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IN THIS ISSUE

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Your next TIA patient is at risk for an untreated stroke: Take these steps

Look for 'subtle-but-potentially-deadly' signs

If a patient told you that she was a little dizzy a few hours ago, but she feels absolutely fine now, would you consider this as a life-threatening emergency? If this patient is having a transient ischemic attack (TIA) and leaves your ED, she is at risk of having a full-blown stroke shortly afterward.

About one in 20 TIA patients will have a stroke within 48 hours after they leave the ED, according to a review of research.[1] "Multiple studies have found an early high risk of stroke in TIA patients," says **Jonathan A. Edlow**, MD, the study's author and vice chair of the Department of Emergency Medicine at Beth Israel Deaconess Medical Center in Boston. "This finding is very different from what we believed 10 years ago."

Even though TIA patients often are asymptomatic when they present at triage, they must be treated as a "real emergency," he says.

With increased volume and acuity in EDs, patients with vague complaints and resolved symptoms don't always receive immediate interventions, says **Shelley Calder**, RN, CEN, MN, clinical nurse specialist for the ED at Beth Israel. "An evolving stroke is usually obvious on presentation, but TIA is considerably more difficult to recognize. Unfortunately, this may only be considered by a nurse with many years of clinical expertise."

Triage nurses tend to focus on the obvious, and TIA patients often have an

EXECUTIVE SUMMARY

When patients report transient ischemic attack (TIA) symptoms that have since resolved, they may be undertriaged. However, one in 20 TIA patients will have a stroke within 48 hours of leaving the ED.

- TIA symptoms will resolve, but patients with stroke have evolving symptoms that don't go away.
- TIA patients with hypertension, diabetes, high cholesterol, and obesity have increased risk of stroke.
- Give nurses actual examples of TIA patients who had negative work-ups but returned to the ED with a full stroke.

unclear history and presentation, says Calder. "Often, their symptoms have completely resolved, and their vital signs are stable. However, it is absolutely essential that all care providers recognize the potential risk of TIA and stroke," she says.

To improve care of TIA patients, do the following:

• **Differentiate between stroke and TIA.**

At Beth Israel, the ED's protocol activates the Code Stroke team for patients with acute stroke less than six hours from onset of symptoms, with symptoms still evolving. Patients are considered to have nonacute or possible TIA if onset of symptoms is over six hours and less than 24 hours, with complete symptom resolution, says Calder.

TIA symptoms are transient and last from two to 20 minutes, but a stroke has evolving symptoms that do not resolve, she says. "If patients voice concern about an earlier episode of headaches, visual disturbance, or unilateral weakness, you need to be thinking of TIA," she says.

• **Don't discharge TIA patients.**

At MetroHealth Medical Center in Cleveland, TIA patients are not usually discharged from the ED, says **Christina Kirkner**, RN-MSN, EMT-P, ED nurse manager. "We admit them, usually just for observation status, to ensure that their symptoms don't change or increase," she says. "If a patient chooses to leave against medical advice, we make sure that the patient is educated about possible outcomes, including the worst-case scenario."

Any patient with acute dysrhythmia, a persistent deficit, or other need for additional inpatient evaluation should definitely not be discharged from the ED, says **Amber Egyud**, BSN, RN, director of the ED at the University of Pittsburgh Medical Center. "If the nurse feels badly about discharging the patient, they speak with the physician to address concerns and discuss an additional plan for evaluation and action," she says.

• **Rule out other conditions.**

Calder says any of the following could alter your patient's neurological status: hypoglycemia, hypoxia, seizures, migraines, and current medications. "If you take away all those things, what else could this be?" Hopefully, you have thought of TIA," says Calder.

• **Recognize risk factors.**

"All TIA patients are at increased risk for stroke," says Egyud. "Our goal is to prevent the progression to stroke." However, TIA patients with advanced age, hypertension, diabetes, high cholesterol, obesity, heart disease, carotid or peripheral vascular disease, and hypercoagulable states are at increased risk, she says.

Ask these questions at triage, says Kirkner: What time did you first notice symptoms? Do you take blood pressure medication? If so, are you taking it consistently? Do you have headache? Do you have blurred vision? Do you have problems swallowing?

Assess the following in your patient, she recommends:

— whether there are any changes in speech;

— whether hand grasps are symmetrical in strength;

— whether the tongue is midline when you ask the patient to stick it out;

— whether there are any changes in mental status from the time of arrival;

— when you ask the patient to smile, whether the smile looks symmetrical or there is a facial droop on one side;

— when you have the patient close his or her eyes and hold both arms out in front of them, palms up, whether one arm drifts down.

Sometimes symptoms can be fairly subtle, adds Calder. "It all comes down to recognizing that even if the symptoms aren't present at the moment, there can

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SOURCES

For more information about patients with transient ischemic attack in the ED, contact:

- **Shelley Calder**, RN, CEN, MN, Clinical Nurse Specialist, Emergency Department, Beth Israel Deaconess Medical Center, Boston. Phone: (617) 754-2310. E-mail: scalder@bidmc.harvard.edu.
- **Jonathan A. Edlow**, MD, Vice Chair, Department of Emergency Medicine, Beth Israel Deaconess Medical Center, Boston. Telephone: (617) 754-2329. Fax: (617) 754-2350. E-mail: jedlow@bidmc.harvard.edu.
- **Amber Egyud**, RN, BSN, Director, Emergency Department, University of Pittsburgh Medical Center. Phone: (412) 647-9099. E-mail: egyuda@upmc.edu.
- **Christina Kirkner**, RN-MSN, EMT-P, Nurse Manager, Emergency Department, Metro Health Medical Center, Cleveland. Phone: (216) 957-6357. E-mail: ckirkner@metrohealth.org.

still be a serious underlying issue," she says.

• **Make sure patients get a complete work-up.**

"All TIA patients need an electrocardiogram and some form of brain imaging," says Edlow. Carotid angiography, such as ultrasound or magnetic resonance imaging, is not routinely done in EDs for TIA patients who are not admitted, but this is important to see if there is critical carotid stenosis, he adds.

At University of Pittsburgh, ED nurses take these steps at the bedside during the initial assessment of a TIA patient, says Egyud:

— A neurological assessment is done using the National Institutes of Health Stroke Scale (NIHSS).

— A CT scan is performed. "Our goal is to have the patient in the CT scanner as soon as possible after arrival," says Egyud;

— An electrocardiogram and serial labs are done.

• **Use examples from your ED as teaching cases.**

Beth Israel's ED nurses are educated during orientation and triage training class about the "subtle-yet-potentially-deadly-presentations" that have been seen at the ED, says Calder. For example, one 58-year old man with a history of coronary artery disease and smoking came to the ED with no present complaints, but he reported an earlier event of visual loss for a few minutes and right arm heaviness. He had a negative work-up, but upon discharge the ED nurse noted that the patient was a little unsteady on his feet.

The man insisted it was because he was lying down for so long, but the ED nurse and patient's wife expressed concern about discharge. "The patient was discharged from the ED, only to return 12 hours later with a fully evolving stroke," she recalls. "I use this as a teaching case to stress two points: First, TIA symptoms are subtle and may not always be present on arrival. Also, nurses are essential patient advocates. This patient should have been observed or admitted to rule out a TIA."

Reference

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Use color-coded scale to assess children's pain

A color-coded scale is effective at pain assessment in pediatric patients, says a new study that looked at 126 children between 5 and 12 years old presenting to a pediatric ED with acute pain.[1]

The Colored Analog Scale (CAS) is shaped like a thermometer, with color that gradually gets darker red as you go up the scale. Children are asked to slide a marker to show how much pain they are feeling, with corresponding pain ratings marked on the back of the scale. **[Scale is included with the online version of this month's *ED Nursing*. For assistance, contact customer service at customerservice@ahcmedia.com or (800) 688-2421.]**

When children marked their pain severity on the CAS before and after a pain intervention, 28 children described their pain as "the same," 58 said it was a "little less," and 29 said it was "much less." A previous study showed that the CAS was effective at defining mild, moderate, and severe pain.[2]

"Pain assessment and pain management of children

EXECUTIVE SUMMARY

The Colored Analog Scale is used infrequently in EDs, but this is an effective tool for assessing pain in children ages 5-12 and reassessing pain after interventions, says a new study.

- Have a variety of pain scales available for children.
- Identify the exact location of pain by making the child comfortable.
- Ask parents how the child usually displays pain.

SOURCES

For more information on pediatric pain assessment, contact:

- **Angela Just**, RN, Emergency Department, Phoenix Children's Hospital. E-mail: ajust@phoenixchildrens.com.
- **Thomas E. McConahay**, MD, Department of Emergency Medicine, Phoenix Children's Hospital. Phone: (602) 546-1910. Fax: (602) 546-1907. E-mail: tmcconahay@phoenixchildrens.com.

in the emergency department has been underutilized and poorly addressed for many years," says **Thomas E. McConahay**, MD, the study's lead author and an ED physician at Phoenix Children's Hospital. It only is recently that the American Academy of Pediatrics, the American College of Emergency Physicians, and The Joint Commission have taken steps to correct this problem, he says.

ED nurses need to assess pain as a routine practice, using accurate tools, says McConahay. "Emergency nurses play a key role in this, as they are often the first to recognize pain in children during triage," he adds. "They also have extensive interaction with patients for reassessment of pain response."

The CAS is a relatively new method of pain scoring and is used fairly infrequently, but children ages 5 and older can comprehend it very well, he says. "This can be an invaluable tool in addressing pain and its management in children in the ED," McConahay says. "It allows quick, quantitative assessment of pain by staff, while being easy to understand by children. It also allows for evaluating the success of the implemented pain intervention," he explains.

Pinpoint location of pain

ED nurses need to have a variety of pain assessment tools at their disposal, to individualize care and use the one most appropriate for each patient, says **Angela Just**, RN, an ED nurse at Phoenix Children's Hospital.

The pain scale Just uses most often is the Wong-Baker Faces scale, which allows children to point to the face, ranging from smiling to crying, which correlates with the amount of pain he or she is experiencing. "Assessing pain in pediatric patients can be difficult, especially in younger children who are unable to verbalize pain," she says. Nonverbal signs of pain include crying, elevation in heart rate, blood pressure, respiratory rate, and diaphoresis, Just adds.

"Some children will be quiet, stoic, or even lethargic in response to pain," she says. Parents also can provide important information by telling the provider what unique expressions of pain the child has displayed in the past, Just adds.

To determine the exact location of the child's pain, make your patient as comfortable as possible before an examination, she suggests. Just recommends giving a pacifier or bottle to infants and allowing the parent to hold them, or having a child sit on a parent's lap and using toys or books as distractions. "During the physical exam, the child will likely cry or express pain when a painful area is palpated," she says. "Ask the child to point to what hurts or 'the owie,' either on himself or a stuffed animal."

References

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Don't miss 'red flags' for heart failure in females

Patients may deny or minimize symptoms

A woman with a history of carpal tunnel syndrome reports wrist pain while vacuuming. Would you suspect heart problems?

"The pain was gone, and she said yes, she had gotten a little sweaty during this, 'but doesn't everyone

EXECUTIVE SUMMARY

Women with heart failure present with different symptoms than men, according to new research. Carefully evaluate women with vague complaints, such as being more tired or short of breath than usual or having dizziness or palpitations.

- Don't assume that high blood pressure is due to anxiety.
- Women with diabetes or anemia are at high risk.
- Red flags include jugular venus distention, fine rales that do not clear with a deep breath or cough, and extra heart sounds.

sweat when vacuuming?'" says **Joan Somes**, PhD, MSN, RN, CEN, FAEN, ED educator at St. Joseph's Hospital in St. Paul, MN. "Fortunately, my guardian angel told me to get an EKG [electrocardiogram] that day. The woman had ST elevation in her inferior leads and was rushed to the cath lab in 15 minutes from the time she was roomed."

Women and men present differently with heart failure, says a new study of 3,580 patients participating in the EuroHeart Failure Survey II. Women had new-onset acute heart failure, hypertension, and valvular disease more often, and they had coronary heart disease or dilated cardiomyopathy less often, compared with men.[1]

Johanna Bruner, MS, RN, FNP, director of cardiology services and the Emergency Medicine Center at University of California — Los Angeles Medical Center, says, "Across the board, all ED nurses need to recognize that there are many cases where women simply do not present with the same symptoms or in the same way as men."

Symptoms can be subtle

Heart failure may not present as crushing chest pain, into the jaw, and down the arm. A woman may tell you she is more tired than usual; getting short of breath more quickly; has palpitations or dizziness; or has vague shoulder, scapula, or wrist pain, says Somes.

"When ED nurses think about heart failure patients, they often picture the patient in decompensated heart failure, with acute respiratory distress, super wet lung sounds, and chest pain," says Somes. "Yet, a significant number of patients will present with less acute heart failure and its associated issues."

Women may minimize symptoms or deny they are continuing, she says. "Don't assume that it is just the wrong sized blood pressure cuff or anxiety that is causing the hypertension. It may actually be due to the heart having to work harder," Somes says.

Evaluate women with vague complaints carefully, especially if they have a history of diabetes or anemia, she says. "Swollen ankles, weight gain, or feeling bloated may be chalked up to too much salt, periods, allergies, taking nonsteroidals, being anxious, or being on their feet too much," Somes says. "Often, a woman will blame these symptoms on anything but a heart that is not working effectively."

Many times, these subtle symptoms may be glossed over in the ED, since the patient is not in acute distress, she Somes. "But it is important to identify those as risk, because they may become acute if not treated appropriately," Somes says.

Triage nurses need to be cognizant of any shifts or new symptoms in patients, male or female, says Bruner. "Shortness of breath, swelling in extremities or around eyes, and change in weight are all signs of fluid retention," she says.

Assess lung sounds thoroughly, and look closely for signs of fluid retention in the face and all extremities, says Bruner. "By the time these patients hit the ED, their symptoms, while subtle, may already indicate an acute progression," says Bruner. "Ongoing pulse oximetry, maintaining an upright position in bed, and giving oxygen are all immediate interventions not requiring a physician's order."

Carefully auscultate heart and lung sounds to identify the patient in trouble, says Somes. "Jugular venous distention, fine rales that do not clear with a deep breath or cough, or extra heart sounds should send up red flags," she says. "Blood pressures may not be affected, but heart rhythm should be monitored, as it appears new onset of atrial fibrillation is often associated with heart failure."

Patients presenting with stroke symptoms may have a clot as a result of the atrial fibrillation caused by acute heart failure, and they should have the cardiac system evaluated as well, adds Somes. Another red flag is an EKG with changes from previous EKGs, or a rhythm that cannot be documented as chronic due to lack of previous EKGs to compare it with, says Somes. "Careful monitoring of the blood pressure and identifying that it is not dropping, even after rest in a quiet area, should be a red flag as well," she says.

Obtaining a brain natriuretic peptide level to identify risk of fluid in the lungs may help with the differential if the chest X-ray is abnormal, adds Somes.

Hearts that are working harder will be strained, so look for cardiac markers being slightly elevated, says Somes. "It may not be enough to trigger the panic call from the lab, but the patient may have a high normal," she says. "The patient with low normal oxygen saturation should

SOURCES

For more information about heart failure patients in the ED, contact:

- **Johanna Bruner**, MS, RN, FNP, Director, Emergency Medicine Center, University of California — Los Angeles Medical Center. Phone: (310) 206-2447. E-mail: JBruner@mednet.ucla.edu.
- **Joan Somes**, PhD, MSN, RN, CEN, FAEN, Staff Nurse/Department Educator, St. Joseph's Hospital, St. Paul, MN. Phone: (651) 232-3000. E-mail: somes@blackhole.com.

be considered in trouble, at least until proven otherwise."

Reference

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Consider lead poisoning if you see these symptoms

Cases are 'seen and missed' in EDs

If your patient tells you she is taking herbs or ayurvedic remedies, you may consider interactions with prescription drugs, but would you suspect lead poisoning?

Some of your patients may be taking herbal supplements that contain dangerous levels of lead, but symptoms of lead poisoning are likely to be overlooked in EDs, says **Stefanos N. Kales**, MD, MPH, FACP, FACOEM, medical director of employee and industrial medicine at Harvard School of Public Health. "Think about lead poisoning with differential diagnoses of abdominal pain, anemia, and other common ailments," he says.

Traditional remedies account for up to 30% of all childhood lead poisoning cases in the United States, according to the Centers for Disease Control and Prevention (CDC). The Environmental Protection Agency estimates 240,000 U.S. children were diagnosed with high blood lead levels from 2004 to 2006.

You might think that you haven't seen any lead poisoning cases in your ED, but this is probably because you haven't looked for them, says Kales. "Many cases have likely been seen and missed," he says. "The number of cases recognized will increase if nurses and doctors ask about these remedies."

If you fail to detect high levels of lead and the source of lead exposure continues, the patient would continue to be poisoned with all the associated potential complications, says Kales.

EXECUTIVE SUMMARY

ED patients may be taking herbal supplements that contain lead, but symptoms of lead poisoning are likely to be overlooked, putting them at risk for continued exposure. Up to 30% of childhood lead poisoning cases involve use of traditional medicines, according to the Centers for Disease Control and Prevention.

- Consider lead poisoning if patients present with abdominal pain or anemia.
- Ask patients about supplements and traditional remedies.
- If you suspect lead poisoning, obtain a blood lead level.

SOURCES

For more information on assessment of lead poisoning in the ED, contact:

- **Stefanos N. Kales**, MD, MPH, FACP, FACOEM, Director, Occupational & Environmental Medicine Residency, Harvard School of Public Health, Cambridge, MA. Phone: (617) 665-1580. Fax: (617) 665-1672. E-mail: skales@challiance.org.
- **Robert C. Knies Jr.**, RN, MSN, CNAA, BC, Director of Emergency Services, Baptist Hospital East, Louisville, KY. Phone: (502) 897-8143. E-mail: robert.kniesjr@bhsi.com.

Symptoms vary widely

Any part of the central or peripheral nervous systems can be affected by lead intoxication, depending on the level and duration of exposure, with possible symptoms including edema, hemorrhage, vision and hearing loss, anemia, and renal failure, says **Robert C. Knies Jr.**, RN, MSN, CNAA, BC, director of emergency services at Baptist Hospital East in Louisville, KY.

Since symptoms of lead poisoning can be vague, such as general malaise, cases aren't likely to be identified at triage, he adds. "It would be difficult to pick this up in the ED," Knies says. "The ED is under time pressure, and we don't have the privilege of doing the million-dollar work-up that we may want to do."

In some cases, patients may not report taking traditional remedies even if they are asked directly, adds Knies. "Also, you wouldn't know whether what they are taking has lead in it or not," he says. "Another thing is that ED nurses continue to learn more about symptoms from overdoses of herbals, but this lead exposure is occurring with normal use."

At triage, ask patients specifically about supplements, traditional remedies, and medications from home countries, recommends Kales. "When in doubt or suspicious, get a blood lead level on the patient," he says. "You have nothing to lose and will get an objective answer." ■

ED nurses uncover 'hidden' cases of CO poisoning

Toxicity cases may be unexpected

Carbon monoxide (CO) poisoning often is overlooked in the ED, in part because symptoms are similar to the flu, but very few EDs screen patients for this condition, says **Selim Suner**, MD, MS, associate professor of emergency medicine, surgery, and engineering at Brown University and director of disaster medicine in the Department of Emergency Medicine at Rhode Island Hospital, both in Providence.

Rhode Island's ED nurses screened more than 10,000 patients for CO poisoning over a nine-month period, using a handheld device at triage, the SET Rad-57 Pulse CO-Oximeter, manufactured by Masimo. **(For contact information, see resource box, right.)** The ED nurses found 28 cases of CO toxicity, of which 11 were unexpected, according to a study headed by Suner.[1]

Some patients required treatment with hyperbaric oxygen as a result of the screening, and others were treated with high-dose oxygen. "In some cases, serious sources of CO were uncovered, including a faulty boiler in one apartment complex, which put nearly 30 other residents at risk for CO poisoning," says Suner. "In another case, a husband and wife were poisoned with CO because their chimney was blocked by a dead raccoon."

For every CO toxicity case identified, venous or arterial carboxyhemoglobin confirmations of elevated measurements were verified by lab analysis of blood samples, and all correlated with the handheld tool's findings.

The researchers estimate that as many as 11,000 CO poisoning cases go undetected annually. Identifying CO toxicity in the ED often is challenging, because many patients might not know or suspect that they were exposed, says Suner. If CO toxicity is missed and the patient returns to the site of exposure, this can lead to further toxicity and possible long-term neurological, psychiatric, or cardiovascular complications, he adds.

All ED nurses received a half-hour training session, covering CO poisoning and common sources of CO, conducted by the study's investigators during shift changes. "The nurses were then familiarized with the device. Since the device is very similar to a pulse oximeter, this was not difficult," says Suner.

The investigators posed as patients and allowed the ED nurses to practice on them while answering questions. "Pitfalls such as thin fingers and soot or dirt on the fingers were explained," says Suner. "Nurses were instructed to clean the fingers with alcohol swabs and question the readings if patients had very thin fingers. Alternatively, a pediatric probe can be used for these patients."

Next, the devices were placed at triage points, and the nurses were asked to record a level on every patient that presented to the ED. "ED records were modified to accommodate this new 'vital sign,'" says Suner. "I believe this practice is valuable, and it has been adopted as standard practice in our ED. It has resulted in the discovery of multiple hidden cases of CO."

CO screening now is included in the routine vital signs taken by triage nurses, says **Terry Cottrell**, RN, an ED triage nurse at Rhode Island Hospital. "The whole process of taking the patient's pulse, pulse oximetry, and CO monitoring takes less than a minute," she says.

Before, triage nurses only screened for CO if the patient reported possible exposure or poor ventilation in the home, or if the patient presented with obvious

EXECUTIVE SUMMARY

When ED triage nurses at Rhode Island Hospital screened more than 10,000 patients for carbon monoxide (CO) poisoning, they found 28 cases, of which 11 were unexpected.

- Screening with a handheld device takes less than one minute.
- Some patients required treatment with hyperbaric oxygen as a result of the screening.
- Family members were identified who also had CO toxicity.

SOURCES/RESOURCE

For more information on screening ED patients for carbon monoxide poisoning, contact:

- **Terry Cottrell**, RN, Emergency Department, Rhode Island Hospital, Providence. E-mail: ECottrell@Lifespan.org.
- **Selim Suner**, MD, MS, Director of Disaster Medicine, Department of Emergency Medicine, Rhode Island Hospital, Providence. Phone: (401) 444-6653. E-mail: Selim_Suner@Brown.edu.

For more information about the Masimo Rad-57 Pulse CO-Oximeter, which costs $3,995, contact: Masimo Corp., 40 Parker, Irvine, CA 92618. Telephone: (800) 257-3810 or (949) 297-7000. Web: www.masimo.com/rad-57.

symptoms such as pink skin and dizziness, she says. "Now everyone gets screened," says Cottrell.

In two cases, nurses identified family members of patients who also had high CO levels, adds Suner. "The family members were accompanying the patients, and the nurses had the foresight to screen them as well," he says. "They were asymptomatic and were treated with high-dose oxygen."

Reference

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For seizure patients, stop 'revolving-door syndrome'

Emergency cases are on the rise

Epilepsy-related hospitalizations rose 43% from 95,000 in 2000 to 136,000 in 2005, with 66% of these patients admitted through the ED, says a new report from the Agency for Healthcare Research and Quality.[1]

ED nurses at Tallahassee (FL) Memorial Hospital's Bixler Emergency Center saw 32% fewer patients with epilepsy or seizure diagnosis from 2000 to 2003, but cases are on the rise again, reports **Sheri Cook**, RN, CEN, emergency services educator. "In the first half of 2007, we saw 100 patients, about 2.6 times more of this group of folks then we did in our all-time low of 68 patients in 2003," she says. It's possible that a growing number of uninsured patients is resulting in poor compliance with medications, says Cook.

Children younger than 2 are one of the groups with the greatest number of new onset seizures, says **Karen Delrue**, RN, MSN, CEN, clinical nurse specialist for emergency services at Spectrum Health in Grand Rapids, MI. "For children, the cause is most frequently related to a febrile event," she says. "Any seizure in children is a very traumatic event for the child's parents, so particular care needs to be extended to address their fears and anxiety."

Be aware of the potential for child abuse and the possibility that the seizure is the result of injury, Delrue says. "ED nurses need to always be evaluating what they see and what they are told. Activate the child protection team if you have any suspicions that something is not quite right," she adds.

Adults over 65 years old also are at high risk for developing seizures, especially those with history of head injury, stroke, central nervous system (CNS) infections, and degenerative CNS disorders such as Alzheimer's and multiple sclerosis, Delrue says. "New onset of seizures in the older population will require a detailed medical work-up to determine the underlying cause," she says.

For patients who arrive actively seizing, get as accurate a history as possible to determine if this is a new onset, if there is a history, and how long has the seizure activity been occurring, Delrue says. Do the following to improve care of seizure patients in your ED:

• **Protect the patient from injury.**

Paul Schoenberg, RN, CEN, director of the Emergency Trauma Center at St. Cloud (MN) Hospital, says some seizures can be quite violent. "Ensuring the patient does not hurt themselves is important," he says.

Pad side rails if possible, especially if you are having difficulty getting the patient's seizure activity under control or if the patient is in status epilepticus, advises Cook.

• **Measure blood glucose levels.**

Severe hypoglycemia, if untreated, can cause seizures, Cook explains. "Also, during a seizure, the brain is using up glucose at an alarming rate," she says.

ED nurses may not see the urgency in testing glucose levels for a patient with seizures or epilepsy, but this is a missed opportunity, says Cook. "With diabetes on the rise in the U.S., it is not uncommon for our patients to have dual diagnoses, or for the patient to have a new diagnosis of diabetes," she says. "The best rule of practice is to check the sugar quickly, no matter the patient's history."

• **If the patient is on anticonvulsants via infusion pump, monitor the patient's electrocardiogram, blood pressure, and respirations continually.**

"I find that my more seasoned nurses have a good understanding of the use and precautions with this group of drugs. Some of us are even old enough to remember

EXECUTIVE SUMMARY

Patients admitted to hospitals with epilepsy-related diagnoses increased to 136,000 in 2005, and 66% of these came through the ED, according to a new report. The increase in cases could be due to uninsured patients and poor medication compliance, suggest emergency nurses.

- Always check blood glucose levels, because severe hypoglycemia can cause seizures.
- Monitor electrocardiogram, blood pressure, and respirations for patients on anticonvulsants.
- Give instructions about drug interactions and scheduling, even if the patient has a long history of seizures.

SOURCES

For more information on patients with seizures in the ED, contact:

- **Sheri Cook**, RN, CEN, Emergency Services Educator, Bixler Emergency Center, Tallahassee (FL) Memorial Hospital. Phone: (850) 431-4167. E-mail: Sheri.Cook@tmh.org.
- **Karen Delrue**, RN, MSN, CEN, Clinical Nurse Specialist, Emergency Services, Spectrum Health, Grand Rapids, MI. Phone: (616) 391-1914. Fax: (616) 391-1995. E-mail: Karen.Delrue@spectrum-health.org.
- **Paul Schoenberg**, RN, CEN, Director, Emergency Trauma Center, St. Cloud (MN) Hospital.

that [phenytoin] was originally used as an antiarrhythmic, and it can be cardiac toxic if given too rapidly, hence the pump and the cardiac monitor," says Cook.

• **Give thorough discharge instructions.**

"Drug interactions and scheduling are very important in this patient population and cannot be overstressed," says Cook. "Education is key to reduce the 'revolving-door syndrome' that we sometimes see with this group of patients."

For example, a young man told ED nurses he couldn't afford "designer seizure medications" because he had lost his health benefits and was taking half the prescribed amount to make his medication last longer.

The patient was given phenytoin intravenously and discharged with a prescription for oral phenytoin, but he couldn't afford to fill it and asked if he could keep taking his old medications until they ran out, says Cook. In the end, ED nurses paid for the man's prescription and referred him to a local clinic that could refill medications for free or at a reduced rate.

If patients have their seizures well controlled, they might stop taking their medications because they don't like the side effects, adds Cook.

Don't assume patients with a long history of seizures "know it all," says Cook. "Start by saying, 'You might already know this,' so they don't feel you are taking down to them," she suggests. "I find without fail, every time I give discharge information to my patients, they find a new gem of information."

Reference

1. Agency for Healthcare Research and Quality, U.S. Department of Health and Human Services. Hospitalizations for epilepsy and convulsions, 2005; *HCUP Statistical Brief* No. 46. January 2008. ■

Will ED nurses receive the anthrax vaccine?

Bioterrorism experts are calling for the anthrax vaccine to be offered to civilian emergency responders and critical infrastructure public safety workers, which could include emergency nurses.

"I believe emergency nurses who might come into contact with patients exposed to anthrax spores who have not been decontaminated should be offered the anthrax vaccine on a voluntary basis; however, I do not believe that this will happen in the near future and possibly not [at all] unless we face a large scale anthrax attack," says **R. Gregory Evans**, PhD, MPH, one of the authors of a consensus statement on the anthrax vaccine and director of the Institute for Biosecurity at the Saint Louis (MO) University School of Public Health.

As with any vaccine, the risks of unintended effects must be weighed against the risk of contracting the disease, according to **K.C. Rondello**, MD, MPH, assistant professor of emergency management and health services administration at Adelphi University in Garden City, NY. "As the risk is so low in the general population, routine vaccination of health care workers would seem unwarranted at this time."

Anthrax vaccination is "no simple matter," says Rondello. It is given as a series of six injections over an 18-month period. "While the efficacy is high after receiving the full regimen, the duration of that efficacy is unknown," he adds.

Cutaneous anthrax is easily treated with antibiotics, and although the pulmonary form can be deadly, it has a low mortality rate, notes **Lisa Kosits**, RN, MSN, BC, CCRN, CEN, clinical inservice instructor for the ED at Montefiore Medical Center in Bronx, NY. "You have to be exposed to a high number of spores in order to contract the illness. It is not transmittable from patient to patient," she says. "Since the risk to ED nurses is low, I would not recommend the vaccine for them."

EXECUTIVE SUMMARY

Emergency nurses should be offered the anthrax vaccine, argue bioterrorism experts, but this is unlikely to happen in the near future.

- The vaccine entails six injections given over an 18-month period.
- Cutaneous anthrax is easily treated with antibiotics.
- Pulmonary anthrax can be fatal, but it has a low mortality rate.

SOURCES

For more information on the anthrax vaccine, contact:

- **R. Gregory Evans**, PhD, MPH, Professor and Director, Institute for Biosecurity at the Saint Louis (MO) University School of Public Health. Phone: (314) 977-8133. E-mail: evansrg@slu.edu.
- **Lisa Kosits**, RN, MSN, BC, CCRN, CEN, Clinical Inservice Instructor, Emergency Department, Montefiore Medical Center, Bronx, NY. Phone: (718) 920-5241. Fax: (718) 324-4246. E-mail: lkosits@montefiore.org.
- **K.C. Rondello**, MD, MPH, Assistant Professor, Emergency Management & Health Services Administration, Adelphi University, Garden City, NY. Phone: (516) 877-4544. E-mail: Rondello@adelphi.edu.
- **Mercedes L. Wilson**, RN, BSN, CEN, Emergency Department, Oregon Health & Sciences University, Portland. Phone: (503) 494-6051. E-mail: wilsonm@ohsu.edu.

Kosits says she has not been asked about it by any staff. "I do not believe there is an interest amongst ED nurses," she says.

However, there may be an unfounded fear of the anthrax vaccine among ED nurses, says **Mercedes L. Wilson**, RN, BSN, CEN, an ED nurse at Oregon Health & Sciences University in Portland. "From what I have read, the vaccine is as safe as any other vaccine. The severe problems associated with it are rare — less than one in 100,000," she says. "From a personal standpoint, I would be willing to get the vaccine if it was offered." ■

Treatment under 30 minutes boosts odds for MI patients

If door-to-needle time is under 30 minutes in your ED, your heart attack patient has a better chance of surviving, says a new study.[1]

Researchers looked at 62,470 patients with ST-segment elevation myocardial infarction (STEMI) treated using fibrinolytic therapy at 973 hospitals that participated in the National Registry of Myocardial Infarction from 1999 to 2002. They found that mortality rates were lower with shorter door-to-needle times (2.9% for 30 minutes or less, 4.1% for 31-45 minutes, and 6.2% for more than 45 minutes).

To reduce door-to-needle times in your ED, do the following:

• Obtain electrocardiogram (EKG) results before the patient arrives.

At University of Colorado Hospital in Denver, ED nurses can take action more quickly because patients who arrive by ambulance have an EKG done before arriving at the ED.

"If there is ST-segment elevation, we are alerted, putting patients in a better position for rapid ED response," says **Lorna K. Prutzman**, RN, MSN, director of emergency/stroke services. Immediately after a "cardiac alert" is received, the ED charge nurse notifies the interventional cardiac team, and the STEMI is confirmed with a stat EKG upon the patient's arrival.

If the patients are candidates for the cardiac catheterization lab, they are immediately transported. "By this time, the interventional team has responded to the ED, and they accompany the patient to the cath lab," she says. "Our departments' best performance is 10 minutes from door to cath lab."

Instead of door-to-needle time, the ED tracks door-to-balloon time, because this marks the time oxygenation is restored to the cardiac muscle, says Prutzman. "If the patient arrives at the cath lab in 10 minutes, a noncomplicated case can have a door-to-balloon time of 40 minutes," she says. "The same alert process is put into play for ambulatory patient arrivals with chest pain. However, the response is slightly slower without the pre-hospital warning."

At Emory University Hospital in Atlanta, ED nurses use the same process to decrease door to balloon times and activate the cath lab team based on the pre-hospital EKG. "When we identify a patient with a STEMI, we use a one-call process to activate the team," says **Samuel Shartar**, RN, CEN, ED nurse manager. "During business hours, the ED charge nurse directly contacts the cath lab charge nurse to expedite patient transfer."

• Identify patients without delay.

EXECUTIVE SUMMARY

Heart attack patients with door-to-needle times under 30 minutes have a better chance of surviving, according to a new study. To decrease delays:

- Have emergency medical services do an electrocardiogram on the way to the ED.
- Alert the cardiac team before the patient's arrival.
- Apply defibrillation pads and portable cardiac monitor/defibrillator.
- Ensure there is a full oxygen tank on the stretcher.

RESOURCE

An operations manual developed by the Reperfusion in Acute MI in Carolina Emergency Departments (RACE) project is available at no charge on the North Carolina Chapter of the American College of Cardiology's web site (www.nccacc.org). Click on "Click here for more information about RACE and to read the new press releases." Scroll down to "Optimal System Specification by Point of Care Operations Manual" and click on "Download PDF."

ED nurses must rapidly identify patients with possible symptoms of acute coronary syndrome, both typical and atypical, says **Jenny C. Underwood**, RN, BSN, CCRN, acute myocardial infarction coordinator at Duke Health System in Durham, NC. "This is key to decreasing door-to-balloon times for patients with STEMI."

At Duke University Medical Center, ED nurses rapidly obtain a 12-lead ECG and work with the ED physician on identifying ST elevation and activating the "AMI Hotline" team of cardiac cath lab personnel. "Patients do not receive lytics, as we have primary PCI [percutaneous coronary intervention] capabilities," she says.

If you don't have a pre-hospital diagnostic EKG, your first and most important step is to obtain a rapid EKG within the first 10 minutes of the patient's arrival, says Shartar. "This is the decision point to diagnose STEMI and activate the cath lab team," he says.

• **Perform timesaving steps**.

While your patient is being stabilized, do the following, says Shartar: Perform clipper preparation of the groins. Apply defibrillation pads and a portable cardiac monitor/defibrillator to the patient. Ensure there is a full oxygen tank on the stretcher.

"All of these steps help to reduce transportation delays, which contributes to reducing time from the ED to the cath lab. This translates into reduced door-to-balloon or needle times," says Shartar.

Reference

1. McNamara RL, Herrin J, Wang Y, et al. Impact of delay in door-to-needle time on mortality in patients with ST-segment elevation myocardial infarction. *Am J Cardiol* 2007; 100:1,227-1,232. ■

Study finds that 22% of STEMI patients untreated

Of 460 patients with acute myocardial infarction (MI) coming to five EDs in Colorado and California between 2000 and 2002, 22% did not receive reperfusion therapy even though they were eligible, according to a new study.[1]

"The biggest implication for ED nurses is simply to be aware that we are undertreating one in five patients with ST-elevation MI," says **Albert J. Tricomi**, MD, the study's lead author and a senior instructor at University of Rochester.

There are several reason for this, including failure to recognize important electrocardiogram (EKG) abnormalities, he says. "Nurses should be aware that certain groups of patients, including the elderly, those with peripheral vascular disease, and those presenting with atypical symptoms are more likely to not receive therapy," he adds.

ED nurses should be sure to promptly alert physicians when patients present with typical or atypical cardiac symptoms, and for any abnormal EKG interpretations, urges Tricomi. "This is particularly important when subsequent EKGs are performed after the initial evaluation," he says.

Reference

1. Tricomi AJ, Magid DJ, Rumsfeld JS, et al. Missed opportunities for reperfusion therapy for ST-segment elevation myocardial infarction: Results of the Emergency Department Quality in Myocardial Infarction (EDQMI) study. *Am Heart J* 2008; 155:471-477. ■

CNE objectives

Participants who complete this activity will be able to:

- **identify** clinical, regulatory, or social issues relating to ED nursing;
- **describe** how those issues affect nursing service delivery;
- **integrate** practical solutions to problems and information into the ED nurse's daily practices, according to advice from nationally recognized experts. ■

COMING IN FUTURE MONTHS

■ Controversy over ED nurses performing procedural sedation

■ Mistakes for trauma patients who are victims of violence

■ Prevent life-threatening emergencies with fentanyl patches

■ Stop the most common pediatric medication errors

CNE *questions*

Nurses participate in this continuing education program by reading the issue, using the provided references for further research, and studying the questions at the end of the issue.

Participants should select what they believe to be the correct answers, then refer to the list of correct answers to test their knowledge. To clarify confusion surrounding any questions answered incorrectly, please consult the source material.

The semester ends with this issue. You must complete the evaluation form provided in that issue and return it in the reply envelope provided in order to receive a certificate of completion. When your evaluation is received, a certificate will be mailed to you. ■

21. Which is true regarding care of patients with transient ischemic attack (TIA) in the ED?
A. TIA patients with hypertension or heart disease are at increased risk for stroke.
B. Electrocardiograms (EKGs) are not indicated if symptoms have resolved.
C. Carotid angiography should be done only for admitted patients.
D. If vital signs are stable, patients can be safely discharged.

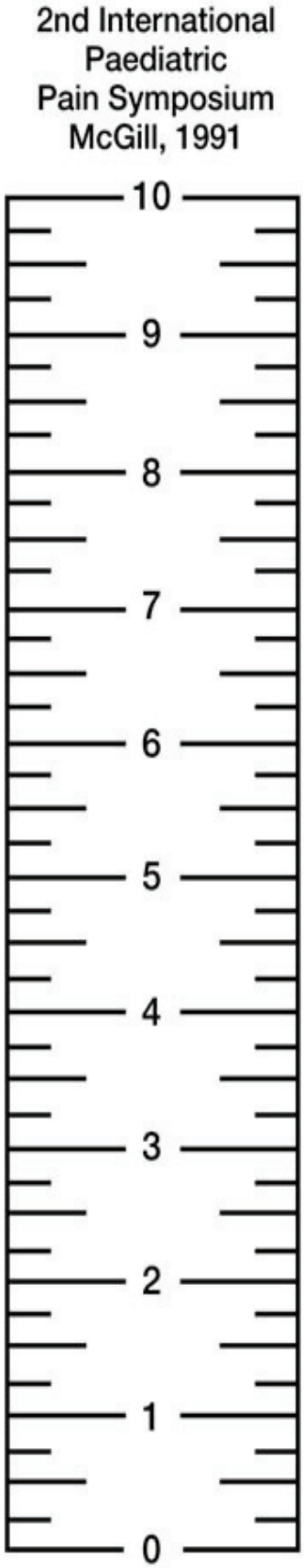
22. Which of the following is a sign a patient may be in heart failure?
A. Jugular venous distention.
B. Fine rales that do not clear with a deep breath or cough.
C. Extra heart sounds.
D. All of the above

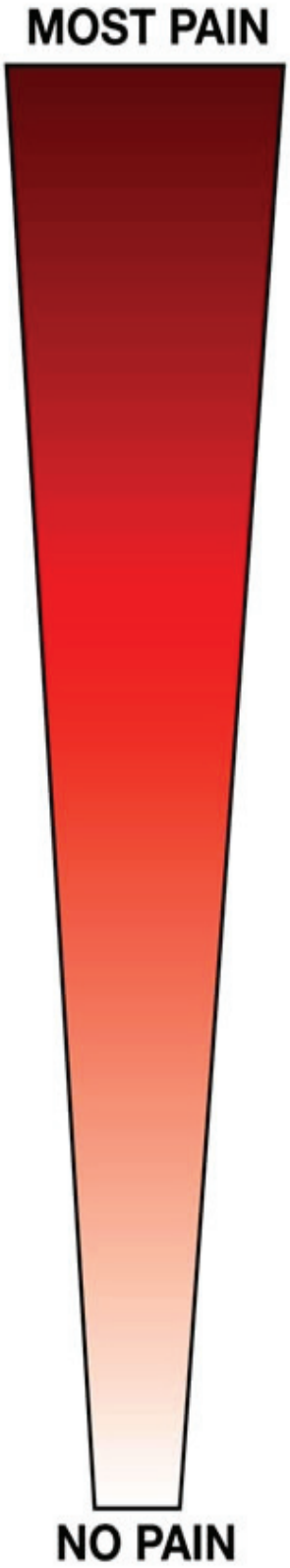
23. What was the result when ED nurses at Rhode Island Hospital screened patients for CO poisoning?
A. No cases of CO toxicity were identified.
B. Cases of CO toxicity included some that were unexpected.
C. All of the identified cases were false positives.
D. No cases were identified except for patients who already had reported exposure.

24. Which is recommended when caring for seizure patients in the ED?
A. Blood sugar should be checked only if patients are known diabetics.
B. Patients on anticonvulsants don't require monitoring.
C. Education is not necessary for patients with long history of seizures.
D. EKG, blood pressure, and respirations should be monitored for patients on anticonvulsants.

Answers: 21.A; 22. D; 23. B; 24. D.

Colored Analog Scale staff side (left) and child side (right)





Source: McGrath PA, Seifert CE, Speechley KN. A new analogue scale for assessing children's pain: An initial validation study. *Pain* 1996; 64:435-443. Used with permission.