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ED Handoffs: Patient Safety at Stake in Transition from ED to Inpatient

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The practice of emergency medicine is unique in that an emergency medicine physician acts as a gatekeeper: while treatment of a patient may be brief, initial examination and assessment will often dictate the course of the patient's treatment after admission to the hospital. Thorough, efficient communication between the emergency department (ED) and the hospital floor is essential to continuity and quality of care. This article addresses handoff pitfalls, pertinent law, case studies, and ideas for improvement.

Nature of Admission Handoff

"Handoff" or "handover" refers to transition of care, when control of, or responsibility for, a patient passes from one health care professional to another. Handoff occurs at many stages in the hospitalization of a patient. In the ED setting, the main transition episodes are presentation to the ED (particularly if by emergency transport), shift changes within the ED, and admission to inpatient care. This article focuses on handoffs at the time of hospital admission.

Historically, there has been a dearth of research and literature on the subject of handoffs. In recent years, however, interest in the subject has increased significantly. In 2006, the Joint Commission named as one of its National Patient Safety Goals "Implement a standardized approach to 'hand off' communications, including an opportunity to ask and respond to questions."[1] The World Health Organization also launched its "Action on Patient Safety: High 5s" initiative, naming "communication during patient care handovers" as one of the five pillars.[2] Indeed, patient safety is always at stake during a handoff, and it is crucial that no information be lost during the transfer.

The ED-physician-to-admitting-physician handoff presents unique challenges in that, as opposed to shift or location changes, it is a cross-specialty transfer. Due to the nature of shift changes in the ED, there is more of an established procedure for handoffs to the oncoming physician. Admission handoffs represent a change in three different domains: provider, depart-

ment, and physical location.[3]

In general, the handoff process begins with the emergency physician's assessment of the patient's stability and acuity. Following that, the emergency physician will contact an admitting physician. At this point, it is important that a core of information passes between the physicians, whether by phone or in person. This includes, at a minimum: chief complaint, past medical history, history and physical, reason for admission, any abnormal findings, lab and radiology results, the course of treatment in the ED, and whether or not the patient is stable.[4]

Handoff Pitfalls

Errors in ED-to-hospital handoffs can result in dire, but preventable consequences. Failure to timely and accurately pass on important information can lead to a delay in diagnosis or treatment, or worse. There are societal dangers as well, with handoff fumbles leading to higher healthcare costs, public dissatisfaction, longer hospital stays, and a higher rate of return visits. In one study, 29% of physicians reported that one of their patients had experienced an adverse event or a "near miss" because of inadequate communication between the ED and admitting physician.[5]

A situation which often leads to handoff problems is the practice of "boarding," or keeping a patient physically in the ED after he has been technically admitted to the hospital as an inpatient. This scenario arises when a hospital experiences a temporary bed shortage. The emergency physician has signed out the patient, and while he still bears some responsibility for the patient, often mentally "moves on," and considers the patient's care to be the admitting physician's responsibility. Particularly in a case where an admission is done over the phone, a patient who is being "boarded" can have a significant and dangerous gap in treatment simply because each physician thinks the other one is handling patient care.

Problems in handoff communication do not always originate with the physician making the handoff. When there is imperfect communication between the patient and the initial emergency room physician or between emergency physicians at a shift change, this will often carry forward past admission, contributing to errors in diagnosis, treatment and disposition.[6]

One key area rife with problems is lab results. Often, results of lab draws taken in the ED are returned after the patient has been admitted to the floor. If the results come back to the ED instead of being sent to the floor or the admitting physician, they may not make it into the hands of the doctor who is currently treating the patient. If it is unclear after a transition which physician is to follow up on certain studies, there is a danger that no physician will follow up. One study found that in one of six cases of missed diagnoses, test results had failed to reach the proper clinician.[7]

As an ED becomes busier, the attentions of the health care professionals become, by definition, more divided. When the provider responsible for signing a patient out is carrying a heavy workload, this inevitably can lead to faulty transitions. Not surprisingly, the likelihood of omission of information is higher when the handoff is rushed.

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Likewise, an ED physician caring for a great number of patients may be operating based on, and reporting, information that is not current at the time of handoff.[8]

Another less concrete area in which handoff problems originate is physician bias. Some doctors see their specialty as superior to others, or are dismissive of another doctor's opinions or recommendations. Bias can create holes in the handoff, as the receiving physician practices selective listening. For example, an internist may not trust the ED staff's ability or judgment. Similarly, there can be a dogmatic divide of responsibilities. Some internists expect that emergency physicians will produce definitive diagnoses and provide complete treatment, while some emergency physicians think that their role is to stabilize and dispose of the patient.[9]

Finally, technology can also complicate matters related to the handoff. Medical record format is often the partial culprit in improper information exchanges. As hospitals move toward electronic records, part of the record is often electronic and part is still paper. When a receiving physician sees only one or the other, he can make treatment decisions based on an incomplete picture. Furthermore, reliance on electronic records tends to reduce the "cognitive load" of physicians, making quick recall more difficult.[10]

Pertinent Law

At first glance, the requirements of EMTALA appear to end once a patient has been admitted to the ED and stabilized.[11] If, however, the patient cannot be "stabilized" in the ED, EMTALA may require admission. In a 2009 federal decision, the 6th Circuit Court of Appeals ruled that there is a continuing obligation for a hospital to treat a patient after admission, for however long until "no material deterioration of the condition is likely" upon the patient's release.[12] Depending on a patient's condition, EMTALA may require an ED physician to not only treat a patient, but to effect a handoff to an admitting physician. However, it is the position of the Centers for Medicare and Medicaid Studies that a "boarded" patient is outside of the scope of EMTALA.[13]

State laws require physicians to comply with the standard of care, which is generally defined as what a reasonably prudent physician would do in like or similar circumstances. Poor handoffs are specifically implicated in 24% of malpractice claims involving the ED.[14]

Case Studies

In a 2006 Texas case, a patient presented to the ED with abdominal pain. The ED physician made a diagnosis of pancreatitis and recommended admission, which was done by an internist over the phone. The patient, however, remained "boarded" in the ED, waiting for a bed. No ED physician evaluated the patient after 2:00 pm, and the internist never saw him. Around 8:00 pm a code was called, and the patient died after resuscitative efforts failed. In this case the internist was sued, and the jury awarded the plaintiff $1.2 million.[15] While it was the admitting physician who was found liable, the problem likely occurred because there was no clear delineation of responsibility at the handoff point. Had the two physicians agreed who was to monitor the patient while he was boarded, his pancreatitis likely would not have resulted in death.

In a 2006 Maryland case, a patient presented to the ED with nausea, vomiting, and a bump on the head oozing pus. The initial ED physician ordered x-rays and blood work. The lab results were returned on the next shift, showing WBC 15,300 and creatinine 1.6. The x-rays, also read during the next shift, showed two cavities in the lungs. The ED physician telephoned the on-call internist, who admitted the patient to the floor over the phone with a diagnosis of pneumonia and gastroenteritis. The patient, however, was "boarded" in the ED. Following that call, further lab reports came to the ED showing bandemia (45%) and blood in the urine. The ED physician did not report these to the internist. For over six hours no physician saw the patient. The ED doctor testified that the patient was no longer his responsibility. When a night resident examined the patient, he was septic, with renal failure. The patient continued to deteriorate and died. The case resulted in multiple settlements (including by the emergency physician who performed the handoff) and a verdict of $2.9 million.[16] The ED physician should have passed on the test results he received after admission, and he should have agreed on a plan with the internist as to who would care for the patient while he waited for a bed.

In a 2008 Pennsylvania case, a patient presented to the ED with cyanosis, bloody diarrhea, rapid breathing, hypertension and tachycardia. The ED physician called a critical care doctor for a con-

sult, and ordered one liter of IV fluid. Thereafter, no physician saw the patient for an hour and a half, during which the patient was left in a hallway. She died shortly thereafter. Both the critical care physician and the emergency room physician insisted they were relying on the other to care for the patient. A jury returned a verdict against both doctors for $1.2 million.[17] While this was not technically an admission case, it is analogous to the admission handoff. The death was caused by a failure of the two physicians to communicate about whom was responsible for the care and treatment of the patient.

Ideas for Improvement

Given the various difficulties mentioned in the preceding section, it is important to take preventative measures and to establish practices and protocols pertaining to handoffs. Many suggestions for establishing protocol offered in the literature have their basis in other industries, and health care presents a situation where every interaction is going to be different. Applying assembly-line efficiency to handover procedure should be done with care.[18]

Therefore, any discussion of improvements in the handoff process is by necessity limited to generalities. Obviously, optimizing communication is paramount. Most proposals involve greater standardization of the handoff process. There should be a minimum set of essential data to be passed on in each circumstance, agreed upon by the outset by physicians on both sides of the exchange.[19]

In addition to the medical information to be shared, the physicians need to agree upfront on who is to follow up on test results. This will prevent the situation where each physician assumes the other will follow up. This is particularly important in academic hospitals, where several interns and residents are likely to see the patient. There is often, of course, a third physician involved. The pathologist or radiologist must also develop a fail-safe method of making sure that results make their way to the correct clinician.[20]

Furthermore, a precise and distinct point of transition should be established. The more ambiguous the shifting of responsibility, the greater chance there is of an adverse outcome. At every point in the patient's care, all physicians involved should be clear on who is responsible for the patient. To the fullest extent possible, phased handovers, in situations like boarding, should be eliminated.[21]

Patients should themselves be used as a sort of fail-safe. The more information to which the patient is privy, the less likely that information will get lost during transition. This can be accomplished by conducting the handoff at the patient's bedside. This will also allow the patient to have some input, and it gives the receiving physician an opportunity to directly examine the patient at the point of transition. The downside to this plan is that it may curtail access to computerized records or to the whiteboard. Therefore, it is important for the ED physician to bring and use parts of the record as "visual aids" in the handoff.[22]

Improving hospital-wide patient flow, while not under the control of the ED physician, will certainly help to diminish the likelihood of handoff errors. Reducing crowding in the emergency room will allow the physicians to more carefully treat, and less crowding on the floor makes it unlikely that ED physicians will have to "board" patients who have already been admitted. Hospitals should also work to standardize medical records and make sure that every part of the record and all diagnostic studies can be stored and retrieved electronically.[23]

Conclusion

As illustrated by the legal cases above, communicating a clear division of responsibility, as well as other information, as part of patient handoff can prevent tragedy and costly malpractice litigation. ED physicians should communicate all vital information but also clearly delineate responsibility and plan for information exchange after the moment of transfer. These simple steps can prevent adverse consequences and improve patient care.

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Will Jury View ED 'Boarded' Care as Substandard?

Work within "broken system"

Your ED patient's bad outcome might have nothing to do with the fact that he or she was held in the hallway while awaiting an inpatient bed. However, it could impact the outcome of subsequent litigation against the ED.

"I know that patients and families think that 'boarded' care is substandard to inpatient care. I would think the jury may think the same," says **Matthew Rice, MD, JD, FACEP**, an ED physician with Northwest Emergency Physicians of TEAMHealth in Federal Way, WA.

Sandra Schneider, MD, professor of emergency medicine at University of Rochester (NY) Medical Center says that the best way to reduce liability is to "get the admissions out of the ED as soon as possible. We know that boarding is the number one patient safety concern of emergency physicians." She believes risk increases with very prolonged boarding times as the patient is handed off to subsequent providers who often are not aware of the details of the patient's case.

According to the Centers from Disease Control and Prevention report "Estimates of Emergency Department Capacity: United States, 2007," there are 500,000 ambulance diversions annually in the U.S., and 62.5% of EDs board admitted patients for more than two hours. **Andrew Garlisi, MD, MPH, MBA, VAQSF**, medical director for Geauga County EMS and co-director of University Hospitals Geauga Medical Center's Chest Pain Center in Chardon, OH, says the report contains "few, if any, surprises to nurses and emergency physicians who regularly work in the trenches."

Redesign Is Needed

Reducing liability risks related to long waiting times will require redesigning emergency care systems so that patients don't need to wait as long, says **Jesse M. Pines, MD, MBA, MSCE**, associate professor of emergency medicine and health policy at George Washington University in Washington, DC.

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"This can be difficult, particularly in settings where there is insufficient institutional support to do so," he says. "The other option is to implement hospital policies that improve safety by early identification of clinical changes in patients who are forced to wait in an otherwise broken system."

For instance, to improve the safety of ED boarding, some hospitals have policies where inpatient medical teams care for admitted patients while they are held in the ED. "Because ED physicians are busy seeing new patients, sometimes subtle changes in clinical status that may be the 'calm before the storm' are missed," says Pines. "Having inpatient medical teams manage ED boarders may increase the safety of boarding, by having the doctors who will be ultimately responsible for a patient's inpatient care be responsible as early as possible."

Schneider says that EDs should implement the three high-impact, low-cost solutions recommended by the American College of Emergency Physicians' Boarding Task Force's 2008 report, Emergency Department Crowding: High-Impact Solutions. These are assuring that discharged inpatients leave the hospital before noon, smoothing out the OR schedule throughout the week, potentially including Saturdays, and moving admissions from the ED to the hall of the hospital.

"Boarding comes from hospital crowding; it is not primarily an ED problem," says Schneider.

Rice says that he is unaware of any data-supported review article about increased risk of boarded patients, but he does know of litigation involving boarded patients. "Who is responsible for a patient being boarded from a standard of practice perspective, and from a patient's and family expectation when they are being 'kept' in the ED?" asks Rice.

If a patient is sick enough to be admitted, then Rice says that patient is better served by being cared for in that inpatient area. There is also the issue of whether the ED staffs the boarded patients with physicians and nurses using the same standard as the inpatient area would use.

For example, EDs often staff nurses to patients in a 1:4 nurse to patient ratio, whereas in an intensive care unit, there may be one nurse for every two patients. "If there is a difference in staffing, skills, training, or equipment and there is a bad outcome, it seems logical this would put the ED in a vulnerable position relative to risk," says Rice.

Stop Dangerous Practices

S. Allan Adelman, JD, a health law attorney with Adelman, Sheff & Smith in Annapolis, MD, says the most dangerous practices regarding ED boarding involve "anything that makes continuous supervision and monitoring of the patients more difficult."

Adelman isn't not aware of any specific evidence, such as studies or literature, showing that holding patients increases an ED's legal risks. "But you cannot ignore the fact that being left in a hallway is not going to create an impression of well-organized health care," says Adelman. "That alone may make patients much more willing to believe they were not properly cared for."

Adelman says that he firmly believes "that an unanticipated bad outcome coupled with dissatisfaction with some aspect of the care provided are the primary ingredients of a malpractice claim." He recommends the following:

- *Be sure that sicker patients whose condition could deteriorate more rapidly are kept in locations where they can be more readily and regularly observed.* Avoid placing the patients in locations where they cannot be readily observed, or not having enough staff to regularly check on patients being boarded. Either way, the failure to regularly observe and check on patients creates "the risk of not being aware of some adverse change in the patient's condition, and also the risk of the patients' feeling they were abandoned," says Adelman.
- *Avoid any lack of clarity regarding who is responsible for the boarded patient, both with regard to the nursing staff and physicians.*
- *Make regular contact with the patients and their families, and explain to them why the patient is being boarded.* Keep them updated concerning what is going on, and give them assurances that they are not being ignored or forgotten about. "This is extremely important, to avoid having unhappy patients and families who are looking for a reason to sue the hospital or other health care providers," says Adelman. "Be especially attuned to patient comfort." Provide pain medication, a blanket if they are cold, or something to eat or drink if clinically permitted.
- *Make an effort to provide privacy.* "Be sensitive to the fact that being boarded in an open area such as a hallway denies patients and their families any real privacy in what can be a particularly stressful time," says Adelman. "Anything that can

be done to afford patients and their families some level of privacy will be very much appreciated by patients, and helpful in mitigating the adverse impact of being boarded."

- *Have a good explanation of why boarding was necessary readily available.* "I think most people can understand that an emergency department is not a place where the flow of patients can be controlled by the hospital, and that there may be occasions when boarding in hallways is simply unavoidable," says Adelman.

Hospitals should be able to show it was unavoidable, and that appropriate steps were taken to assure that patients were properly monitored and treated." The goal is to convince a jury that the care of the patient was not in any way compromised by having to board the patient in a hallway.

"Having said all that, having a patient held in a hallway, and then have an adverse outcome, is going to be a combination that is not going to present a favorable impression of the hospital," says Adelman. "It is going to be just one more issue that the hospital will have to deal with in the course of defending the lawsuit."

Does a Lawyer Claim You Failed to Order Diagnostic Tests?

The use of high-tech diagnostic imaging in EDs has quadrupled since the mid-1990s, says a new report from the Centers for Disease Control and Prevention. In 2007, magnetic resonance imaging, computerized tomography, or positron-emission tomography scans were done or ordered in 14% of ED visits, which is four times as often as 1996.

"The impact of overutilization of diagnostic tests for "defensive medicine" is staggering," says **Matthew Rice, MD, JD, FACEP**, an ED physician with Northwest Emergency Physicians of TEAMHealth in Federal Way, WA. "There is little doubt that it occurs, adds impressively large amounts of dollars to health care and is often not even good for patients' health. The data for this fact is indisputable."

Rice says that his own personal experience, after practicing for over 30 years in emergency medicine, is that "about 25% to 33% of my care is related to defensive medicine."

A significant number of ED litigations do involve failure to order tests or interpret them. "One of the largest causes of action is failure to diagnose. At least part of the case often revolves around whether a test is ordered and interpreted properly," says Rice.

Rice says that it is much easier to defend a bad outcome when a test is normal, than it is to defend a bad outcome when the right test, if available, could have assisted in making the correct diagnosis and disposition of a given patient.

"Classic cases of not ordering the right test are numerous," says Rice. These include a complete blood count to help in diagnosis of infection, a urinalysis to assist in diagnosis of kidney disease, a chest X-ray that could have found a pneumonia or tumor, an ultrasound and/or d-Dimer to assist in diagnosis of a blood clot, or a computerized tomography scan that could have assisted in a diagnosis of appendicitis or pulmonary embolism.

"The examples are almost endless in an age of technology, and patient expectations," says Rice. He says these questions are commonly asked by plaintiff's attorneys: "Doctor, would test X have assisted you in your diagnosis? Was it available? Why would you not get it prior to the patient leaving the ED? For the sake of only $500, did you avoid this test that cost your patient their ability to work the rest of their life?"

Allegation Is Common

One of the most prevalent grounds for lawsuits in the ED setting is a failure to diagnose, which often goes hand-in-hand with a failure to order a diagnostic test, according to **Chris DeMeo, JD**, a health care attorney with Munsch Hardt Kopf & Harr in Houston, TX.

"The physician, however, is typically the one responsible for ordering tests. So unless the physician is an employee of the ED, the ED would not be the proper target for such an allegation," says DeMeo.

The exception to this rule is when the standard of care for a patient's presenting complaint requires a protocol that includes certain tests to be run without the need for a physician's order. One example of this type of situation would be a patient presenting with chest pain for whom cardiac enzymes and an EKG may be ordered.

"If a protocol is in place and is not executed, there may be a lawsuit," says DeMeo.

Alternatively, a patient may sue arguing that a protocol should have been in place but was not. "Regardless of the target or theory of the lawsuit, failing to order a diagnostic test is an extremely common allegation," says DeMeo. The riskiest areas, he says, involve diagnostic imaging related to cardiac disease/myocardial infarction or stroke.

Very Difficult Defense

The ED physician may have, in fact, been justified in not ordering a diagnostic test because this was not indicated based on their current knowledge of the patient's condition. However, if the test would have identified something, this "hindsight is 20/20" situation is "very difficult for the defense," says DeMeo.

"It will likely result in liability, absent a very conscientious jury and a defense team that at trial can impress upon the jury the importance of not using the "retrospectoscope" in judging the defendants' conduct," says DeMeo.

Even then, there will be the challenge of explaining why the test was not indicated, if in fact there was something there to be diagnosed. "Specifically, the plaintiff will argue that the main reason for using diagnostic imaging is to spot things that cannot be detected in a clinical exam," says DeMeo.

"It is rare to have conclusive evidence that a certain test would have been positive at the time of the events giving rise to the lawsuit, simply because the reason there is a lawsuit is because the test was not done," says DeMeo.

One situation where there could be some conclusive evidence of this, though, is where the patient has a retained sponge from an earlier surgery, presents to the ED with abdominal pain, and no scan is done. Later, the family physician orders a scan showing the sponge.

"In that case of course, the main liability would be with the facility that did the surgery. The ED liability should be limited to damages incurred from the date of the ED visit," says DeMeo.

Usually, the plaintiff's expert will take a later test result and try to 'back-date' the findings to come up with an opinion as to what would have been present and detectable at the time of the ED encounter. "At that point, there should be a vigorous battle on the reliability of the expert's back-dating methodology," says DeMeo.

While a connection has been shown between diagnostic testing and the prevalence of medical malpractice lawsuits, "it appears to be a one-way street with lawsuits impacting diagnostic testing, but not vice-versa," says DeMeo.

"Stated another way, there are published studies that point to the correlation of tort reform, and the resulting reduction in the frequency of malpractice litigation, and the reduction in the utilization of diagnostic testing," says DeMeo.

There is less published evidence, however, demonstrating that the reverse is true – that as the utilization of diagnostic testing has risen, that there has been a corresponding rise, fall or flat effect in the prevalence of malpractice lawsuits.

"The real concern for the physician from a litigation perspective when it comes to overutilization is in payer reimbursement actions, most notably Medicare recoupment claims and, in the extreme case, actions under the federal False Claims Act," says DeMeo.

Sources

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Lawsuits for Needless Tests? It's Possible

If a CT scan of your ED patient isn't medically necessary, can the patient sue you for ordering one? "The great big elephant in the room," says **Matthew Rice, MD, JD, FACEP**, an ED physician with Northwest Emergency Physicians of TEAMHealth in Federal Way, WA, involves risks from radiation from these studies. One study says the CT scans ordered by doctors each year could lead to thousands of added cancer deaths in the decades to come.[1]

"Twenty years from now, will the courts be inundated with litigation from cancers, then discovered, caused by excess radiation from CT scans obtained earlier in life that were 'unnecessary?'" asks Rice.

Although the scenario of patients suing for tests ordered unnecessarily has occurred, says Rice, "so

far, their success has been limited, mostly because of the plaintiff's inability to prove specific damages, or with limited value."

Rice says that "the big unknown" is the risk of side effects or future damage to the patient if an unnecessary test is ordered. "That could be a real risk problem in the future.," he says. "Certain dyes with bad reactions, such as renal failure, can lead to litigation and the question of 'Was this really needed?'"

Ann Robinson, MSN, RN, CEN, LNC, principle of Robinson Consulting, a Cambridge, MD-based legal nurse consulting company. says although she has not come across a case where over-utilization per se was the basis for appropriate litigation, "I have little doubt that such a scenario has at least been attempted."

"It is rare, however, that patients perceive that too many tests are ordered," says Robinson. "More often, it is their perception that more tests equal better care, though we as providers do not always align with that philosophy."

Chris DeMeo, JD, a health care attorney with Munsch Hardt Kopf & Harr in Houston, TX, agrees that although a patient could conceivably sue the ED if a diagnostic test was ordered when it wasn't really necessary, this scenario is rare. He says that litigation more likely involves situations where the test was not unnecessary, but was not useful in diagnosing the patient's condition.

"Even then, liability is generally limited to situations where the patient is injured during the process of the test itself, or the test leading to a delay in treatment that results in an injury," says DeMeo.

Risks of an allergic reaction to contrast dye can be minimized by using an informed consent form or by not using contrast, says DeMeo. In other instances, such as a patient falling off the imaging table or suffering an intravenous line infiltration, liability would lie primarily with the technician performing the test and the hospital employing that individual.

A plaintiff might even raise an argument that an unnecessary test caused a delay in treatment and a bad outcome — for example, if time was spent obtaining a CT on a patient with meningitis, thereby delaying the start of antibiotics; or, if a CT was ordered on a hypotensive patient who showed clear evidence of a ruptured abdominal aortic aneurysm, rather than sending the patient directly to surgery.

"With respect to an unnecessary test causing a delay in treatment leading to an injury, there would have to be expert opinion as to how earlier treatment would have lead to a different result," says DeMeo. "Unless there is the requisite measure of reliability in this opinion, it is subject to challenge and may be stricken."

To reduce these risks, many ED physicians are now having patients participate in decisions about use of CT scans. They are documenting that the patient was aware of the potential future risks, and accepted them for the purpose of obtaining diagnostic information from imaging with various forms of diagnostic radiation.

"Such imaging may be the asbestos litigation of the future, and devastating to medical imaging companies and medical providers," says Rice.

Reference

1. Redberg RF, et al. Cancer risks and radiation exposure from computed tomographic scans: How can we be sure that the benefits outweigh the risks? *Arch Intern Med* 2009;169:2049-2050.

Lower Risk of Missed Subarachnoid Hemorrhage

Missed cases of subarachnoid hemorrhage "are devastating to everyone involved," says **Andrew Garlisi, MD, MPH, MBA, VAQSF,** medical director for Geauga County EMS and co-director of University Hospitals Geauga Medical Center's Chest Pain Center in Chardon, OH.

Misdiagnosis of aneurysmal subarachnoid hemorrhage in the ED has been reported to occur in a significant proportion of cases, due in part to a wide spectrum of presentations and subtle initial signs.[1,2]

Legal pitfalls for the ED physician include failure to take a careful history including rapidity of onset, intensity and character of the headache pain, or failure to inquire about personal or family history of cerebral aneurysm or intracranial bleed.

Other potential problems, says Garlisi, involve minimizing the patient's complaint or judging the patient as a drug-seeker, and unfamiliarity with performing a high-quality, atraumatic lumbar puncture. Physicians may also have the perception

that the lumbar puncture, if done, will consume too much time in a busy ED.

Reliance on a negative head CT to rule out subarachnoid hemorrhage is a dangerous practice, warns Garlisi. "A CT scan can miss a sentinel bleed which is swept away by the cerebrospinal fluid, only to be found on analysis of the spinal fluid," he explains.

For patients with sudden severe headaches, or headaches clearly of different pattern than the typical migraine usually experienced, Garlisi says that "it behooves the emergency physician to explain to the patient and family why a lumbar puncture is indicated" If the patient refuses, a Refusal of Procedure form should be signed, with risks of undiagnosed subarachnoid hemorrhage explained.

Garlisi says that a colleague once complained that he was experiencing trouble performing the lumbar puncture procedure. "He had several 'traumatic' taps, especially on patients who required three or four needle sticks to obtain the specimen," says Garlisi. "He complained that the patients could not remain still during the procedure. He also had trouble performing lumbar punctures on obese patients." Garlisi gives these recommendations:

- *Take a couple of minutes to reassure the patient.* "Let the patient know how important it is to remain still and in good position to maximize the likelihood of a successful tap," says Garlisi. "Tell the patient you will provide light sedation."
- *Sedate the patient after obtaining consent.* "A small dose of Versed with a narcotic makes the procedure more humane and tolerable. It virtually guarantees that the patient will not jump or squirm while the needle is introduced," says Garlisi.
- *Sit the patient up, leaning over a bedside table with pillow.* "I find this creates an incredible alignment of hips and shoulders, and makes it easier for the patient to arch the back, making palpation of landmarks easier," says Garlisi.

Recognize Risk

Sandra Schneider, MD, professor of emergency medicine at University of Rochester (NY) Medical Center, says that the first issue is the recognition of a patient at risk. "These are generally young healthy patients who present with a headache," she says. "Sorting through all the headaches for the one subarachnoid hemorrhage can be difficult. Subarachnoid hemorrhages have been reported to improve with analgesia, even Compazine," notes Schneider.

Have a low index of suspicion, and remember that CT does not rule out all subarachnoid hemorrhages. "About 10% will have a normal CT," says Schneider. "Even a perfusion CT is not conclusive, as again a small number will not have a documented aneurysm." If the patient refuses an lumbar puncture, it should be carefully documented including they were warned of potential rebleed.

Most often, ED physicians are sued for sending the patient home and the patient then rebleeds with devastating neurologic deficits. Lawsuits may involve a scenario where the patients' workup is delayed, "but most, if not all, are for discharging the patient," says Schneider.

Patients with a sudden onset of severe headache should be worked up for subarachnoid hemorrhage, says Schneider, and patients who have a negative CT for subarachnoid hemorrhage should have a lumbar puncture. "If possible, headaches should be treated with alternatives to narcotics, such as Compazine," says Schneider.

Jesse M. Pines, MD, MBA, MSCE, associate professor of emergency medicine and health policy at George Washington University in Washington, DC, says that while emergency physician might think that the most dangerous practice is not getting a lumbar puncture after a

negative CT, according to the literature, the most dangerous practice is not getting a CT.[3] "The message here is that if you are at all concerned about subarachnoid hemorrhage, get a CT," says Pines.

Pines says that unfortunately, there are no clinical decision rules that effectively differentiate patients who have subarachnoid hemorrhage from those who don't. While the best way to reduce liability is to test more, this will also increase costs.

"From a patient perspective, it is not clear whether this will improve outcomes. But increased testing will certainly increase the amount of radiation delivered, and the numbers of painful lumbar punctures, of which a third get post-dural headaches," says Pines. "These can debilitate patients for more than a week."

References

1. Vermeulen MJ, Schull MJ. Missed diagnosis of subarachnoid hemorrhage in the emergency department. *Stroke* 2007; 38:1216-1221.
2. Edlow JA, Rothman RE, Barsan WG. What do we really know about neurological misdiagnosis in the emergency department? *Mayo Clin Proc* 2008; 83:253-254.
3. Kowalski RG, Claassen J, Kreiter KT, et al. Initial misdiagnosis and outcome after subarachnoid hemorrhage. *JAMA* 2004 18;291:866-869.

CNE/CME OBJECTIVES

After completing this activity, participants will be able to:

1. Identify legal issues related to emergency medicine practice;
2. Explain how the legal issues related to emergency medicine practice affect nurses, physicians, legal counsel, management and patients; and
3. Integrate practical solutions to reduce risk into daily practice. ■

CNE/CME INSTRUCTIONS

Physicians and nurses participate in this CNE/CME program by reading the issue, using the references for research, and studying the questions. Participants should select what they believe to be the correct answers, then refer to the answer key to test their knowledge. To clarify confusion on any questions answered incorrectly, consult the source material. After completing the semester's activity, you must complete the evaluation form provided and return it in the reply envelope to receive a letter of credit. When your evaluation is received, a letter of credit will be mailed to you. ■

CNE/CME QUESTIONS

23. Which is true regarding litigation involving an ED physician's failure to order or interpret diagnostic tests?
    A. One of the most prevalent grounds for lawsuits in the ED setting is a failure to diagnose, which typically involves whether a test ordered, and interpreted properly.
    B. If a lawsuit alleges a bad outcome due to failure to order a diagnostic test, the ED, not the individual physician, would typically be the proper target for such an allegation.
    C. As the utilization of diagnostic testing has risen, overwhelming evidence has shown a corresponding fall in the prevalence of malpractice lawsuits.
    D. If the ED physician was justified in not

ordering a diagnostic test that in fact was not indicated based on their current knowledge of the patient's condition, even if the test would have identified something, the lawsuit is unlikely to be successful.

24. Which is true regarding an ED's ordering of an unnecessary diagnostic tests that could potentially harm the patient?
    A. Plaintiffs frequently successfully sue EDs for tests ordered unnecessarily.
    B. Liability is generally limited to situations where the patient is injured during the process of the test itself or leads to a delay in treatment that results in an injury.
    C. If a patient suffers an intravenous line infiltration, liability would lie primarily with the hospital employing the technician performing the test, not the individual technician.
    D. ED physicians should avoid having patients participate in decisions about use of CT scans or documenting that the patient was aware of the potential future risks.

25. Which is true regarding reducing risks of misdiagnosis of aneurysmal subarachnoid hemorrhage in the ED?
    A. ED physicians cannot be held liable for failing to inquire about family history of cerebral aneurysm or intracranial bleed .
    B. ED physicians can safely rely on a negative head CT to rule out subarachnoid hemmorhage.
    C. For patients with sudden severe headaches, or headaches clearly of different pattern than the typical migraine usually experienced, the ED physician should explain to the patient and family why a lumbar puncture is indicated.
    D. If the patient refuses a lumbar puncture, having a "refusal of procedure" form signed, with risks of undiagnosed subarachnoid hemorrhage explained, can increase legal risks for the ED.

26. "Phased" handovers, in situations like boarding, offer protections against handoff errors during ED-to-inpatient transitions.
    A. True
    B. False

Answers: 23. A; 24. B; 25. C; 26. B

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CNE/CME Evaluation — Vol. 21, Nos. 1-6

Please take a moment to answer the following questions to let us know your thoughts on the CNE/CME program. Fill in the appropriate space and return this page in the envelope provided. **You must return this evaluation to receive your letter of credit. ACEP members — Please see reverse side for option to mail in answers.** Thank you.

CORRECT ● INCORRECT ⊘ ✓ ✗ ⚠

1. In which program do you participate? ○ CNE ○ CME
2. If you are claiming physician credits, please indicate the appropriate credential: ○ MD ○ DO ○ Other_____
3. If claiming nursing contact hours, please indicate your highest credential: ○ RN ○ NP ○ Other_____

After participating in this program, I am able to:	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
4. Identify legal issues relating to emergency medicine practice.	○	○	○	○	○	○
5. Explain how these issues affect nurses, physicians, legal counsel, management, and patients.	○	○	○	○	○	○
6. Integrate practical solutions to reduce risk into the ED practitioner's daily practices.	○	○	○	○	○	○
7. The test questions were clear and appropriate.	○	○	○	○	○	○
8. I am satisfied with customer service for the CNE/CME program.	○	○	○	○	○	○
9. I detected no commercial bias in this activity.	○	○	○	○	○	○
10. This activity reaffirmed my clinical practice.	○	○	○	○	○	○
11 This activity has changed my clinical practice.	○	○	○	○	○	○

If so, how?_____

12. How many minutes do you estimate it took you to complete this activity? Please include time for reading, reviewing, answering the questions, and comparing your answers with the correct ones listed. _____ minutes.
13. Do you have any general comments about the effectiveness of this CNE/CME program?_____

_____

I have completed the requirements for this activity.

Name (printed)_____ Signature _____

Nursing license number (required for nurses licensed by the state of California) _____

In accordance with ACEP requirements, below we provide the option for ACEP members to submit their answers for this CME activity. If you wish to submit answers to this activity, please refer to Vol. 21, Nos. 1-6, and circle the correct responses.

January 2010
Patient Compensation Funds

1.	A B C D
2.	A B C D
3.	A B C D
4.	A B C D
5.	A B

February 2010
Psych Patient Pitfalls

6.	A B C D
7.	A B C D
8.	A B C D
9.	A B C D
10.	A B

March 2010
Admission Ends EMTALA

11.	A B C D
12.	A B C D
13.	A B C D
14.	A B C D

April 2010
HIPAA in the ED

15.	A B C D
16.	A B C D
17.	A B C D
18.	A B C D

May 2010
Tort Reform Takes Hits

19.	A B C D
20.	A B C D
21.	A B C D
22.	A B

June 2010
Issues at Handoff

23.	A B C D
24.	A B C D
25.	A B C D
26.	A B