt, passed the nation's first child safety seat bill in 1977). Dr. Mick Connors' testimony before the Senate Transportation Committee really opened the eyes of the legislators to the dangers currently facing our children when they are too small to be protected by a seat belt alone. Never before had they heard of "seat belt syndrome", just as many parents today have not.

Basically, Tennessee law will now require booster seats through age 8, and it closes the loophole which previously allowed parents to take their children out of car seats to nurse, comfort, etc, while the vehicle is in motion.

More specifically, here is how this new law will change the current law:

Ages 0-1 (plus any child <20 pounds): Current law: states only that they must be in child passenger safety seat.

New law: adds they must be in rear-facing position and in the rear seat (if available)

Ages 1-3: Current law: states only that they must be in child passenger safety seat.

New law: adds they must be in forward-facing position and in rear seat (if available)

Ages 4-8: Current law: booster seat required only if <40 pounds

New law: booster seat in rear seat (if available) unless over 5 feet.

Ages 9-12: Current law: requires seat belt.

New law: requires seat belt and recommends that they be in the rear seat

Ages 13-15: Current law: requires seat belt.

New law: no change

Data from the National Highway Traffic Safety Administration (NHTSA) shows that booster seats can result in a 60% decrease in injuries and deaths. Thank you for doing what you can to help parents understand this and the importance of the new law.

Catherine M. Fenner, Executive Director
Tennessee Chapter of the American Academy of Pediatrics

Do you have any pediatric emergency issues you would like to see addressed in this newsletter? We welcome your comments and suggestions. Please email the editor at: rlembersky@pol.net. Views expressed in the Pediatric Emergency Messenger are not necessarily endorsed by the Tennessee Chapter of the American Academy of Pediatrics. Reprint permission may be requested from the editor.



New EMTALA Rules



This past September the federal government came out with “new and improved” guidelines for the Emergency Medical Treatment and Labor Act (EMTALA). This act is far reaching and affects many aspects of emergency care in the United States. In the following article I will give you a *Reader’s Digest* version of the changes.

One of the experts on EMTALA, Dr. Robert Bitterman states that “overall, the new rule is positive for hospitals, emergency departments, and physicians without diminishing protection for patients seeking emergency care.” The biggest concern for the ED physician is that the law provides “flexibility” to a hospital’s required subspecialty coverage. This may negatively impact the availability of subspecialty care for emergency patients. CMS (Centers for Medicare and Medicaid Services) reports to follow the “Rule of Reason” for hospital coverage, with the intent that subspecialty coverage should meet the needs of the community. Exactly what

this rule means for hospitals and coverage is questionable. The answers will probably be found in some of the rulings of future violations. Dr. Bitterman has stated, “This could result in conflicts between hospitals over who will provide specialty care and result in delayed care and more transfers of patients, and exacerbate the ambulance diversion problem in the United States.”

Some of the highlights in the new rule include:

- EMTALA obligations stop when the patient is admitted. Once a patient is admitted (or moved to inpatient status) EMTALA does not apply.
- The “Rule of Reason” as outlined above for the community standard for on-call specialists. No specific numbers are expected or observed as standard.
- EMTALA rules apply to the “Emergency Department.” This is considered to be the dedicated Emergency Department at the

facility, that area which holds itself out to emergency care. This does not include a pain clinic or a physical therapy center for example.

- Hospital owned ambulances may follow community standards on trauma, etc.
- Sub-specialist may be on call at multiple facilities and may do elective procedures while on call. The hospital must develop a back-up plan.

The above are just a few areas of change. The final result of the changes will not be seen until CMS makes some ruling of interpretations on what the “Rule of Reason” means. Hopefully, as the rules become apparent, the American College of Emergency Physicians and other stake holders can sit down with CMS to assure quality patient care and access.

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