

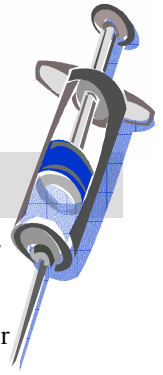
the Pediatric Emergency Messenger



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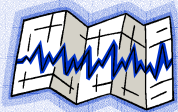
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Chairman's Message

State EMS Prepares for Potential Threats

In a recent discussion with Mr. Joe Phillips, the State EMS Director, I learned a great deal about the state's plans to try to prepare for the threats facing our nation and our state. I felt a brief overview of these plans would be of great interest to the recipients of this newsletter. I appreciate Mr. Phillips allowing me to share this information.

This preparation is obviously a huge task and is an ongoing process which will require much time, effort, and funding. The task includes bioterrorism and community disaster preparedness. The positive aspect, if there is one, is that these efforts are bringing together hospitals, EMS, the health department, and thousands of volunteers in a collaborative effort.

One example of this effort is the State Hospital Bioterrorism Committee. This committee's primary goal is to offer statewide uniformity and surveillance of bioterrorism readiness and response. In addition, this effort has highlighted the need for training, public education, and improved communication capabilities for all involved agencies.

The smallpox threat is a first test for this readiness and highlights the need for the public

health focus on surveillance, epidemiology, and vaccination. The state is currently working on pre-exposure planning which includes the volunteer vaccination of health care workers, fire, police and EMS providers. In case of a documented exposure the state is developing plans to rapidly vaccinate the entire population. Each of these local sites will have the capability to vaccinate 50,000 people in a matter of days.

Mr. Phillips urged primary care and emergency department personnel to report any suspicion of a biological agent to their local health department. Rapid response is key to an effective public health effort.

Disaster preparedness is also an ongoing effort for the state. Disasters would include natural disasters as well as dealing with the aftermath of terrorist activity. These situations are very different from dealing with a biologic agent. These potential mass casualty situations require rapid response, triage, and prompt medical treatment. These preparations require pre-event planning and the development of training exercises. Communication and collaboration between EMS, hospitals, and local public health agencies is very important.

Mr. Phillips reported that there has been local and regional variation in disaster planning across the state. For example, West Tennessee is focusing on earthquake preparedness while East Tennessee is working with its expertise in nuclear exposure. These regional efforts will help to provide uniformity and guidance for statewide preparedness.

Much work is being done in Tennessee to prepare for these potential disasters but obviously more needs to be done. Federal dollars will continue to go toward state preparedness. Please contact your local health department with questions or if you have concerns of a potential developing situation.

Mick Connors, MD
Pediatric Emergency Medicine, Knoxville

***"Rapid response is key to an
effective public health effort"***

Mark your calendar for a CME event in Memphis!!!

Please join us at the second annual collaborative statewide conference entitled "Advancing the Frontiers of Pediatric Emergency Care in Tennessee" to be hosted by Le Bonheur Children's Medical Center on September 12-13th, 2003 at the Fogelman Executive Convention Center in Memphis.

Earn CME credits focused on cutting edge urgent and emergent pediatric issues that include: Acute Abdomen; Airway Management; Office Preparedness for Emergencies; Club Drugs; Pediatric Sedation & Analgesia; Tips for Minor Procedures; Emergency Radiology; Wound Management; Infectious Disease Update; Resuscitation Update; Seizure Management; Pitfalls in Pediatric Trauma Care; Community Disaster Preparedness & Bioterrorism; Literature Update; Legislative Update.

Check our website www.lebonheur.org for details on registration.

Jay Pershad, MD, FAAP
Course Director

Robert Lembersky, MD, FAAP
TNAAP Program Chair



Tricks of the Trade

(Editors note: This is the second of a two part series by Dr. Herman. Part one was published in the Fall 2002 issue of this newsletter.)

Most docs with any experience have picked up a few little tricks or tidbits of information during their careers that make them more efficient or seem smarter than the “newbie” coming out of training. My goals for this article are to refresh your memory regarding tricks you might have learned about or used in the past and possibly introduce a few new tricks that may make your job easier.

Removing rings can be a challenge. Of course you could use a ring cutter, or if lucky simple application of soap and water or a lubricant may work. If the finger is swollen, you might want to try to wrap the finger with a wide rubber band (umbilical tape and Coban™ have also been used), starting distally. Once the edema is squeezed out of the digit, lubricate the rubber band and slide the ring off.

Paraphimosis is somewhat similar to the problem one sees with rings. To treat this problem you must also reduce the edema. Patience is the key here. Medicate the patient for pain control and then try to reduce the glans back into the prepuce with constant pressure applied to the edematous areas. Once the paraphimosis is reduced, urologic consultation is advised to schedule a circumcision.

Other miscellaneous problems which may present a challenge include plugged G-tubes, hair tourniquets, or an unruly child. When a child has a plugged G-tube, instead of immediately replacing the tube, instill a little carbonated cola and you may find the clog resolved. Hair tourniquets? No problem, apply the depilatory products Neet or Nair and wait. Do not apply to broken skin because your patient will not be happy with you. For the unruly child, or when they are fearful of the papoose board or you don't have one, have them insert their arms into a pillowcase. If you need to have access to their back, place the pillowcase in the

front and have the patient lay down prone. The arms will be trapped under them. For access to the chest and trunk, the arms are placed behind the patient (similar to applying handcuffs) and the pillowcase pulled up from the rear. The patient lies down on their back and the arms are once again held out of the way.

Feeling frustrated when you try to feel an “olive” to diagnose hypertrophic pyloric stenosis? Insert a feeding tube when the baby is first examined, then feed the child by mouth. After the child is satiated, remove

the stomach contents by aspirating the feeding tube and then palpate the abdomen. Pay particular attention to the epigastrium and liver edge area.

If you want to appear really quick in the math department, try to remember these little tidbits. When you need to start an IV, the “4-2-1 rule” can quickly calculate the hourly fluid rate. For the first 10 kg of weight, give 4cc/kg/hour. If the child weighs more than 10 kg, start at 40 cc/hour and add 2cc/kg/hour for every kg of weight between 10-20 kg. If the child weighs

Continued on page 4

What are the effects of “Ecstasy?”

(Editors note: this article is an example of the “Question of the Week” produced by the Middle Tennessee Poison Center. Weekly e-mail delivery of the “Question of the Week” is available and the contact information is included below.)

MDMA (3,4 methyl-enedioxy-methamphetamine), is a chemical with structural similarities to both amphetamine and mescaline. It has been classified into a novel pharmacological class termed “enactogens” because it has a characteristic psychoactive profile that distinguishes it from classic hallucinogens and stimulants. Acute psychological effects include euphoria, elevated self-confidence, and heightened sensory awareness. Individuals feel closer to other individuals and groups of people.

MDMA increases release and prevents reuptake of 5-hydroxytryptamine-serotonin, and to a lesser extent, dopamine. Serotonin regulates mood, anxiety, aggression, impulsiveness, sexual activity, appetite, sleep, pain, circadian rhythm, and body temperature. The role it plays in cognition is poorly understood.

Also called ecstasy, MDMA is central to “raves” – all night dancing at clubs associated with loud music and flashing lights. MDMA is becoming increasingly popular as a recreational drug. Adverse effects include loss of appetite, trismus or bruxism, muscle aches and stiffness, ataxia, sweating, tachycardia, hypertension and hyperthermia. Life threats include hyper-

thermia, seizures, DIC, rhabdomyolysis, acute renal failure, and liver failure. Death is usually due to severe hyperthermia. All night dancing, sustained physical activity, and fluid loss accentuate the potential for hyperthermia. Treatment of overdose is supportive, with emphasis on rapid cooling of life-threatening temperatures.

One of the questions regarding ecstasy use is if permanent impairment can occur as a result of serotonergic neurotoxicity. There is evidence that chronic heavy use is associated with sleep disorders, depressed mood, anxiety, impulsiveness, hostility, and memory and attention impairment.

The Middle Tennessee Poison Center produces the “Question of the Week” to highlight a toxicology topic. If you would like to receive the previous questions, and be added to our weekly email service, please send an email to donna.seger@Vanderbilt.edu

Donna Seger, MD
Medical Director,
Middle Tennessee
Poison Center



Emergency Department Management of Technology Dependent Children

Initial management consists of determining what has changed from the child's baseline state. Basic interventions are the same as in the "normal" child – Airway, Breathing, and Circulation. Further assessment and management are then based on the particular technologies upon which the child is dependent.

VP Shunt:

Shunt malfunction cases may present with only irritability or vomiting. If unrecognized, neurologic status will gradually decline as would be seen in cases of increased ICP. Evaluation consists of a *Shunt Series* (plain films of the track of the shunt from skull to abdomen) looking for disruptions of the shunt tubing and an *Uncontrasted Head CT*. Interpretation of the CT is greatly enhanced by the availability of a comparison study; however, should the child not be a "known" patient at the presenting facility, an alternative approach will allow at least some degree of interpretation. By contacting the radiologist at the child's "home" facility, the ED physician could discuss the films and then at least determine gross changes in CT findings. As teleradiology develops we may also have the ability to transmit the films between institutions to allow for accurate comparisons. Physical examination should also include palpation of the shunt course for defects or fluid accumulations that would suggest disruption of the shunt tubing.

In cases associated with fever or altered mental status at presentation, shunt infection must be given serious consideration. Ideally a shunt tap will yield an answer; however, if neurosurgical consultation is not promptly available this may not be feasible. Lack of the ability to obtain a shunt tap should not preclude administration of appropriate antibiotics, including vancomycin for Staphylococcal species coverage, if the index of suspicion is high for shunt infection. Lumbar puncture is an alternative in some cases to assess for infection; however, it may not reliably detect shunt infection and should not be used as justification to withhold antibiotics.

Home Ventilators:

Most commonly these children will present with either mechanical problems with the ventilator or airway related issues; pneumonia, pneumothorax, bloody or purulent tracheal secretions, and tube dis-

placement. These children may be totally or partially ventilator dependent, which will be a deciding factor in their method of management on arrival in the ED. In the case of total dependence, begin with the usual home settings and modify, as in any other mechanically ventilated patient, according to airway findings and response to therapy. Increasing PEEP is often more helpful than raising FIO₂ in children with pneumonia although this must be done cautiously. Tension pneumothorax as a complication of home ventilation must be mentioned separately because of the potential for rapid deterioration and the necessity for rapid diagnosis and management.

Tracheostomy:

Displacement and mucous plugging are the predominant complications; however, because of pre-discharge teaching of care providers, these problems are often eliminated prior to presentation to the ED. More prevalent in the ED are complications due to infection or bleeding/irritation. Local infection of the tracheostomy stoma may include cellulitis or abscess formation. These should be managed with added consideration of any risk to the airway proper. Infection of the stoma may also lead to tracheitis.

Bleeding of the trachea secondary to trauma/ulceration may constitute an emergent situation and warrants prompt otolaryngology involvement. Should the bleeding be of sufficient volume to cause risk of airway compromise, the tracheostomy tube could be replaced with a cuffed ET tube of similar outer diameter and the cuff inflated to either secure the airway or tamponade the bleeding site. In the case of bleeding due to erosions in the trachea, the risk of tracheal perforation must be considered with this intervention and cuff volume sufficient to control bleeding only should be introduced.

Gastrostomy/Feeding Tubes:

As with tracheostomies, blockage and displacement are the predominant problems seen. Usually these problems are taken care of by care providers at home but may present to the ED if complications develop or they are unable to resolve the situation at home. Replacement with a like-sized tube is the simplest manner to correct the situation. In cases of tube displacement and imminent closure of the

track, a Foley catheter or similar tube may be used as a temporary replacement. On occasion, reinsertion of a gastrostomy tube over a guide wire may be necessary if narrowing of the track has begun to occur.

Local infection is also a likely occurrence and must be differentiated from local (chemical) irritation secondary to gastric fluid leakage. Cellulitis and abscess formation at the G-Tube site, although not imminently life threatening as would be the case with a paratracheal process, still present a significant risk of sepsis and peritonitis and must be addressed appropriately.

Abuse and Neglect:

Unfortunately this must always be a consideration in evaluation of the technology dependent child. As many of these children have impaired communication abilities and dependence on an often fatigued and/or frustrated caretaker, they tend to be at significantly increased risk. Although neglect is a much more common situation, it can prove to be equally life threatening, as is frank abuse. Neglect may result from fatigue, lack of support services, or inadequate education in dealing with the child's ongoing needs. Unless actively sought or considered, this situation often escapes recognition by the ED physician. Neglect, as opposed to abuse, is also more easily resolved if it is recognized before harm occurs.

Abuse is an active intent to injure the child or hasten their demise and is often more apparent and suspected. It is, however, often much harder to prove or "treat." Although more easily recognized/differentiated by experienced providers, or those familiar with the child and family, abuse should be considered in any setting where the situation "just doesn't seem right." This should include developmentally inappropriate injuries or injuries more severe than would be expected from the history or proposed mechanism. As abuse has such a high potential for bad outcome for the child, one should err on the side of protecting the child and involve social services and protective services even in cases which the physician feels are borderline for maltreatment.

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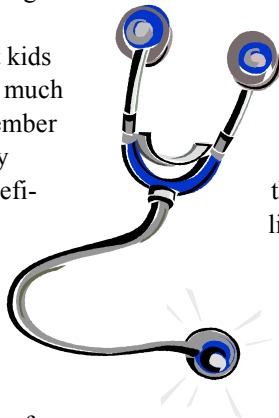


Tricks of the Trade (cont'd.)

more than 20 kg, start at 60 cc/hour and add 1cc/kg/hour for every kg beyond 20 kg.

When you need to treat kids who are dehydrated, how much fluid do they need? Remember that each 1% of total body weight that you think is deficient is equivalent to 10cc/kg of lost fluid. So for a child that you feel is 6% dry, simply give 60cc/kg as deficit fluid.

What is the right volume for an infant to feed at any given feeding? Remember that infants require 100-120 kcal/kg/day to grow, which amounts to 5-6 ounces/kg/day. Typically babies feed 6 times a day, thereby making it easy to see that 1 ounce/kg/feed 6 times a day is more than sufficient. Of course you know that one ounce of standard formula contains 20 Kcal. It is also so nice that the

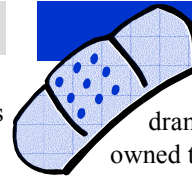


estimated volume of an infant's stomach is 3% of their body weight. This 1 ounce/kg/feed is then the ideal volume. It fills the stomach and satisfies the child's caloric requirements.

Lastly, I will point out that drug concentrations also have little secret to them. For every % concentration, there is 10 mg/ml of drug. For example, lidocaine 2% has 20mg of lidocaine per ml, or D25W has 250mg glucose/ml. I use this tidbit of information daily to quickly check that a particular drug order has been filled correctly.

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DID YOU KNOW?



Trampoline injuries are dramatically rising. Privately owned trampolines account for 99% of injuries on trampolines. Most injuries (66%) occur on the trampoline and do not involve falling off. The American Academy of Pediatrics recommends that trampolines should never be used in the home environment, in routine physical education classes, or in outdoor playgrounds. For more information, you can see the policy statement at PEDIATRICS Vol.103, No. 5, May 1999, pp 1053-1056.

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



