

ED Legal Letter

The Essential Monthly Guide to Emergency Medicine Malpractice Prevention and Risk Management
From the publishers of *Emergency Medicine Reports* and *ED Management*

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Medicolegal issues and risk management in pediatric emergency medicine

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Editor's Note:

Emergency physicians must be cognizant of the inherent dangers in the pediatric population. This issue of ED Legal Letter highlights those high-risk presentations. The authors' use of malpractice case scenarios and pertinent medical management guidelines will provide emergency physicians with risk management strategies. When applied in practice, these strategies will assist the emergency physician in reducing the risk of an ever-looming professional negligence suit.

Testicular Torsion

*Rappa v. Nierman and Hillell.*¹ A 13-year-old male presented to an emergency department (ED) complaining of swelling and pain in his right testicle. He had one episode of emesis in the ED. No imaging studies were performed. The patient was prescribed pain medication and antibiotics and discharged with a diagnosis of epididymitis. He was instructed by the physician to return for follow-up the next day, but was scheduled by the office to come back one week later. Five days later, he reported worsening pain and was told to wait two days for the appointment. At that visit, and by subsequent operative exploration, the diagnosis of a necrotic testis secondary to intermittent torsion was made. A \$2 million jury verdict was returned.¹

Testicular torsion is not a difficult diagnosis to make, but may be

obscured by difficulty in obtaining important history and overlap of other diagnoses with similar presenting complaints. The correct diagnosis is crucial in this entity, however, because of the severe consequences of testicular loss and sterility if not treated in time. Testicular torsion should be considered the primary diagnosis to rule out in any patient with a chief complaint of acute scrotal pain. It is the most common cause of acute scrotum pain in boys younger than age 15 — up to 74% of cases.² Thought to be a disease of adolescents, with a peak age of 14 years, a recent study showed an even distribution of age of presentation between ages 1 and 14 years.³ There are several reasons that diagnosis is difficult. Testicular torsion may be associated with trauma in 4%-8% of cases.⁴ Patients may have fever (16%), nausea and vomiting (up to 50%), or pyuria (27%), which leads to the false diagnosis of epididymitis.^{4,5} Testicular torsion most classically presents with sudden, acute testicle pain.

Careful and sensitive history-taking in this often shy patient population will discover the true complaint and often a previous history of similar episodes. Using pain relief with elevation of the testicle is an unreliable way of differentiating torsion from other possible diagnoses.⁶ The amount of testicular swelling will vary depending on the degree of ischemia and the delay in presentation. The most important physical exam finding to evaluate is the cremasteric reflex. Normally, stroking of the inner thigh causes reflex contraction of the cremasteric muscle and resultant elevation of the testis on that side. Absence of this reflex is extremely highly associated with testicular torsion, and a normal reflex makes torsion very unlikely. Testicular necrosis, ischemia, and infarction are likely if diagnosis is not made within six to eight hours. For this reason, if torsion is likely, immediate surgical exploration is mandatory. In the remainder of cases, a Doppler ultrasound of the testicle can be a very useful test that usually is readily available and gives results approaching 100% with respect to both sensitivity and specificity.⁵ It is most accurate in an uninfamed scrotum without edema in a patient who has had symptoms for less than 12 hours.⁷ Testicular nuclear scanning is accurate, but its disadvantages include an 8% false-negative rate, expense, and unavailability.⁸

An understanding of these key features of diagnosis should lead to a reduction in the number of misdiagnoses.

Procedures/Supervision of Housestaff

*Queens County, New York Supreme Court Case No. 18825/86.*⁹ An 8-month-old male underwent lumbar puncture and suffered cardiac arrest during the procedure, resulting in severe brain damage, blindness, and quadriplegia. The lumbar puncture was performed by an intern while a nurse held the baby. The plaintiff's contention was that the nurse held the child improperly, causing hyperflexion of the neck, thus leading to airway obstruction and cardiac arrest. The plaintiff also claimed the intern failed to properly monitor and resuscitate the infant, and that the hospital was negligent for failing to have a more experienced physician present to supervise. The plaintiff won a \$27.3 million verdict.⁹

Appropriate monitoring of patients during

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procedures is one of the key issues in this case. Another is the need for adequate supervision of housestaff by attending physicians. Physicians may be sued for malpractice under various legal doctrines when alleged acts of negligence are committed by residents whom they supervise. Under the doctrine of respondent superior, the employer is responsible for the employee's misconduct as well as for the employee's failure to act.¹⁰ This applies even if the employee disobeys an employer's orders. The principle of vicarious liability, which means employers may be held liable for injuries caused by their employees, can be invoked. Based on this principle, it is clear that a hospital or university that pays residents' salaries also assumes some legal responsibility for negligence committed by these employees. It also is apparent, from a number of court decisions, that if a court determines that an attending physician has any degree of control over the actions of a resident, the attending may be held liable for the resident's negligence.⁹ Usually, residents in their first year of training are not yet licensed to practice medicine, and this, coupled with their relative lack of clinical experience, means close supervision is warranted. By co-signing the ED chart, the faculty physician essentially approves the documented record as well as the evaluation and treatment that was given to the patient.¹⁰ Clearly, close supervision of interns performing procedures is always warranted.

Medication Errors/Airway Management

*Salyers v. Sacred Heart Hospital, Newsome and Bashir.*¹² An 8-month-old infant, diagnosed with asthma and respiratory syncytial virus, was to be transferred to a children's hospital. The transport team made the decision to intubate the patient, who weighed 10 kg (22 lbs). A pediatric pulmonologist was called, and he gave orders to give the child 2 mg of midazolam, intubate, then give a 2 mg dose of vecuronium. The nurse instead gave the midazolam followed by the vecuronium, then attempted to intubate the patient five minutes after the vecuronium was given. Documentation indicates that the infant was hypoxic and that there was absent chest rise, yet no attempt was made to extubate and reintubate the infant until 15 minutes later. The patient arrested and died. A settlement

was reached in the amount of \$150,000, plus a \$145,977 annuity.¹²

In addition to the errors in airway management, incorrect medication doses were raised as another area of malpractice in this case. When given intravenous doses of 0.1-0.2 mg/kg, vecuronium produces paralysis appropriate for intubation in 1-4 minutes.¹³ Higher doses shorten the onset to paralysis but prolong the duration. Since the dose of vecuronium used in this case was in the higher range of standard dosing, it could have been expected that paralysis would have occurred well before the first attempt was made to intubate the patient (five minutes after vecuronium was administered). The formal policy of the children's hospital involved was that vecuronium should not be given until after intubation. Although rapid sequence intubation protocols usually involve use of sedation and neuromuscular blockade prior to intubation, if the hospital's written policy, as in this case, states otherwise, deviation from this standard could place the physician at medicolegal risk. Verification and documentation of correct endotracheal tube placement is essential. Endotracheal tube placement, equal breath sounds, oxygen saturation, vital signs, and a chest X-ray should be checked and findings documented. If, as in this case, improper endotracheal tube placement is evident, immediate corrective action is mandatory. Medication error is defined as "any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer."¹⁴ It has been estimated that childhood mortality from medication errors may exceed that caused by accidental poisoning.¹⁵ Medication errors may seriously harm patients, increase costs, and are a frequent basis for litigation. The American Academy of Pediatrics Committee on Drugs and Committee on Hospital Care recommend a number of steps that can be taken to reduce these errors. Orders should be legible, unambiguous, and written out without abbreviations. The patient's weight and medication allergies should be clearly identified. Use of a terminal zero should be avoided (e.g., use 1 instead of 1.0).¹⁴ A zero to the left of a dose less than 1 should be used (e.g., use 0.1 instead of .1). There is a particular risk of dosing errors in the pediatric patient population because of variability in weights of patients and the need to

calculate individual doses.

(Editor's note: This case reflects the potential danger of not following established protocols. Hospital physicians and nurses need to be aware of patient protocols and follow them. Extensive documentation explaining deviations should be done when established protocols are not followed. Both in the malpractice and EMTALA [Emergency Medical Treatment and Active Labor Act] arenas, these protocols will be used against providers to aid in proving a deviation from the standard of care at a particular institution.)

Meningitis

*Anonymous v. Anonymous, Worcester County Massachusetts Superior Court.*¹⁶ An 18-month-old girl was evaluated for complaints of fever, lethargy, increased sleeping, and rash. She was diagnosed with a viral infection and sent home. That evening at 7 p.m., the child's mother called the doctor because her daughter had slept all day and developed "pimples" on her chest. She was told to return the next day. At 8 p.m., the mother called again because the child had a fever of 106° and "red blotches all over her body." She was again told to return the next day. When the mother called again at 3:30 a.m., she reported that her daughter had developed vomiting and diarrhea. A "summer rash" was diagnosed over the phone. The next morning, the plaintiff awoke to find her daughter dead. An autopsy showed meningococemia.¹⁶ A settlement was reached for \$300,000. This case illustrates the difficulties of phone triage. Apparently, the severity of the child's illness was not clear to the physician taking the phone calls. One could speculate that the mother's multiple calls during the night, along with the information that the child had developed a very high fever and rash, should have raised enough concern to prompt referral to an ED for an immediate evaluation. The plaintiff in this case alleged that the child's symptoms were indicative of a bacterial infection and warranted a complete exam, labs, and antibiotics. The defendants contended that the symptoms were more indicative of a viral infection and claimed that nothing could have been done because the rash was a fatal sign of meningococemia.

The allegation that physician negligence contributed to an adverse outcome in patients with

meningitis is a common claim in lawsuits against pediatricians and ED physicians. This claim often assumes a correlation between duration of patient symptoms and outcome of bacterial meningitis. The duration of symptoms may not be the same as the duration of meningitis. This is a particularly difficult distinction to make when meningitis begins as a nonspecific illness. Actual meningeal seeding of infection may occur at any point in the illness. For example, a physician sees a child with nonspecific symptoms on Tuesday and the child is diagnosed with meningitis on Friday. Was there a delay in diagnosis? Not necessarily. Expert witnesses often are asked to estimate when a bacterial infection invaded the central nervous system.¹⁷ Since the answer to this can be only speculated, studies instead address the duration of symptoms. In a review of the literature, Bonadio found that studies correlating symptom duration and outcome of bacterial meningitis do "not definitively determine whether and for what duration of time a delay in treating the infection affects patient outcome."¹⁸ The best approach for the individual physician is careful assessment and thorough documentation of history and exam findings. It is of utmost importance to give the caregiver clear instructions to bring the child back for reevaluation if the condition worsens in any way, and there should never be resistance or reluctance to provide re-evaluation when requested by a parent.

In a review of existing data linking a delay in therapy to outcome in bacterial meningitis, Radetsky found that if the presentation was that of a nonspecific illness, a short delay of fewer than three to five days in diagnosis, and initiation of treatment does not alter the risk of sequelae or death.¹⁹ In addition, he noted that in the case of fulminant meningitis, antimicrobial treatment has minimal influence on outcome when these patients deteriorate early and rapidly during the course of their illness. However, Radetsky found that in patients with clinically obvious meningitis, an inappropriate delay in initiating treatment dramatically increases the risk of permanent injury. Another possible issue raised by this case is adverse outcome as a result of managed care gatekeeping. A review published in *Academic Emergency Medicine* suggests that "gatekeeping, as currently practiced by telephone, may be associated with adverse outcomes."²⁰ ED physicians are required by EMTALA to provide a screening exam

and indicate stabilizing treatment even if the patient has been “denied” ED referral or payment by the managed care organization. It is prudent for referring physicians to have a low threshold for advising patients to seek timely evaluation in an ED. This is especially true when the patient has a potentially high-risk complaint (such as fever, abdominal or chest pain), the severity of which cannot easily be judged over the phone.

Appendicitis

*Bronx County, New York Supreme Court Case No. 24646/94.*²¹ An 11-year-old female was diagnosed with viral gastroenteritis by her pediatrician. She continued to have symptoms and was re-evaluated by her doctor the next day, at which time labs were checked and the patient was sent home. That evening, the girl’s symptoms became more severe and she presented to a hospital ED, where she was diagnosed with acute appendicitis. She was taken to the operating room and found to have a gangrenous appendix. After a nine-day hospitalization, she recovered fully. It was the plaintiff’s contention that treatment was delayed because her doctor did not check labs on the first visit and then incorrectly interpreted the labs done on the second visit. The defendant argued that there was no breach in the standard of care. A \$110,000 settlement was reached.²² Appendicitis is the most common condition requiring emergency abdominal surgery, and has a peak childhood incidence at ages 10-12 years.²² Diagnosis of appendicitis, especially in younger children, can be particularly difficult, as evidenced by the fact that the perforation rate in children younger than 8 years is twice that in those older than 8 years. Although white blood cell (WBC) elevation is common in acute appendicitis, it is not a completely reliable parameter for definitive diagnosis. A normal WBC count does not consistently rule out the diagnosis of appendicitis, either. Earlier diagnosis and prompt treatment of acute appendicitis decreases the perforation rate. Pediatric patients are less able to communicate a history consistent with appendicitis, and localized tenderness may be difficult to assess in an uncomfortable child.

Given these limitations, imaging studies should be considered strongly when the diagnosis is less clear. Abdominal pain films most often are normal

early in the course of appendicitis, and therefore rarely add much to the evaluation. Barium enemas are used occasionally to evaluate patients with possible appendicitis. In a significant proportion of barium enema examinations, the appendix cannot be visualized, making the study indeterminate.²³ Appendiceal computed tomography (CT) scan has been found to be highly accurate for diagnosing or excluding the diagnosis of appendicitis, with an accuracy of 93%-98%.²³ CT diagnosis of appendicitis is most accurate when a combination of helical CT and colon contrast is used.²³ CT also has the advantage of aiding the diagnosis of conditions that may mimic appendicitis. Findings on ultrasound that indicate appendicitis include an incompressible appendix, identification of an appendicolith, or a fluid collection or mass representing an abscess due to a perforated appendix.²⁴ Use of ultrasound for diagnosis has a number of pitfalls, including difficulty visualizing an appendix located retroceally or a perforated appendix (unless a fluid collection or abscess is present).²⁴ In addition, ultrasound may be a very difficult test for a patient to tolerate when suffering from severe abdominal pain, due to the examiner’s need to press firmly on the abdomen to obtain adequate visualization. Ultrasound has the potential to be helpful when clinical findings are equivocal. In these instances, ultrasound may help identify an alternative diagnosis, such as an ovarian cyst, and sometimes can make a definitive diagnosis of appendicitis. Unfortunately, ultrasound has not yet been shown to improve outcome in pediatric patients with appendicitis. A recent study in *Academic Emergency Medicine* evaluated the potential of ultrasonography to improve outcome for children with appendicitis. In this study, the use of ultrasound did not expedite the diagnosis of appendicitis and was not associated with a decrease in rates of perforation.²⁵ Acute appendicitis remains primarily a clinical diagnosis. History, physical exam, clinical suspicion, and lab data together can be used to determine a diagnosis. In some cases, imaging studies may aid in the diagnosis. When the diagnosis is uncertain, close observation with frequent repeat exams may be indicated. Careful education of patients and parents regarding signs and symptoms of appendicitis is important. When patients presenting with abdominal pain are discharged, documentation of

instructions to patients should include indications for return for re-evaluation if they develop increased pain, fever, or have no improvement within 12-24 hours.

Dehydration

*Anonymous v. Anonymous.*²⁶ A 3-year-old child presented with a two-day history of diarrhea, vomiting, inability to keep anything down, and decreased urine output. The parents described the child as lethargic and having sunken eyes. The nurse described the child as listless, pale, and quiet and noted that the child did not react when she gave an injection of ampicillin as ordered by the physician. Blood pressure and pulse were not documented, electrolytes were not checked, and no intravenous or oral fluids were given in the office. The parents were told to take the child home and to continue to try to give oral liquids. That afternoon, the child continued to have vomiting and diarrhea, and that evening suffered a cardiac arrest and died. An autopsy noted hypernatremic dehydration and listed the cause of death as a viral infection. The plaintiffs alleged that failure to diagnose dehydration and failure to give intravenous fluids caused shock and death.²⁶ A \$300,000 settlement was reached.

When evaluating a child for dehydration, documentation of vitals is essential, and obviously was neglected in this case. Also, if clinical evaluation suggests dehydration, a definite plan for rehydration should be documented. In this case, oral rehydration could have been attempted while the child was observed in the office. If the child continued to be unable to tolerate oral intake, intravenous fluids should have been initiated. Another noteworthy point in this case is the apparent difference between the nurse's findings and the physician's assessment of the child. This highlights the importance of reviewing the nurse's notes; if the physician's findings differ, this should be explained and documented on the chart.

A recent study found that conventional clinical signs of dehydration are valid and reliable.²⁷ According to the findings in this study, diagnosis of clinically significant dehydration should be based on at least three clinical findings, among which may include capillary refill greater than two seconds, decreased tears, dry mucous membranes, and ill general appearance.²⁷ Electrolyte values

may be helpful in assessment of moderate to severe dehydration and to identify electrolyte abnormalities such as hyponatremia, hypernatremia, and hypoglycemia that may affect treatment.²⁸ A prospective study of children with gastroenteritis and dehydration found that although decreased serum bicarbonate concentration is more common with increasing severity of dehydration, the magnitude of decreased bicarbonate was not significantly different with increasing degrees of dehydration.²⁹

An American Academy of Pediatrics practice parameter on the management of acute gastroenteritis advocates the use of oral rehydration therapy (ORT) with a glucose-electrolyte solution.³⁰ Contraindications to ORT include altered mental status, ileus, and intractable vomiting.³¹ Even in the presence of some vomiting, frequent small volumes of an oral rehydration solution may be useful. Solutions with 45-90 mmol/L sodium should be administered in a volume of 100 mL/kg for moderate dehydration and 50 mL/kg for a child with mild dehydration.³⁰ When considering the possibility of significant dehydration in a child, the clinician should strongly consider checking electrolytes. In addition, before releasing a child with acute gastroenteritis from the ED, it is essential that the physician makes certain that the child can tolerate oral liquids. If the child cannot tolerate oral rehydration, admission or further ED observation is advisable.

Consent by Parents/Battery

*Banks v. Medical University of South Carolina.*³¹ An 8-year-old girl presented with respiratory distress, fever, and hip pain. In the course of her evaluation and treatment, she had an exploratory laparotomy and transfusions. She then died from cardiac arrest secondary to multiple pulmonary emboli secondary to a protein C blood disorder. Her mother was a Jehovah's Witness who opposed blood transfusion. She brought suit for battery against the physicians for administering blood without consent. The transfusions were determined not to be critical for survival of the child at the time. The court allowed her suit and noted, "as a general proposition, except in the event of an emergency, a surgeon will be liable for an assault where he operates on a child without the consent of the latter's parents."³²

Key Risk Management Points

Testicular Torsion

- Age of the patient is not a reliable predictor of testicular torsion.
- Testicular torsion may include fever, vomiting, and pyuria suggestive of infection.
- Presence of a cremasteric reflex almost completely rules out testicular torsion.
- If testicular torsion is fairly certain, immediate operative exploration is indicated.
- If time allows and the diagnosis is uncertain, Doppler ultrasound is the most readily helpful test to diagnose testicular torsion.

Procedures/Supervision of Housestaff

- Interns and residents should be closely supervised, particularly when performing procedures.

Medication Errors/Airway Management

- Adhere to the institution's written policies regarding rapid sequence intubation.
- Be familiar with time to onset and duration of effects of drugs used for sedation and neuromuscular blockade.
- Verify and document correct endotracheal tube placement.
- Write orders legibly and without abbreviations.
- Clearly identify patient weight and allergies.
- Avoid use of a terminal zero (i.e., using 1 instead of 1.0).
- A zero to the left of a dose less than 1 should be used (0.1 instead of .1).

Meningitis

- When a child with nonspecific symptoms and fever with no source is examined, document a thorough history and exam.
- Have a low threshold for lumbar puncture in children with fever and no source, particularly if the child is ill-appearing, lethargic, or irritable.
- When discharging febrile children from the ED, give caregivers clear instructions to have the child re-evaluated if his or her condition worsens in any way.

Appendicitis

- Remember that appendicitis is more difficult to diagnose in younger children.
- Do not rely entirely on a normal white blood cell count to rule out appendicitis.
- Consider imaging studies such as CT or ultrasound when the diagnosis of appendicitis is not clear. Also have a low threshold for surgical consultation.
- When appendicitis is suspected but not definite, consider observing the child in the ED or as an inpatient for serial abdominal exams.

Dehydration

- Document vital signs.
- Have a low threshold for checking electrolytes in the moderately to severely dehydrated child.
- Before discharging a child with gastroenteritis, make certain the child can tolerate oral fluids.

A review of the entire topic of consent in minors is beyond the scope of this issue. Each state will have laws and codes that define at what age a person may give consent for himself or herself, as well as the rights of parents in giving consent for their children. The ED physician should review the applicable laws in the state in which he or she practices and become very familiar with them to avoid situations such as the one cited above.

Battery is defined as the intentional infliction of a harmful or offensive bodily contact.³² An important thing to note is that “intentional” means “intent to perform the act or procedure,” not “intent to harm.” It doesn’t matter that the physician was trying to help, or even that no harm occurs as a result; it is the invasion itself (without consent) that is unacceptable. Courts often use statements such

as “sanctity of the body, bodily integrity,” and “personal autonomy” when they support suits charging battery. Two types of damages can be awarded when battery occurs. First, general damages are whatever monetary sum the jury feels is reasonable to compensate the patient for the invasion. Second, special damages are expenses incurred by the invasion (e.g., lost work, medical bills, etc.). Keep in mind that these awards may not be covered under a physician’s malpractice insurance policy, leaving his or her personal wealth exposed.

The ED physician should not hesitate in rendering life- or limb-saving care to children in their parent’s absence. Courts have, on occasion, supported a parent’s refusal of life-sustaining care for their children, but did not persecute physicians who, in good faith and the best interest of the

child, have initiated life-saving care without parental consent.^{33,34} A famous quote from a court case is often cited: “Parents may be free to become martyrs themselves. But it does not follow they are free, in identical circumstances, to make martyrs of their children before they have reached the age of full and legal discretion when they can make that choice for themselves.”³⁴

However, if there is no life threat present, it is prudent to wait for a parent/guardian’s consent before performing invasive procedures or exams. Many registration forms include signature for “carte blanche” consent. If consent also is documented on the chart, it is nearly irrefutable, and this practice is advisable.

One dilemma an emergency physician faces is the question, “When is a child competent to give his or her own consent?” Again, it is wise to be familiar with the state laws governing where the physician is practicing, but courts have commented in general on this topic as well. The “Rule of Sevens” states that when younger than 7 years, the child has no capacity to give consent; between ages 7 and 14 there is a rebuttable presumption of no capacity; and between 14 and 21 years, there is a rebuttable presumption of capacity.³⁵ In one case, the court declared, “Whether a minor has the capacity to consent to medical treatment depends upon the age, ability, experience, education, training, and degree of maturity or judgment obtained by the minor, as well as upon the conduct and demeanor of the minor at

the time of the incident involved. Moreover, the totality of the circumstances, the nature of the treatment and its risks or probable consequences, and the minor’s ability to appreciate the risks and consequences are to be considered.”³⁵

Duty To Warn/Duty To Third Parties

*Tarasoff v. Regents of University of California.*³⁶ Under previous common law, a physician only had a duty to care for the particular patient with whom he or she had a patient/physician relationship. This was drastically changed by the landmark *Tarasoff* case in 1976.³⁶ A patient confided to his psychologist that he intended to kill a specific woman. The psychologist notified campus police, who investigated the man and released him. Two months later, he killed the named woman. The psychologist was successfully sued for not warning the woman of the threat upon her life.

Physicians now must warn a person who is in possible danger from threatened violence by a patient. If *Tarasoff* is read literally, then simply notifying the police does not relieve one of the responsibility of warning the threatened party. A person must be “foreseeable,” which is equivalent to identifiable. Thus, if a patient states, “I am going to kill someone in the Army,” there is no duty to warn, as the physician can’t warn everyone in the Army. But if someone threatened to “kill someone in the nephrology clinic,” there would be a duty to warn this easily identifiable group.

There are situations other than those involving threatened violence that require the physician to warn third parties of danger. In one case, a woman was being treated with insulin for pregnancy-induced diabetes. She had a hypoglycemic episode while driving and hit and injured a pedestrian (who was a physician, interestingly). The pedestrian successfully sued the prescribing physician (not the driver) for not warning the driver of this “foreseeable” event and potential victim.³⁷ The *Tarasoff* case mandated, “A doctor must also warn a patient if a patient’s condition or medication renders certain conduct, such as driving a car, dangerous to others.”³⁶ This duty to warn not only applies to medications prescribed, but also conditions such as seizures, which could cause injury to others in certain situations.

In another case, a lab tech got a needle stick

Approach to Obtaining Consent in Minors

1. Review the laws of the state in which one practices and comply with them.
2. Rule of 7’s:
 - a. If child under 7 years old, the court considers them unable to give informed consent.
 - b. If child between 7 and 14 years old, the court presumes them unable to give informed consent for themselves unless it can be proven otherwise with evidence.
 - c. If child older than 14 years, the court presumes they can give informed consent for themselves unless it can be proven they are not competent to do so.
3. Courts support a physician treating a child without informed consent in life threatening situations when they are acting in the best interest of the child.

from a patient with hepatitis B. She was told by her physician to watch for symptoms for six weeks, and given no other instructions. The patient ended up contracting the disease and her sexual partner got it, as well. The sexual partner successfully sued the physician for not proscribing sex.³⁸

The *Tarasoff* case also covered this area, mandating responsibility of physicians to third parties by stating, "A doctor is liable to persons infected by his patient if he negligently fails to diagnose a contagious disease or, having diagnosed the illness, fails to warn members of a patient's family."³⁶ A physician theoretically could be liable to a third party who contracted AIDS after the physician negligently failed to diagnose the condition in the patient's family member.

Several court cases have held physicians not liable for injuries in similar circumstances so there is no consensus on how a court will rule. It is prudent for the physician to go ahead and give proper warning and document it on the chart and thus avoid going to court in the first place. It is impractical to warn everyone who might come in contact with a patient. It is acceptable for the physician to relieve himself or herself of this responsibility by telling the patient directly. Instructions such as "don't drive on this medicine," or "don't share utensils or have sex with others while you have this disease," satisfy the duty to warn. While the above cases involve adult patients, many pediatric patients in this day and age are sexually active, drive, and take medication, making this physician responsibility very applicable to pediatric emergency medicine.

Seizures

*Jane Doe et al v. Town Hospital.*³⁹ A 5-year-old was brought to an ED at 8 a.m. suffering from status epilepticus (SE). Valium was administered until 8:37 a.m. without cessation of seizure activity. At that time, a dose of paraldehyde was given, and was repeated 10 minutes later. At 9:30 a.m., the patient was started on phenobarbital and given three additional doses 10 minutes apart. At 9:50 a.m., the seizures stopped. The patient developed cerebral edema and multiorgan system failure due to hypoxia and died 16 days later. The plaintiff alleged that the emergency physician failed to give timely and high enough doses of anticonvulsants.

The defendant claimed the outcome was inevitable. A settlement was reached for \$1 million.³⁹

SE is a life-threatening neurologic emergency which is defined as seizure activity that is either prolonged for more than 30 minutes or in which there are no lucid intervals between seizures. There are 50,000-60,000 cases of SE each year in the United States, with one-half to one-third of incidents occurring in patients with known seizure disorder.⁴⁰ In up to 75% of pediatric patients with SE, it is the first episode of seizure.⁴¹ Quick and effective treatment and cessation of the seizure activity is the key to optimal outcome. In one study, patients with SE lasting longer than 60 minutes had a mortality of 32%, while those with SE lasting 30-59 minutes had a mortality of 3%.⁴² The mean duration of SE is two hours and 45 minutes.⁴³ While treatment is initiated, a search for possible etiologies should be undertaken to correct a possible underlying cause. Inquiry and testing should focus on the most likely reasons for SE, including noncompliance with medication, blood sugar or electrolyte disorders, intracranial lesions or events, or toxins, but a multitude of other reasons are possible.

The pitfall in SE management is not giving anti-convulsants at appropriate rates or doses. Treatment, in general, involves administering a benzodiazepine in combination with a long-acting anti-convulsant such as phenobarbital, phenytoin, or fosphenytoin. Lorazepam is the preferred first-line drug (vs. valium), as it has a longer duration of action on the central nervous system.⁴⁴ The dose is 0.05-0.1 mg/kg IV at a rate of 1-2 mg/minute. It may be given rectally if an IV is not in place, but an increased dose of 0.5-1.0 mg/kg will be required.⁴⁵ Benzodiazepines stop seizures in 75-90% of patients.⁴⁵ Phenytoin will stop seizures in 40-91% of patients, and, unlike benzodiazepines and phenobarbital, it does not cause respiratory depression.⁴⁵ One should be especially cognizant that in pediatric patients, the combination of benzodiazepines and phenobarbital in proximity frequently will require active airway management as a result of respiratory depression. The ED physician should anticipate this side effect and be prepared to provide quick intubation. The loading dose of phenytoin is 20 mg/kg administered no faster than 1 mg/kg/min. Fosphenytoin is considered by many to be the drug of choice (along with

a benzodiazepine) in SE.⁴⁶ It may be ineffective in seizures due to toxins.⁴⁴ The loading dose is 15-20 mg/kg of phenytoin equivalents with a rate of less than 150 mg/min of phenytoin equivalents. Its safety has not been established in pediatric patients. Phenobarbital is generally considered a second-line anticonvulsant, but many in pediatrics use it primarily. The loading dose is 15-20 mg/kg IV at a rate not greater than 2 mg/kg/min.

If SE is not responsive to maximum doses of the above medications, it is considered refractory. Other medications that have been utilized with variable success are lidocaine, paraldehyde, chloral hydrate, and valproate.⁴⁵ Ultimately, barbiturate or isoflurane anesthesia may need to be utilized, with the former being preferable.⁴⁵

Compartment Syndrome

*Anonymous v. Anonymous Emergency Physician Group and Hospital, Dallas County (TX) District Court.*⁴⁷ A 14-year-old male was injured in football practice and presented to the ED complaining of severe pain in his left lower leg. A contusion of the peroneal nerve was diagnosed after a foot drop was noted and he was discharged with instructions to follow-up with an orthopedist in one week. Two days later he saw an orthopedist because the pain was so great. Compartment syndrome was immediately diagnosed with emergent surgical decompression, but the patient was left with a permanent foot drop. A settlement was reached for \$700,000.⁴⁷

Failure to diagnose compartment syndrome is becoming an increasingly common area of recovery in medical malpractice suits. It may occur in any situation in which there is obstruction of circulation due to external compression, internal swelling, or allergic reaction. Manifestation usually is delayed for several hours, with the classic presentation being pain out of proportion for the injury, hypesthesia, weakness, and pain with passive stretching of the involved muscle group. Observation should be considered for those at high risk (tight casts, prolonged pressure in comatose patient, severe internal bleeding, crush injury, burn, fractures, severe contusions, or snake bites). In potential compartment syndrome, patients who are not symptomatic and are discharged must be educated about the signs of a worsening compartment syndrome, and documentation that the instructions were given must be made

both on the chart and in the discharge instructions (by the physician).

Compartment syndromes have been reported in all compartments of the leg, arm, thigh, and forearm, as well as the abdomen, foot, hand, and gluteal area.⁴⁸ Symptoms may occur within minutes or be delayed by days, so there is no time frame in which the emergency physician can feel comfortable excluding the diagnosis by history alone. On exam, it is important to assess the nerve and motor function of the suspected compartment as well as overt signs of swelling and injury. Some consider pain out of proportion to apparent injury to be the key sign, while others feel a sensory deficit is the most important physical finding in the clinical diagnosis.^{49,50} Presence of pulses should not be reassuring. If there is a deficit in function, as in the legal case above, it is prudent to arrange immediate consultation rather than rely on outpatient follow-up. Measurement of compartment pressures is the hallmark of definitive diagnosis and should be undertaken or arranged quickly if suspicion of the diagnosis is present. A variety of methods exist for measuring compartment pressures that will not be discussed here. Continuous monitoring is superior to a single measurement if early compartment syndrome is suspected. When a compartment pressure rises above 35 mm or within 20 mm of a diastolic pressure, tissue perfusion stops. If compartment syndrome is definitively diagnosed, immediate fasciotomy is required in most cases. Some have noted fasciotomy will reverse injury if performed within 12 hours, but others have claimed irreversible injury after 5-6 hours.^{50,51} Poor outcomes generally occur when fasciotomy is delayed longer than eight hours.⁵² These time frames may be referred to in assessing patient care to determine whether the standard was met in deciding physician liability.

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29. Which of the following usually provides definitive information when considering the diagnosis of testicular torsion?
- Presence of fever
 - Urinalysis results
 - Age of patient
 - Doppler ultrasound
 - Relief of pain with elevation of the testicle
30. All of the following drugs are mainstays in the treatment of status epilepticus *except*:
- chloral hydrate.
 - lorazepam.
 - phenobarbital.
 - phenytoin.
31. Which of the following statements about compartment syndrome is *false*?
- Pain out of proportion to the injury is a key diagnostic.
 - Pulses present distal to the injured compartment rules out this diagnosis.
 - Sensory loss is a key diagnostic sign.
 - Symptoms may develop days after the injury.
32. Methods to reduce medication errors include:
- writing out orders without abbreviations.
 - identification of patient weight and allergies.
 - avoiding use of a terminal zero.
 - using of a zero to the left of a dose amount less than 1.
 - All of the above

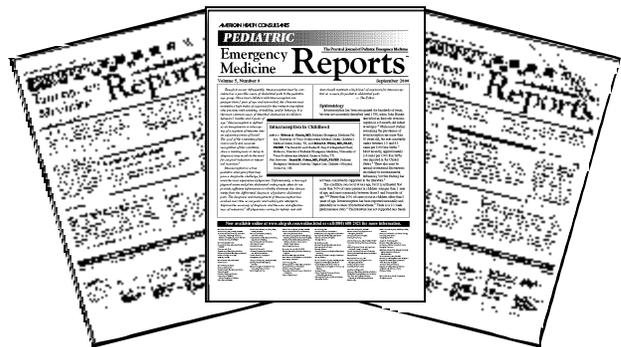
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