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Does your wheezing patient really have asthma?

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Editor's note: *This month's* ED Legal Letter *addresses patients who present with wheezing, particularly asthmatic patients. The risk-management strategies developed in the article will provide a succinct summary of the medicolegal pitfalls that may besiege emergency department (ED) physicians in their care of the wheezing patient. The author identifies several life-threatening illnesses that mistakenly may be treated as asthma. Appropriate diagnosis and treatment will reduce both malpractice claims and repeat visits while simultaneously preventing patient morbidity and mortality.*

Introduction

Asthma has been called the nation's most common and most costly illness.[1] A 1998 survey by the Asthma and Allergy Foundation of America showed that asthma affected more than 17 million Americans and cost more than $11.3 billion in direct and indirect expenses.[2] While a survey by the Centers for Disease Control and Prevention showed a decline in the incidence of self-reported asthma in 2000, the costs attributed to asthma in 2000 increased more than 12% to more than $12.6 billion.[3] Asthma and asthma-related illness result in 3 million lost workdays per year, 10 million lost school days per year, 12 million physician visits per year, and nearly 2 million ED visits per year.[4]

Despite advancements in American health care, the morbidity and mortality associated with asthma still is significant. In 1998, 5,438 people died from asthma and an additional 6,850 people had asthma listed as a "contributing cause" to their death.[5] While the number of deaths from asthma decreased to 4,657 in 1999, this decrease largely is attributed to a change in the wording of national health surveys and a change in the coding criteria from ICD-9 to ICD-10.[6]

Several factors may contribute to increased asthma morbidity and mortality,

including patient exposure to asthma triggers (both intentional and unintentional), failure of patients to recognize warning signs of worsening asthma, patient delays in seeking treatment due to overuse of prescribed or over-the-counter medications, and under-treatment of acute asthmatic episodes by physicians. Unfortunately, regardless of the self-destructive habits of the many asthmatic patients who smoke cigarettes or willingly expose themselves to other asthma triggers, the physician still holds the ultimate responsibility in providing appropriate care once an asthmatic patient reaches the ED.

While the death rate from asthma remains comparatively small, the medicolegal risks involved in treating asthma patients are significant. Even though a majority of asthma deaths occur in patients age 65 and older,[7] asthma also claims the lives of many otherwise healthy children and young adults. A potential jury's sympathy for grieving young parents whose child has just died can lead to significant monetary judgments, regardless of the physician's actions. To make matters worse, asthma patients who ultimately die are more likely to present either on the brink of respiratory collapse or in frank respiratory failure, forcing the ED physician to rapidly make many life-and-death treatment decisions that later may be subject to intense scrutiny with 20/20 hindsight.

To mitigate the potential legal pitfalls, ED physicians should consider several key issues that have been addressed in medical malpractice lawsuits involving patients diagnosed with asthma.

Misdiagnosis — All that Wheezes Is Not Asthma

There is a tendency for physicians to label any patient seeking treatment for wheezing as having asthma and administer bronchodilators until the patient either is ready to be discharged or requires admission. This tendency may be somewhat less, but still occurs, when young, healthy patients seek treatment for dyspnea. An ED physician's task becomes even more difficult when the patients or the parents of young children give a past medical history of asthma even though no physician has ever made such a diagnosis. The ED physician often becomes the de facto primary care physician for patients who are seeking refills on their bronchodilators but who have not been evaluated by a physician since the last time they ran out of their metered-dose inhalers. This all-too-common scenario leaves patients who truly do have asthma with suboptimal episodic "rescue" treatment and those who do not have asthma with delays in the diagnosis and treatment of whatever diseases are causing their symptoms.

While episodic wheezing is suggestive of asthma, the definitive diagnosis of asthma ideally requires pulmonary function testing or positive findings on bronchoprovocation testing with histamine or methacholine. The hallmark of asthma is a reversal of obstructive changes on pulmonary function testing after administration of bronchodilators. A peripheral blood smear demonstrating eosinophilia in a wheezing patient also suggests a diagnosis of asthma.

Wheezing is a common presenting symptom in children. When a physician is evaluating a wheezing child, it is important to note that other forms of reactive airway disease also may cause this symptom. Examples of other reactive airway diseases that can cause wheezing in children include bronchiolitis, sinusitis, foreign body aspiration, gastroesophageal reflux, cystic fibrosis, bronchopulmonary dysplasia,

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and anatomic abnormalities. While it may be difficult to diagnose diseases such as gastroesophageal reflux or cystic fibrosis in the ED, alerting parents that diseases other than asthma may be causing their child's symptoms while reinforcing the need for evaluation by a primary care physician will benefit both the patient and the ED physician.

Adult patients with various other medical illnesses also may present with symptoms suggesting asthma. Disease processes such as infection (pneumonia or allergic bronchopulmonary aspergillosis), airway obstruction (foreign bodies, tumors, tracheal stenosis, or laryngeal edema), cardiac dysfunction (congestive heart failure), pulmonary embolism, and allergic reactions at least should be considered when an "asthmatic" patient does not respond to standard therapy. Failure to consider these etiologies in a patient with an "asthma attack" has subjected physicians to liability when alternative diagnoses are missed.

Mabry v. County of Cook.[8] The patient in this case presented with shortness of breath and dizziness. Although no previous history of asthma was documented, the patient had bilateral wheezing on pulmonary auscultation. An initial peak flow was 250, and an arterial blood gas showed hypoxemia. A chest radiograph revealed a round soft-tissue density in the right hilum, which the ED physician attributed to either lymph node enlargement, infection, or malignancy. The ED physician diagnosed the patient with asthma and respiratory distress, although he testified that his differential diagnosis also included allergies, tuberculosis, tumors, infections, pneumonia, viruses, and congestive heart failure. While the ED physician initially considered pulmonary embolism in his differential, he dismissed it as a possibility because he believed the patient had no risk factors for the condition.

After the patient was admitted, several medical residents performed physical examinations on her. Lung sounds were consistently abnormal, being described as "mucous" by one resident and "occasional wheezing" by another. None of the residents documented any evidence of deep-vein thrombosis. A computed tomography (CT) scan of the chest was ordered to rule out malignancy, but never was performed.

The following day, the patient felt better, although she remained mildly tachycardic and somewhat hypertensive — symptoms attributed to her asthma medications. Later that day, the patient's condition suddenly worsened, and shortly thereafter she died from a pulmonary embolism.

Plaintiffs hired an expert who criticized the differential diagnosis made by the ED physician and stated that the ED physician's failure to follow up on the hilar density noted in the chest radiograph fell below the standard of care. He also testified that the patient's failure to improve within 24 hours of admission, her blood gas results, and her recent bilateral wheezing all indicated that she had a condition other than asthma. The jury returned a verdict in favor of the plaintiff and awarded $750,000.

Defendants appealed the verdict for an issue unrelated to the care the physicians provided. Importantly, in its written opinion, the Court of Appeals highlighted a short exchange between the plaintiff's attorney and the expert regarding the expert's opinion about why so many physicians missed the diagnosis of pulmonary embolism:

Q: Doctor, can you explain to us how so many physicians can miss the diagnosis of pulmonary embolism?

A: [U]nfortunately, each of the physicians who saw the patient was relying on the physician who saw the patient before them in having made the right diagnosis. And so there was a sort of a spiral of failure to diagnose her problem, and each doctor kind of went along into that spiral by assuming that her underlying problem was asthma and then treating her for asthma and never pursuing any other diagnostic possibilities.

The Court of Appeals overturned the jury verdict against the defendants based on a technicality concerning an Illinois statute.[9]

Discussion. A history of recent diagnostic testing for a patient's complaints may be helpful in confirming or excluding some diagnoses. For example, a patient who recently had a pulmonary function test demonstrating an obstructive pattern relieved by bronchodilators and improves with standard asthmatic treatment probably doesn't need further work-up for other diseases. In this case, several physicians diagnosed asthma in a patient with new-onset wheezing without any confirmatory testing and when other findings hinted at several alternative diagnoses. Unfortunately, the physicians were wrong.

Retrospectively, the ED physician may have been able to reduce his liability by diagnosing the patient as having "respiratory failure, hypoxia, rule-out asthma, rule-out pneumonia, rule-out lung tumor, etc. . ." or by diagnosing "respiratory failure, probable asthma" and including a short differential diagnosis on the patient's chart. A list of "rule-out" diagnoses or

differential diagnoses (or a documented discussion with the admitting physician) would have put the admitting physician on notice that the reason for the patient's respiratory failure was uncertain and needed further evaluation in an inpatient setting.

Beverly v. Kensington Hospital et al.[10] In this case, a 6-year-old child presented for evaluation of chest pain after two days of home treatment failed to improve her symptoms. The ED physician evaluated the child and noted a decreased peak expiratory flow rate (PEFR), but no evidence of wheezing. Despite the lack of wheezing, the physician made a tentative diagnosis of asthma, administered oral albuterol in the ED, and discharged the patient with a prescription for oral albuterol. Shortly after the patient was discharged, she collapsed and was transported to a second hospital. While under observation at the second hospital, the child collapsed again, suffered a cardiac arrest, and was not able to be resuscitated.

In a lawsuit promptly filed after the patient's death, the plaintiff's attorneys argued that the ED physician had misdiagnosed myocarditis as asthma, and, by giving oral albuterol, which was known to have a cardiotoxic effect on the heart, the defendants precipitated an arrhythmia that "removed [the patient's] opportunity to survive."

Despite the defense expert's contention that the child probably did have asthma and that albuterol was the "safest" asthma medication available under these circumstances, a jury awarded plaintiffs $1.5 million in damages assessed against both the ED physician and the hospital.

Discussion. This case illustrates the legal risks involved in allowing juries to decide the appropriateness of care in emotionally charged cases. In children, myocarditis has many symptoms that overlap with asthma, including respiratory difficulties and intercostal retractions. Between 10% and 15% of children with myocarditis also will have wheezing, and only 12% of patients with myocarditis have chest pain.[11] Despite the low incidence of myocarditis and its many nonspecific manifestations, the plaintiff's experts likely convinced a jury that the "standard of care" requires the diagnosis of myocarditis to be made in the ED.

In addition to the unfortunate misdiagnosis, this case raises two important points regarding the treatment of asthma. First, oral albuterol probably should not be administered for an acute asthma attack. Oral absorption of albuterol is erratic, takes longer than inhaled albuterol, and has more systemic side effects than inhaled albuterol.[12] Use of oral albuterol has fallen out of favor with many physicians, since even an infant can use a metered-dose inhaler when it is combined with a spacer device and face mask. Second, the absence of wheezing in this patient did not necessarily rule out asthma. "Cough-variant" asthma is common in children and often produces no wheezing on physical examination. Additionally, wheezing requires adequate airflow. Patients with poor airflow may not have wheezing despite severe respiratory compromise. The burden, though, is on the physician to document sufficient reasoning to justify a diagnosis of asthma when a patient suspected of asthma has atypical complaints.

While the defendant ED physician's diagnosis and treatment in this case may have had some questionable aspects, it appears unlikely that most physicians would have made the diagnosis of myocarditis in a healthy young girl with chest pain on an initial visit. Unfortunately for the physician, it also appears that the jury may have been concerned with compensating grieving parents for the loss of a child.

Jones v. Kaiser Foundation Health Plan of Georgia Inc.[13] A 14-year-old patient was brought to an acute care clinic complaining of dyspnea. His vital signs showed a pulse of 120 beats per minute, a respiratory rate of 40 breaths per minute, and temperature of 104.4°F. After an examination by the physician, the patient was diagnosed with asthma and started on nebulizer treatments. A chest x-ray was performed and showed pneumonia. After several hours, the physician noted a significant improvement in the patient's respiratory status and discharged the patient with diagnoses of "pneumonia, asthma, and pharyngitis" and prescriptions for bronchodilators and antibiotics. The patient and his family were instructed to schedule a follow-up appointment in two days and to call back if his condition worsened.

After arriving home, the patient's mother contacted the hospital "advice line" twice during the night. During the first call, she reported that the patient continued to have difficulty breathing and had a fast heart rate. The mother was assured by the on-call physician that the patient's asthma medications were known to cause tachycardia and anxiety. During the second call, the patient's mother informed the nurse that the patient had coughed up bloody mucus. The nurse allegedly informed her that this symptom was not a cause for concern. The following morning, the patient was found unresponsive in his living room. When the paramedics arrived, he was in ventricular

fibrillation, but resuscitation efforts were unsuccessful, and the patient died in the hospital ED. An autopsy showed that 70-80% of the patient's lungs were congested with blood and mucus from pneumonia.

Plaintiff's experts claimed that the acute care clinic physician was negligent in failing to admit the patient based on the patient's condition and that the "advice line" nurse was negligent both for relaying inaccurate information to the on-call physician and for failing to suggest that the patient be reevaluated. Because of these failures to provide proper treatment, the patient's pneumonia overwhelmed him, causing a respiratory and cardiac arrest.

Defendants argued that the patient died from a sudden and unexpected cardiac arrhythmia triggered by an adverse reaction to the albuterol inhaler he was prescribed. The presence of ventricular fibrillation on the paramedic's initial assessment, an uncommon arrhythmia in pediatric respiratory arrests, bolstered their claim. Since there were no signs of hypoxia such as cyanosis, "gasping for air," confusion, and anxiety, the defendant's experts testified that the medical evidence did not support the theory that the patient died from hypoxia due to his pneumonia.

Plaintiff's initial demand of $3.3 million had decreased to $1.8 million by the time the jury began deliberating. On the second day of deliberations, defendants offered $500,000, to which the plaintiffs countered with a demand of $1 million. No settlement was reached, and the jury returned a verdict in favor of the defendants.

Discussion. The defendants dodged a bullet in this case. The patient had dyspnea in addition to multiple abnormal vital signs and could have been admitted for closer monitoring. Multiple calls for the same problem should have prompted a follow-up visit to the ED.

While defendant's claims that it is uncommon for pediatric hypoxia to lead to ventricular fibrillation were correct, this 14-year-old patient was 6 feet 4 inches tall and weighed 240 pounds — larger than most grown adults. Further, acidosis from failure to ventilate lungs filled with mucus and blood could easily have caused the patient's arrhythmia.

In addition to reinforcing the adage "all that wheezes is not asthma," this case also illustrates several other important points:

- Pneumonia should be considered high in the list of differential diagnoses of a wheezing patient presenting with a fever.
- Abnormal vital signs should be addressed, repeated, and explained before a patient is discharged. Failure to do so may leave an opportunity for a plaintiff's attorney to explain how the patient's condition could have been recognized had the careless physician only reviewed the patient's vital signs. Vital signs are given their name for a reason.
- Follow-up instructions must err on the side of caution. In this case, instructions to "call if symptoms worsen" probably should have been changed to "go to the ED if symptoms worsen." Worsening symptoms may be due to several causes. Perhaps the patient was not instructed on the correct use of his metered-dose inhaler. Perhaps he vomited his medications or took incorrect dosages. Maybe the parents couldn't afford to fill the prescriptions. There is always the lingering possibility that the worsening symptoms were due to a progression of the disease. The best way to fully assess the cause for worsening symptoms is to reevaluate a patient. Further, this patient's parents followed the discharge instructions correctly, but the health care provider fielding the phone calls provided advice based upon incomplete or misunderstood history. Many of these issues could have been resolved had the patient been evaluated in person. Although many ED physicians complain that telephone triage should be referred to as "go to the ED" triage, this case illustrates the importance of encouraging patients to seek further evaluation in the face of new or worsening symptoms. Err on the side of re-examination.

Thomas v. Wilifac Inc., et al.[14] A farm worker exposed to malathion insecticide powder presented to an acute care clinic with congestion, shortness of breath, and dizziness. The moonlighting radiology resident questioned the patient about organophosphate poisoning-related symptoms, obtained a chest x-ray (which was normal), and diagnosed the patient as having an asthma attack. He discharged the patient with instructions to follow up with her family physician if her symptoms did not improve. At her follow-up appointment two days later, the patient's family physician diagnosed her with malathion poisoning and promptly hospitalized her. In the hospital, the patient was evaluated by an internist, who also diagnosed an asthma attack. The patient made an uneventful recovery, but sued the moonlighting radiology resident under several theories, including failure to inform her of her diagnosis, failure to call the poison control center, failure to tell her of the future risk of developing organophosphate-induced neurotoxicity, and failure to

tell her he was not an emergency medicine specialist. A jury found in favor of the defendants on all counts.[15]

Discussion. Retrospectively, this case appears to present an issue as to whether the patient had an asthma attack, organophosphate poisoning, or a transient reaction to organophosphate exposure. In any event, this lawsuit likely was precipitated by discussions between the patient and the patient's family physician during the follow-up appointment. It appears as if the moonlighting radiology resident failed to meet the expectations of either the primary care physician or the patient. Depending upon the circumstances, the moonlighting radiology resident probably could have avoided this lawsuit with better communication. Had the patient expressed apprehension about possible malathion poisoning, the resident could have briefly called the poison control center, if for no other reason than to reassure the patient that the care he was providing was appropriate. Further, following poison center recommendations and noting those recommendations on the patient's chart would have been a strong defense to malpractice claims if an adverse event had occurred. Also, if the resident knew that the patient's family physician had referred her to the acute care clinic, a quick call advising the physician of the patient's normal examination would have avoided several problems. Although failing to call a referring physician is probably not a source of legal liability, making the call will enhance the relationship with the primary care physician and will provide better continuity of care for the patient while also dispelling any notions of poor care the patient may relay to the family physician.

Failure to Review Test Results

Rixey v. West Paces Ferry Hospital Inc., et al.[16] A 24-year-old patient presented to the ED with severe dyspnea attributed to an asthma attack. Shortly after arriving, he went into respiratory arrest and required intubation. A post-intubation x-ray was ordered, but was not timely developed or reviewed. A pulmonologist evaluated the patient in the ED and transferred the patient to the intensive care unit. At that point, the ventilator was set at its highest-pressure settings and the pulmonologist left the hospital. Shortly thereafter, a nurse noticed that the patient was becoming cyanotic, and the respiratory therapist observed the patient's scrotum had "distended like a balloon." The patient promptly developed ventricular tachycardia. A code blue was called, and the ED physician responded to the code, but he had neither been advised of the subcutaneous air noted in the patient's testicles nor had he been advised of any abnormalities on the patient's post-intubation chest x-ray. He therefore followed the standard advanced cardiac life support algorithms. The pulmonologist was notified by telephone and ordered that bilateral chest tubes be inserted. After 20 minutes, when both chest tubes had been inserted, the patient regained a pulse. Unfortunately, the prolonged pulselessness had resulted in brain death and the patient was removed from life support two days later. The following morning, a hospital radiologist interpreted the post-intubation x-ray as showing the presence of mediastinal air, subcutaneous air in the neck, and a possible pneumothorax.

Plaintiff's experts opined that the physician was negligent in failing to monitor the patient on a ventilator and that the nursing staff were negligent for not noting the signs of subcutaneous air sooner. The defendant physician claimed that the tension pneumothorax was an unpredictable, unexpected, and unfortunate development for which he should not be held liable. The jury deliberated fewer than three hours before awarding the plaintiffs $520,000.

Discussion. The take-home point in this case is quite clear: A physician ordering a test must review the results of the test and act upon those results accordingly. Even taking defendant's argument as true — that the tension pneumothorax was unpredictable and unexpected, the defendant still could not justify his failure to review the chest radiograph he ordered that demonstrated the pneumothorax.

Failure to Properly Monitor and Counsel

An unfortunate aspect of practicing medicine in our society is that when patients die, family members may search for some third party on whom to attach liability. Often that search focuses on the treating physician, regardless of how a patient may have contributed to his or her own demise or what steps a physician took to keep the patient healthy. As the following cases illustrate, physicians may be held liable for a failure to properly monitor patients with asthma or for a failure to identify risks involved with the administration of asthma medications.

Smith v. Lillian V. Ney, MD, P.C.[17] The appellate division of the New York Supreme Court in this case overturned a lower court decision to set aside a plaintiff's jury verdict. The patient was a longstanding

steroid-dependent asthmatic who had been managed for more than 20 years by his primary care physician. One morning, the patient suddenly collapsed and died while working outside in extremely cold weather. The cause of death was determined to be acute asphyxiation resulting from an acute asthma attack.

During the trial, the patient's widow testified that the patient knew he needed to avoid cold temperatures, dust, and animals whenever possible to avoid causing asthma attacks. Despite the widow's testimony, the plaintiff's expert opined that the physician failed to prescribe proper medications, failed to monitor the prescribed medications properly, and counsel the patient on environmental dangers that could impact his asthma. The defendants' expert testified that the physician prescribed appropriate medications in the proper dosage but that the patient would have died from the severe asthma attack regardless of the medication prescribed. A jury apparently believed the plaintiff's expert and awarded a substantial verdict in the plaintiff's favor.

In another unidentified case,[18] an ophthalmologist treated an elderly patient for increased intraocular pressure by administering a beta-blocker. After administering the medication, the ophthalmologist reviewed the patient's chart and noted a history of asthma requiring intermittent use of inhalers. He asked the patient to sit in the waiting room so that she could be monitored for adverse reactions. While sitting in the waiting room, the patient began to experience respiratory problems and suffered a respiratory arrest less than two hours after receiving the medication. She suffered permanent brain damage and remained in a nursing home for an extended period of time until her death.

The plaintiff was prepared to offer medical evidence establishing that beta-blockers specifically are contraindicated for use in the treatment of patients with respiratory conditions such as asthma, and had an expert willing to testify that the defendant's administration of the beta-blocker constituted a clear deviation from the standard of care. The defendant was prepared to argue that the patient's underlying health problems, not the administration of the beta-blocker, were responsible for the patient's respiratory arrest. The case settled prior to trial for $900,000.

Discussion. Neither of these cases involved ED physicians, but each scenario reasonably could include the everyday interactions between ED physicians and patients. Each case illustrates that physicians at least should be cognizant of the side effects from the medications they prescribe and always should refer patients to primary care physicians for further monitoring of their conditions. Computer-generated discharge instructions discussing the risks and benefits of taking medications may be helpful in reducing liability for medication-related lawsuits.

The *Smith v. Ney* case also raises an issue of holding a physician liable when patients do not follow a physician's advice. While it may seem somewhat unfair to hold a physician responsible when patients knowingly expose themselves to conditions that may worsen their asthma, the following cases show that physicians are limited in their ability to point a finger back at a plaintiff patient as a defense.

Comparative Negligence Is No Defense

Comparative negligence is a legal theory that holds plaintiffs responsible for negligent actions they have committed that contribute to their injuries. If a jury finds that a plaintiff is 33% at fault for his or her injuries, the ultimate award will be reduced by that percentage. Generally, if a plaintiff is more than 50% at fault for his or her injuries, the lawsuit against the defendant is dismissed.

It may seem logical to hold patients at least somewhat accountable for actions that negatively impact their health. Many asthmatics freely admit that they smoke cigarettes. While comparative negligence may be a valid defense in car accidents and personal injury claims, courts look on comparative negligence with less favor in medical malpractice lawsuits.

Defendant physicians successfully used the defense of an asthma patient's comparative negligence in *Harding v. Deiss*.[19] On appeal, their case was overturned. In this case, a child with a long history of breathing difficulties and who had a known sensitivity to horses went horseback riding and began to have trouble breathing. Her problems progressed to the point that she passed out and became unconscious. She was transported to the local ED and then transferred to a regional medical center the following day, but eventually died due to brain hypoxia.

During the malpractice trial, plaintiffs claimed that the defendant physicians failed to immediately intubate the patient and that their negligence caused the patient to become hypoxic, suffer irreversible brain injury, and eventually die. Defendants argued that the patient's hypoxic brain injury occurred prior to her arrival at the hospital and that the asthma attack causing the hypoxia was caused by the patient's own negligence, not the

negligence of the physicians. A jury found in favor of the defendant physicians on all counts.

On appeal, the plaintiffs argued that a patient's conduct never can be an issue in a claim of medical malpractice and that whether the plaintiff was negligent before she sought treatment is irrelevant to whether the defendants were later negligent in her medical care. The Montana Supreme Court held that a patient's negligent acts that "merely furnishe[d] the need for care or treatment" could not be used to bar the patient from recovery.[20] Therefore, the patient's willful exposure to horses, despite her known horse allergy, could not be used to offset any negligent conduct by the physicians or hospital once she sought treatment for the ensuing asthma attack. In fact, the Montana Supreme Court stated that using such an argument would lead to "absurd result[s]" wherein a treating physician essentially could be immune from malpractice claims when a patient was responsible for events that led to his or her hospitalization.

Informed Consent when Intubating

Shine v. Vega.[21] The decedent in this case was a lifelong asthmatic who agreed to treatment for an acute asthma attack at a local hospital only after being assured that she would be treated only with oxygen. After being evaluated, she received nebulized albuterol for several minutes, claimed that the medication was giving her a headache, removed the nebulizer, and attempted to leave. The physician evaluated the patient, along with the results of an arterial blood gas, and determined that the patient was "very sick" and required intubation for a "severe asthma attack." The patient vehemently refused intubation, and the physician temporarily agreed to treat the patient with an oxygen mask instead of resorting to other therapies.

During the physician's evaluation, the patient's sister called their father, a physician in England, who urged the ED physician not to intubate his daughter without her consent and requested that the physician wait to intubate his daughter until he could fly from England to Boston. When the ED physician returned to the patient's room, the patient and her sister attempted to flee from the ED. The patient was apprehended by a security guard, brought back to her room, and placed in four-point restraints. A short time later, the ED physician intubated the patient without her consent. The patient made an uneventful recovery and was discharged from the hospital the following day.

The family testified that the patient had become traumatized by these events to the point that she was unable to work for several months and obsessively took her medications. She reportedly vowed never to go to another hospital due to her distrust of physicians. More than two years later, the patient had another asthma attack, but refused to go to a hospital. After she became unconscious, her brother called paramedics, but the patient ultimately died from her asthma attack.

The patient's father filed suit against the ED physician for wrongfully restraining the patient and for intubating the patient without her consent. His hired experts stated that the situation was not an emergency, that the physician and the medical staff failed to evaluate the patient's competency to consent to treatment, and that intubation was not an appropriate treatment for the patient. They also testified that the physician fell below the standard of care by not determining the patient's competence and by not seeking consent to intubate from her family members.

The ED physician testified that the patient's mental state had become increasingly confused and she was unable to provide consent. Several experts testified on behalf of the defendants, stating that the patient likely would have died if she were treated only with oxygen, as she requested.

After the jury found in favor of the defendant physician, the Massachusetts Supreme Court, on its own initiative, reversed the jury's decision, stating that a competent patient's refusal to consent to medical treatment cannot be overridden just because the patient faces a life-threatening situation. To perform treatment on a patient without the patient's consent, a patient must be without capacity to make a decision, no one legally authorized to act as agent for the patient must be available, the patient would be subjected to a risk of a serious bodily injury or death if prompt action is not taken, and a reasonable person would consent under the same circumstances.

Discussion. This physician was in a no-win situation. How many times have we seen patients in respiratory distress whose hypoxia causes them to become confused and act erratically or irrationally? From the description of the events in the ED, the physician seemed justified in declaring the patient incompetent to make a decision. Further, the physician probably had no way of verifying the identity of the patient's sister or the patient's father. In this emergency situation, he therefore provided care that he believed was in the

patient's best interest, probably saving the patient's life.

The plaintiff's "expert" opinions in this case are entirely unreasonable. It is easy to imagine that these same experts would have had a completely different opinion focusing upon the patient's lack of capacity had the physician let the patient leave against medical advice and the patient suffered an adverse outcome. Contentions that the patient's condition was not an emergency and that intubation was inappropriate treatment seem unwarranted, especially after noting the outcome from the patient's subsequent asthma attack when these treatments were unavailable. In these situations, ED physicians must document thoroughly the patient's inability to provide informed consent.

The crux of this case was the patient's decision-making capacity. The Massachusetts Supreme Court seemed to want to make it abundantly clear (at this physician's expense) that patients have the absolute right to self-determination. Although the medical record in this case is not available for review, a short note documenting that the physician considered the patient's competence and believed that she was not competent to make decisions because she was hypoxic, behaving erratically, and, after questioning, was unable to explain the possible consequences of her actions would have gone a long way in decreasing this physician's liability.

Ultimately, it appears that this physician would have been sued regardless of how he managed the patient's asthma attack. The important point to remember is that when all else fails, err on the side of doing what is best for the patient.

Asthma Treatment Guidelines

Regardless of whether physicians believe they are appropriate under any given circumstances, treatment guidelines are an important aspect of medical treatment decisions and also help to mitigate medicolegal risk management. Malpractice attorneys must invest substantial sums of money to evaluate possible cases against physicians. Often a first step in determining whether to make an initial investment in a malpractice case against a physician involves consulting written sources to determine whether or not a physician's treatment of a patient fell outside of established guidelines. While a failure to follow guidelines is not necessarily proof of malpractice, physicians whose treatment falls within established guidelines are much less likely to draw a plaintiff attorney's attention.

A useful web site to search for medical practice guidelines is The National Guideline Clearinghouse (http://www.guideline.gov). This site contains a searchable collection of guidelines grouped by disease/condition, by treatment/intervention, and by the organization proposing the guidelines.

Expert Panel Guidelines

Several guidelines address the diagnosis and management of asthma. While most of these guidelines pertain to chronic care of the asthmatic patient, the *Expert Panel Report 2: Guidelines for the Diagnosis and Management of Asthma*, created by the National Heart, Lung, and Blood Institute at the National Institutes of Health,[22] also applies to treatment of asthma by emergency physicians. These guidelines are endorsed by the American College of Emergency Physicians (ACEP) and more than 30 other medical societies and specialty groups. Initially revised in 1997, the Expert Panel guidelines were updated in June 2002, but the full text of the update was not available at the time this article was written. These guidelines create four categories for severity of asthma:

- **Mild intermittent asthma** is classified as symptoms that occur fewer than three times per week and nighttime symptoms that occur fewer than two times per month. Periods between exacerbations are asymptomatic, and PEFRs are normal. Exacerbations are usually brief, lasting from a few hours to a few days. PEFRs are greater than or equal to 80% of the predicted value and vary by less than 20% during acute exacerbations.
- **Mild persistent asthma** is classified as symptoms that occur more than two times per week but fewer than one time per day. Nighttime symptoms occur more than two times per month. Exacerbations may affect activity. PEFRs are greater than or equal to 80% of the predicted value and vary between 20% and 30% during acute exacerbations.
- **Moderate Persistent Asthma** is classified as symptoms that occur on a daily basis and that require daily use of inhaled short-acting beta$_2$-agonists. Nighttime symptoms occur more than once per week. Exacerbations also occur more than once per week and affect the patient's activity. PEFRs are between 60% and 80% of the predicted value and vary less than 30% during acute exacerbations.
- **Severe persistent asthma** is classified as continual symptoms that limit physical activity. Exacerbations and nighttime symptoms are frequent. PEFRs

are less than 60% of the predicted value and vary more than 30% during acute exacerbations.

Several changes in the guidelines for asthma treatment were noted in the latest Expert Panel guidelines update. For long-term treatment, inhaled corticosteroids are now recommended as "preferred treatment" in all patients with any form of persistent asthma — including children younger than 5 years old. The Expert Panel guidelines noted "strong evidence" from clinical trials establishing that inhaled corticosteroids are superior to any other long-term therapy (including cromolyn, nedocromil, theophylline, or leukotriene receptor antagonists) for controlling symptoms in children with any form of persistent asthma. Children who received inhaled steroids exhibited improvement in symptom frequency, required fewer courses of oral corticosteroids, and had fewer urgent care visits and hospitalizations. Based on available literature, the Expert Panel recommended that long-term inhaled steroid use be considered for infants and young children who have risk factors for the development of asthma,[23] and who, in the 12 months prior to treatment, have had more than three episodes of wheezing that lasted more than one day and that affected sleep. The Expert Panel found little evidence that inhaled corticosteroids have any significant long-term effect on vertical growth, bone mineral density, ocular toxicity, or the hypothalamic-pituitary-adrenal axis.

In patients who are older than 5 years and have moderate persistent asthma, the Expert Panel guidelines recommended adding long-acting inhaled beta$_2$-agonists to low to medium doses of inhaled corticosteroids. For those patients younger than 5 who have moderate persistent asthma, the Expert Panel recommended either the addition of long-acting inhaled beta$_2$-agonists to a low dose of inhaled corticosteroids or medium-dose inhaled corticosteroids as monotherapy.

These new recommendations raise an interesting medicolegal issue for the ED physician. If an ED physician classifies a patient as having any form of persistent asthma, does the standard of care require that the ED physician prescribe inhaled corticosteroids? While many physicians would argue that prescription of maintenance medications is not within the realm of emergency medicine, recall that these guidelines were endorsed by the ACEP. Creative plaintiff attorneys might argue that an ED physician should be held responsible for adverse patient outcomes when the ED physician has not prescribed therapy recommended in the Expert Panel guidelines.

Most importantly, for treatment of acute asthma exacerbations, the Expert Panel continued to recommend the following interventions:

- Supplemental oxygen is recommended for all patients with oxygen saturation less than 90%, and for pregnant women and cardiac patients with oxygen saturation less than 95%.
- Three treatments of beta$_2$-agonists spaced at 20- to 30-minute intervals is recommended for all patients with additional treatments dependent upon improvement in symptoms and the occurrence of side effects.
- Addition of high-dose anticholinergics should be considered, as studies have shown that a combination of beta$_2$-agonists and anticholinergics increases bronchodilation more than beta$_2$-agonists alone.[24]
- Systemic corticosteroids are recommended in most patients, including all patients with moderate to severe exacerbations and those patients who do not respond to initial beta$_2$-agonist therapy. Oral prednisone is as effective as intravenous methylprednisolone and is the preferred method of administration.
- Methylxanthines, antibiotics, aggressive hydration, chest physical therapy, mucolytics, and sedation generally are not recommended treatment.

Since infants are at a greater risk for respiratory failure, the expert panel also made several specific considerations to address in the treatment of acute respiratory problems in infants:

- Objective measurements generally are less reliable than physical examination. Signs such as accessory muscle use, paradoxical breathing, cyanosis, and respiratory rate greater than 60 breaths per minute denote "serious distress."
- Oxygen saturation less than 91% also denotes "serious distress."
- Lack of response to beta$_2$-agonist therapy is an indication for hospitalization of infants.
- Early administration of oral corticosteroids was termed "essential."
- Finally, the Expert Panel noted that most acute wheezing episodes in infants are due to viral infections and may be accompanied by fever.

Recognition of Risk Factors for Death from Asthma

The Expert Panel report also notes several risk factors for death from asthma. Noting the presence or absence of these risk factors in the patient's chart may aid the emergency physician in dispositioning asthma patients who do not completely respond to therapy:

- previous history of sudden, severe asthma exacerbations;
- prior history of ICU admission or intubation for asthma;
- two or more hospitalizations for asthma in the past year;
- three or more ED visits for asthma in the past year or one visit within the past month;
- current or recent use of systemic corticosteroids;
- use of more than two canisters of short-acting beta$_2$-agonist metered-dose inhalers per month;
- concurrent cardiovascular, pulmonary, or serious psychiatric disease;
- low socioeconomic status;
- illicit drug use.

Use of Peak Expiratory Flow Measurements

Many studies have recommended the use of serial PEFR measurements to help determine the need for hospital admission in adult patients being managed in the ED. In fact, the second *Expert Panel Report* recommends that PEFR measurement be performed as one of the first objective "functional assessments" a physician makes, and that PEFR measurements be used as a means to disposition patients.[25]

In June 2000, after reviewing more than 20 studies on the subject, ACEP approved a policy regarding use of PEFR in the ED.[26] This review found that most studies on the use of PEFR in the ED suffered from common flaws, including poorly defined outcomes, unclear disposition criteria, poor randomization, and lack of investigator blinding. In addition, none of the studies showed that use of PEFR decreased asthma-related morbidity or mortality. Based on their findings, ACEP created a policy stating that evidence-based testing has not shown PEFR to be a reliable predictor in dispositioning asthmatic patients. Although PEFR measurements may be somewhat useful in certain patients, ACEP believes that evidence does not support widespread use of PEFR in every adult patient.[27]

Despite the debate on whether PEFR measurement is useful in patient disposition, use of the peak flow in the ED setting may have other advantages. PEFR measurements may be to exclude asthma as an etiology for a patient's dyspnea. A patient who has new onset of significant wheezing or dyspnea and who has a normal or near-normal PEFR may have a nonobstructive airflow problem unrelated to asthma. In a more practical approach, low PEFR values may serve as objective documentation justifying treatment decisions or admission to both attending physicians and to insurance companies.

Conclusion

Asthma is a ubiquitous disease affecting many millions of Americans each year. While the diagnosis and treatment of asthma may seem straightforward, physicians should maintain a healthy suspicion for alternative diagnoses when wheezing patients do not respond to standard therapy.

Endnotes

1. Asthma and Allergy Foundation of America. *Asthma Facts.*
2. Id.
3. American Lung Association Epidemiology & Statistics Unit, Best Practices and Program Services. *Trends in Asthma Morbidity and Mortality*; February 2002.
4. Id.
5. National Center for Health Statistics. *New Asthma Estimates: Tracking Prevalence, Health Care, and Mortality*; October 2001.
6. American Lung Association, *supra* note 3. Previous National Health Interview Surveys asked respondents to self-report asthma by inquiring whether any family member had asthma during the past 12 months. Revised questionnaires specifically asked if respondents or their proxies if they have been diagnosed with asthma *by a health professional* within their lifetime.
7. Id.
8. *Mabry v. County of Cook*, 315 Ill.App.3d 42, 733 N.E.2d 737 [Ill.App. 1st Dist., 2000].
9. Defendants were found not liable based on the Illinois Local Governmental and Governmental Employees Tort Immunity Act (745 ILCS 10/6-105, 6-106(a) [West 1996] that immunizes employees of public entities from liability for failing to make an adequate physical examination on a patient.
10. *Beverly v. Kensington Hospital et al.*, 29 Phila. 533; 1995 Phila. Cty. Rptr. LEXIS 36 [Common Pleas Court of Philadelphia County; 1995].
11. Marx J. *Rosen's Emergency Medicine: Concepts and Clinical Practice, 5th Ed.* St. Louis: Mosby; 2002.
12. Powell C, Everard M, Treatment of childhood asthma. *Drugs* 1998; 55:237-252.
13. *Jones v. Kaiser Foundation Health Plan of Georgia Inc.*, 9 Nat. J.V. R.A. 7:C10 [GA 1990].
14. *Ann M. Thomas v. Wilifac Inc., et al.*, 65 Wn. App. 255; 828 P.2d 597; 1992 Wash. App. LEXIS 164 [Washington Court of Appeals; 1992].
15 An interesting administrative risk-management note is that the plaintiff also brought suit against the acute care center for consumer fraud, stating that she went to the center because of advertisements that the emergency treatment center was staffed by physicians specializing in emergency medicine. Later, she discovered her treating physician was not an emergency medicine specialist, but was rather a second-year radiology resident. The court dismissed the plaintiff's consumer fraud claim because she suffered no injury and, therefore, could not fulfill all the elements of the cause of action. While

CE/CME Objectives

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- identify cases in which informed consent is required;
- identify cases which include reporting requirements;
- discuss ways in which to minimize risk in the ED setting.

not stated by the court, inherent in the decision is the notion that a consumer fraud claim may have been upheld had an injury been present.

16. *John F. Rixey, Individually and as Administrator of the Estate of Thomas Corneth Rixey v. West Paces Ferry Hospital Inc., et al.*, 4 Nat. J.V.R.A. 8:C10, 1989 WL 1097324 [1989].
17. *Smith v. Lillian V. Ney, M.D., P.C.*, 700 N.Y.S.2d 318 [N.Y.A.D. 4 Dept. 1999].
18. 14 Nat. J.V.R.A. 4:8, 1998 WL 2012321 [1998].
19. *Marsha Harding, natural mother and personal representative of the Estate of Candice Jamie Jane Shuck, deceased v. Zachory Deiss, MD, and Glenn Sublette, MD*, 2000 MT 169; 300 Mont. 312; 3 P.3d 1286 [Supreme Court of Montana, 2000].
20. Conversely, the court suggested that it would allow comparative negligence claims as a defense during treatment and post-treatment patient conduct.
21. *Ian Shine v. Jose Vega*, 429 Mass. 456, 709 N.E.2d 58 [Supreme Court Mass. 1999].
22. *Expert Panel Report 2: Guidelines for the Diagnosis and Management of Asthma, National Institutes of Health, National Heart, Lung, and Blood Institute*, NIH Pub No 97-4051, 1997. Full text available at www.nhlbi.nih.gov/guidelines/asthma/index.htm.
23. Defined as a parental history of asthma, physician-diagnosed atopic dermatitis, or two of the following signs and symptoms: physician-diagnosed allergic rhinitis, wheezing apart from colds, peripheral blood eosinophilia.
24. Marx J, *supra* note 11. Note that high-dose anticholinergic treatment (0.25 mg via nebulizer) is safe in children and causes additional bronchodilation when compared to beta-agonists alone.
25. *Expert Panel Report 2: Guidelines for the Diagnosis and Management of Asthma*, Figure 3-11, p. 112, 1997.
26. *Use of Peak Expiratory Flow Rate Monitoring for the Management of Asthma in Adults in the Emergency Department*, ACEP Policy #400281, Approved June 2000. A summary of the findings is available on-line at http://www.acep.org/1,1998,0.html.
27. Id.

CE/CME Questions

9. Which is *not* a recommendation of the *Expert Panel Report 2: Guidelines for the Diagnosis and Management of Asthma*?
   A. Steroid use in children should be limited to those children with severe asthma due to adverse long-term effects on vertical growth and bone mineral density.
   B. When using steroids in the treatment of asthma, oral prednisone is just as effective as intravenous steroids and is the preferred route of administration.
   C. High-dose anticholinergics should be considered in management of acute asthma attacks since they improve bronchodilation over beta2-agonists alone.
   D. Theophylline is generally not recommended as treatment for an acute asthma attack.
   E. Beta2-agonist treatment should be initiated with three treatments spaced at 20- to 30-minute intervals with additional treatments dependent upon improvement in symptoms and occurrence of side effects.

10. For which classification of asthma are long-term steroids *not* indicated?
    A. Mild intermittent asthma
    B. Mild persistent asthma
    C. Moderate persistent asthma
    D. Severe persistent asthma
    E. Long-term steroids are indicated for each of these classifications

11. Which is most likely to definitively diagnose asthma?
    A. Physical examination
    B. Reversal of obstructive changes with bronchodilators on pulmonary function testing
    C. Improvement in symptoms with bronchodilator therapy
    D. Eosinophilia on blood smear in a wheezing patient
    E. Self-reported history of asthma in a wheezing patient

12. Which of the following statement is *not* true?
    A. Asthma affects more than 15 million people per year.
    B. A majority of asthma deaths occur in patients 65 years old or older.
    C. The incidence of asthma deaths in the United States has shown a decline in recent years due to improvements in asthma diagnosis and treatment.
    D. Oxygen saturation of less than 91% in an infant may be considered as a sign that the infant is in serious respiratory distress.
    E. Evidence-based testing has shown that peak expiratory flow measurement is an unreliable predictor of which asthmatic patients should be admitted to the hospital and which patients can be safely discharged from the ED.

In Future Issues:

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