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IN THIS ISSUE

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Rural ED nurses treat 14 gunshot victims in one day: Teamwork is key

Mass casualty disasters such as Blacksburg 'can happen anywhere'

A young man and woman from Virginia Polytechnic Institute arriving about 8 a.m. on April 16 with gunshot wounds came as quite a shock to ED nurses at Montgomery Regional Hospital, a 146-bed facility in rural Blacksburg, VA. The male victim was dead on arrival, while the female victim was stabilized and transferred to a nearby Level 1 trauma center.

"We thought this was an isolated event," says **Mike Hill**, RN, director of emergency services.

But a much bigger shock was coming. "About 9:45, we got word that more shots were fired on campus, and they were finding victims all along the classrooms and corridors. We knew then it was going to start getting deep really quick," Hill says.

The ED's "Code Green" disaster plan was implemented, which uses a call tree to alert staff. However, hospital staff already had heard the news and came straight to the ED. Meanwhile, ED staff taking a class on disaster management were pulled out to come to work. "We had a lot of people real quick," Hill recalls.

To free ED beds, patients were transferred to the hospital's ambulatory care center when possible.

Meanwhile, paramedics were radioing in and saying, "I have two," or "I

EXECUTIVE SUMMARY

ED nurses at Montgomery Regional Hospital in Blacksburg, VA, treated 14 gunshot wound cases in one morning after the campus shooting at Virginia Polytechnic Institute, that left 32 people dead.

- Recent disaster training helped nurses to coordinate resources and understand their specific roles.
- The charge nurse made decisions based on information from law enforcement at the scene, emergency medical services, and other hospital units.
- ED nurses and others saved a patient with a gunshot wound to the femoral artery.

have three." A total of 14 patients were brought to the ED and treated over a six-hour time span. "Within the first hour and a half was when the rubber hit the road, so to speak," says Hill.

One patient after another was brought in injured and bleeding, many with multiple bullet wounds, including one shot in his abdomen, chest, and head. In the small town, almost everyone had a friend or relative working at the campus, which was an emotional pull on nurses, says **Andrew Galvin**, RN, the ED's nurse practitioner. "It was very difficult because everyone was waiting to see someone that they knew," he says.

The hospital ironically was no stranger to gunshot violence, even within its own walls. A security guard was shot in the ED in August 2006 by a prison inmate who escaped from the hospital.

Aside from that incident, however, car accidents and industrial accidents are the types of trauma cases the ED usually sees, says Hill. "Usually, a kid jumping off a wall who ends up with a broken ankle is the kind of trauma we have here," he says. However, even the largest urban ED doesn't see the type of trauma that occurred in Blacksburg on that terrible day, notes Galvin. "If you go to Chicago or Miami or L.A, they get trauma, but they don't get 12 penetrating traumas within a one-hour time span," he says.

Nine of the 14 shooting victims were admitted, and seven required surgery, but all eventually were discharged home, a fact that gave Montgomery's emergency nurses heart in the aftermath of the disaster. "The role of any nurse is to save a life, period," says Hill. "The thing that tugs at my heart the most is the 32 that we couldn't do a thing about."

Disaster training helped

Four ED nurses took Advanced Disaster Life Support (ADLS) training in 2006. "When you initially took the class, you thought nothing like that was going to happen here in this small town," Hill says. **(See box on p. 87 for more information on ADLS. See story for lessons learned as a result of this incident on p. 87.)**

The training helped **Barry Akers**, RN, the charge nurse on duty that day, to integrate multiple pieces of information flowing into the ED. "It was my job to coordinate the resources we had available, the number of patients coming in, and the rooms available, with many different factors possibly changing things," he says.

At one point, three phone conversations were occurring at the ED's entrance: A police officer talking to law enforcement at the scene, a staff nurse who also is chief of the Blacksburg rescue squad speaking to his members at the scene, and the ED manager conferring with other hospital units. "I had to talk to all of those folks and take all the information they were getting into account," Akers says.

Although the disaster training had addressed the need for every individual to play a limited role during a disaster, this role was difficult for several ED nurses, particularly for those with previous EMS experience, says Galvin. "As nurses, we want to jump in and apply direct pressure to stop the bleeding, but that's somebody else's job during one of these situations," he says.

The training also reinforced the "cookbook" nature of trauma care, says Galvin, with focus on airway, breathing, and circulation. "It doesn't matter whether the patient had his leg torn off by an industrial machine or been riddled with bullets," he says. "Your role as an ED nurse is to assess and provide appropriate interventions when these patients come through the door." **(See story on p. 88 for more information on treating gunshot wounds.)**

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Editor: **Stacey Kusterbeck**.
Senior Vice President/Group Publisher: **Brenda Mooney**, (brenda.mooney@ahcmedia.com).
Associate Publisher: **Coles McKagen**, (coles.mckagen@ahcmedia.com).
Senior Managing Editor: **Joy Daughtery Dickinson**, (joy.dickinson@ahcmedia.com).
Senior Production Editor: **Nancy McCreary**.

Editorial Questions
For questions or comments, call Joy Daughtery Dickinson at (229) 551-9195.

SOURCE/RESOURCE

For more information about treating multiple trauma cases in the ED, contact:

- **Mike Hill,** RN, Director, Emergency Services, Montgomery Regional Hospital, 3700 S. Main St., Blacksburg, VA 24060. Phone: (540) 953-5286. E-mail: Mike.Hill@HCAhealthcare.com.

Advanced Disaster Life Support (ADLS) is a two-day course covering mass casualty decontamination, use of personal protective equipment, and other essential skills, with simulated all-hazards scenarios, interactive sessions and drills with mannequins and volunteer patients. Fees for the course are approximately $400, but cost varies depending on the training center. To view a calendar of upcoming courses with registration information and course fees, go to www.bdls.com. Under "Find Courses," click on "Course Schedule," or for a map of training centers in the United States, click on "By Location." For more information, contact the National Disaster Life Support Foundation at (866) 722-4911. E-mail: disaster.preparedness@ama-assn.org. Web: www.bdls.com.

Disaster training also resulted in first responders tagging every patient red, yellow, green, or black — meaning that the ED received only patients with a chance of survival. "If this had happened six years ago, we would have gotten every patient and not just the ones that were viable, because the thought back then was "grab and go," says Hill.

Teamwork saved lives

Good communication was the essential ingredient that saved the day for the small community ED facing a nightmare, says Hill.

"We had nurses from every department, lab staff, X-ray techs, an anesthesiologist, and a pharmacist in the ED," he says. "If you don't work together as a team in a situation like this, you're going to fall flat on your face."

One man came in with a gunshot wound to the femoral artery, which is generally not a survivable injury, notes Hill. "He literally arrested at the ED door, and within two minutes he was on the OR table," he says. As part of the disaster plan, the OR cleared their schedule, which meant they had five rooms open and available for the shooting victims.

If it weren't for the first responders stopping the bleeding, the paramedics getting him to the ED in minutes, and the quick action of ED nurses, the death toll would certainly have been one higher, says Hill. "We made a difference that day based on what we learned and practiced," says Hill. "A lot of people take disaster drills as a headache or joke. But if it can happen in small-town Blacksburg, it can happen anywhere." ■

ED shares lessons learned for multiple trauma cases

Tracking patients was 'extremely difficult'

Every ED nurse at Montgomery Regional Hospital in Blacksburg, VA, recently attended the Trauma Nursing Core Course (TNCC) offered by the Emergency Nurses Association. The nurses never dreamed they soon would be relying on this training to care for 14 gunshot wound victims in a single day.

"Through repetition, TNCC teaches trauma assessment and treatment through utilization of the ABCs [airway, breathing, circulation]," says **H. David Linkous**, RN, BSN, disaster preparedness coordinator. "So, the class was very valuable in being able to rapidly assess the patients as they arrived." **(See resource box on p. 88 for more information about the TNCC.)**

The TNCC course was made mandatory for ED nurses after the hospital was designated as a Level 3 trauma center, says Linkous. "Every time multiple victims come in from a motor vehicle accident, the staff must triage and assess to determine the type and severity of injuries and then prioritize the patients," he says. "We see a good deal of trauma here, but the difference on that day was the number of trauma patients that we saw all at once."

EXECUTIVE SUMMARY

ED nurses at Montgomery Regional Hospital had taken the Trauma Nursing Core Course, which helped them to triage and assess 14 gunshot wound victims in a single morning.

- The course was made mandatory for nurses.
- Patients were labeled with medical record numbers, which made tracking difficult.
- To make it easier for laboratory and X-ray results to be matched to the correct patient, a simplified process is being developed.

SOURCES/RESOURCE

For more information about tracking patients during disasters, contact:

- **H. David Linkous**, RN, BSN, Director of Emergency Management, Montgomery Regional Hospital, 3700 S. Main St., Blacksburg, VA 24060. Phone: (540) 953-5359. E-mail: david.linkous@hcahealthcare.com.

For more information about the Trauma Nursing Core Course (TNCC), contact the Course Operations Department at the Emergency Nurses Association's (ENA's) National Office at (800) 900-9659, then press 2. For course schedules in your state, go to the ENA's web site (www.ena.org). Under "CATN II/ENPC/TNCC," click on "TNCC" and "U.S. courses." The cost of the course varies depending on location.

Tracking patients was difficult at times, because they were coming in so rapidly, says Linkous. "They moved to different locations as they were assessed and triaged to the appropriate areas, and then sent for diagnostic testing or surgery," he says.

As each patient arrived at the ambulance doors, a quick triage was done. The patient then was moved to a trauma or orthopedics bay where a team of nurses and doctors did a head-to-toe assessment, ordered all the proper laboratory tests and X-rays, determined if the patient was stable or critical, and decided where the patient would go from there, he explains.

"The system we used worked, in that there were no mix-ups and everyone received the appropriate treatment. But at times, one had to stop and think where a particular patient was at that particular moment," says Linkous. "You should always learn and improve from a situation or incident, and we feel that we can improve on our tracking method. We have set a meeting of key individuals to work on this."

As patients were brought in, each was assigned a number to bypass the usual registration process. To learn the full extent of each patient's injury, immediate laboratory and X-ray results were needed, says **Loressa Cole**, RN, the hospital's chief nursing officer. "With a gunshot wound, you have a penetrating hole, but you don't really know what is going on inside the body," she says. Since the results were tracked by number, nurses had to be extremely careful to match the data to the correct patient, she says.

"We didn't get it wrong, but it was extremely difficult and perhaps there is an easier way to manage that," she says. "That was particularly challenging, and I think that will be something we will be working on in the future. We will be revising our trauma registration process as a result of this event."

ED nurses may practice labeling patients as they arrive during disaster drills, but often don't realize how difficult it will be to keep up with multiple victims when using a numbered system, Cole explains. Stable patients who didn't require immediate surgery were brought into an outpatient area, which made things even more difficult, she adds. "We wanted to clear the rooms as quickly as possible. But as we moved them from one area to another, it became even more difficult to track where they were," Cole says.

Currently, the ED's numbering system is done by medical record, but an easier method is needed with numbers that are not consecutive so they won't be so similar, says Cole. "We were successful using our current system, but have concluded that a simplified system will save valuable time, especially in receiving multiple victims simultaneously," she says. ■

Be ready for gunshot wounds in your ED

ED nurses 'play a pivotal role' in outcome

Five or six gunshot wounds in one night. "Drive-bys" in which a person's body is dumped by the ED entrance. These are not unusual occurrences for ED nurses at Grady Memorial Hospital in Atlanta, as the only Level 1 Trauma Center in the area, says **Julie McInnis**, RN, BSN, ED nurse.

"We admitted 3,500 traumas last year, and 22% of those were gunshot wounds," she reports. "We are used to seeing a lot of gang violence and drug crime shootings."

In a single month, ED nurses at George Washington University Hospital in Washington, DC, participated in two successful trauma codes requiring open-chest resuscitation, reports **Regina J. Hymer**, RN, BSN, director of emergency services. "Both patients left the ED with a sustaining blood pressure and were delivered to the operating room safely," she says.

Even if your ED hasn't seen a gunshot wound in 10 years, you have to be prepared for triage and treatment of this injury, says **Sydney Vail,** MD, director of trauma at Carilion Roanoke (VA) Memorial Hospital. "For a guy with chest pain, you move at a certain pace. For a code, you move at a faster pace, and when it comes to penetrating wounds, you go at the fastest

EXECUTIVE SUMMARY

The status of a patient with a gunshot wound can change very rapidly, and ED nurses have to be prepared for triage and treatment.

- Ask emergency medical services where and when the patient was shot.
- Exit wounds are not always larger, and they depend on the position of the patient when shot.
- Assess the entire body for additional gunshot wounds.

pace possible. If it's life-threatening, things can change in front of your eyes very quickly,"

To improve care of gunshot wounds, here are key areas to consider:

• Get information from emergency medical services (EMS).

"We look really hard at what EMS tells us the vital signs are, and we set up our trauma bays accordingly," says McInnis. "If nurses can get a heads-up on what type of patient they are getting, they can get ready for the type of injuries that person might have and think about what to look for when the patient hits the doors of their ED."

Always ask where and when the patient was shot, she says. If the patient was shot 24 hours ago and their vital signs are fine, different interventions are needed than if a patient was shot five minutes ago and already is losing their blood pressure, says McInnis. "If a patient is doing badly before they even get to the hospital, they don't even stop in our trauma bay," she says. "They go straight to the OR."

• Preserve evidence.

When you cut off a patient's clothing, handle it as minimally as possible, and never cut through bullet holes, says Vail. "Collect it all and bag it and tag it appropriately, or the chain of evidence is broken," he says.

If you happen to find what caused the injury, such as a bullet or casing, become the "guardian" of that item, advises Vail. "Typically, physicians will step on those things and contaminate the evidence, so I really encourage nurses to be the champion of that," he says.

• Stick to the facts when documenting.

Don't specify whether a wound is entrance or exit even if you feel sure, says Vail. "You are not a forensic pathologist. It is simply a wound," he says. During one court case, Vail was asked by defense attorneys where he got his certification in forensic pathology to decide where the bullet entered. "I really got hammered," he says. "Don't get involved in that — simply document "wound on the front side" or "wound on the back side."

You may assume that the larger wound is the exit wound, but this is not always true, says Hymer. "The patient's positioning and other factors may account for a larger entrance wound," she says.

• Stay one step ahead of the team.

At Carilion Roanoke, the gunshot wound is marked with a paper clip and X-ray taken to delineate the bullet's trajectory, says Vail. Before the X-ray comes back, staff members are asked to make an educated guess of "Where is the bullet?" based on the history and physical examination, he says.

"The nurses can figure it out before my residents some of the time, or the doctors are so engrossed in the acute resuscitation, the nurse picks up the phone to the OR and says: "GSW to the chest, and they'll likely be in the abdomen also,'" says Vail.

Likewise, a chest entry tray can be pulled off the shelf so it's ready to open, and nurses can reposition the retractor if it was put back backward by the person who cleaned it, says Vail. "ED nurses should be very familiar with the tools we use, because they end up playing OR nurse," he says.

• Do a thorough assessment.

Always examine the patient's entire body, says McInnis. "Even though the patient may think they were only shot in the arm, we look everywhere to make sure there isn't something we are missing," she says.

A patient once walked into Carilion's ED telling the triage nurse his arm hurt but refused to give more specifics. "If she had done a neurovascular check she

SOURCES

For more information about treatment of gunshot wounds in the ED, contact:

- **Regina J. Hymer**, RN, BSN, Director, Emergency Services and Hyperbaric Medicine, The George Washington University Hospital. 900 23rd St. N.W., Washington, DC 20037. Phone: (202) 715-4210. E-mail: regina.hymer@gwu-hospital.com.
- **Julie McInnis**, RN, BSN, Emergency Department, Grady Memorial Hospital, 80 Jesse Hill Jr. Drive S.E., Atlanta, GA 30303. E-mail: mcijul@yahoo.com.
- **Sydney Vail**, MD, Director of Trauma, Carilion Roanoke Memorial Hospital, Department of Surgical Education, 1906 Belleview Ave., Roanoke, VA 24014. Phone: (540) 981-7942. Fax: (540) 981-8681. E-mail: sjvail@carilion.com.

would have found no pulse, because the guy had been shot in the arm," says Vail, who had to reconstruct the patient's artery when the gunshot wound was discovered. The patient had some nerve damage but could use his hand, he says.

"Never assume a patient doesn't have a worse injury than they are advertising," says Vail. "That could be a gunshot wound or crush victim who now has no pulse, and the guy's going to lose his arm because he sits in the waiting room for six hours." ■

Are you treating pain adequately for procedures?

Many children are given no pain meds

If a child was undergoing an intravenous (IV) catheter placement, would you offer anything to relieve the pain? The answer for many ED nurses would be "no," according to a new study.[1]

Researchers reviewed 1,727 procedures performed in 1,210 children undergoing venipuncture, intravenous (IV) catheter placement, fingersticks, intramuscular (IM) or subcutaneous injections, urethral catheterization, or nasogastric tube placement. They found that almost none received any pain management.

These minor procedures usually are done by ED nurses and pain management hasn't been part of the standard of care, says **Kelly D. Young**, MD, MS, one of the study's authors and director of pediatric emergency medicine and pain management education at Harbor — University of California Los Angeles Medical Center in Torrance. "However, there *are* pain management methods available," she says. "They just take a change in culture and maybe somebody to be the patient's advocate." Here are interventions for these procedures, suggested by Young:

• **Fingersticks.** Use a topical anesthetic, ethyl chloride spray, distraction, or an automated fingerstick device.

• **Heel sticks.** These are more painful than venipuncture, says Young. "Avoid heel sticks altogether and go for a vein if you see one," says Young. "Otherwise, sucrose on a pacifier is good for infant pain management for minor procedures."

• **Venipuncture.** Use topical anesthetic, lidocaine iontophoresis, lidocaine patch, or distraction.

• **Urethral catheterization.** Use a viscous lidocaine lubricant.

• **Shots.** Apply a topical anesthetic, or use counterstimulation by rubbing or putting pressure on skin adjacent to where you will poke.

Educate yourself on the different ways to manage pain and create protocols for their use in your ED, advises Young. "Then strive to make use of pain management methods the new standard of care," she says. Nurses also can advocate for pain management with physicians who are performing incision and drainage of abscesses and infant lumbar punctures, says Young. "Have staffing and physical space set up so that procedural sedation can be used for abscesses and complex lacerations," she suggests.

At Children's Healthcare of Atlanta, ED nurses initiate pre-procedural pain management for venipuncture, IV catheter placement, fingersticks, and IM injections, using protocols that allow the application of a topical

EXECUTIVE SUMMARY

ED nurses should perform appropriate interventions for children undergoing painful minor procedures such as intravenous catheter placement or intramuscular injections, according to a pain management expert.

- Use topical anesthetics for fingersticks, venipuncture, and shots.
- Avoid heel sticks when possible.
- Offer infants sucrose on a pacifier.

SOURCES

For more information on pediatric pain management in the ED, contact:

- **Marianne Hatfield**, RN, BSN, System Director of Emergency Services, Children's Healthcare of Atlanta, 1001 Johnson Ferry Road N.E., Atlanta, GA 30342. Phone: (404) 785-4968. E-mail: marianne.hatfield@choa.org.
- **Kelly D. Young**, MD, MS, Director of Pediatric Emergency Medicine, Harbor-University of California Los Angeles Medical Center, 1000 W. Carson Street, Box 21, Torrance, CA 90509. Phone: (310) 222-3506. Fax: (310) 782-1763. E-mail: kyoung@emedharbor.edu.

anesthetic and cold spray before any type of invasive stick, including lumbar punctures, reports **Marianne Hatfield**, RN, BSN, system director of emergency services. "We are also actively participating in a study with the physicians on one of our campuses to instill viscous lidocaine prior to insertion to decrease the pain associated with urethral catheterization," she reports.

As an ED nurse, it's your role to advocate for pain control or medication when your patient is in pain, says Hatfield. "Every patient is assessed for pain at triage," she says. "We begin pain control or preparation for potentially painful procedures at that time."

Depending on the child's age, local anesthetics, oral, or IV sedation medications are given before fracture reduction, laceration repair, or abscess incision and drainage, Hatfield says. "There is usually some discussion between the nurse and the physician regarding what they feel will work best for each patient, but no patient undergoes any of these procedures without pain management," she says.

Reference

1. MacLean S, Obispo J, Young KD. The gap between pediatric emergency department procedural pain management treatments available and actual practice. *Ped Emerg Care* 2007; 23:87-93. ■

Study: It can be dangerous to guess a patient's weight

Estimates by ED nurses often are wrong

If you have estimated the weight of an adult patient recently, your guess was probably not accurate, says a new study. ED nurses and physicians estimated weights of 241 patients, and they were within 5% of the patient's true weight only 33% of the time, researchers found.[1]

"Our study found that our estimates are not that great, regardless of whether the estimator is a nurse or physician," says **Christopher A. Kahn**, MD, the study's lead author and clinical instructor of emergency medicine at University of California — Irvine. Previous researchers found that a patient's own report of his or her weight was more accurate than that estimates made by ED staff, notes Kahn.[2] "Patient estimates are not perfect, but they are a bit better. So if possible, it's preferred to ask the patient rather than guessing," he says.

Many medications given in the ED are based on weight, so obtaining accurate weights is particularly important, says **Mark Sargent**, RN, clinical manager of the ED at Baylor Regional Medical Center at Plano (TX). "That being said, it is difficult to obtain weights on patients who are unable to stand or are unconscious. In the majority of EDs, stretchers with scales are not routinely used," he says.

If your patient requires cardiopulmonary resuscitation or emergent procedures for which a weight is not critical, the weight can be obtained after resuscitation has occurred, notes Sargent. Estimating weight is risky when using medications such as sodium nitroprusside, a very potent antihypertensive medication that requires very accurate weights, says Sargent. But if facing an emergent situation, an estimated weight may be needed to administer medications, he says. "It is airway, breathing, and circulation — not weight, airway, breathing, and circulation," says Sargent. "An accurate weight can be obtained upon arrival to the intensive care unit."

If you have to rely on your own estimate, keep in mind there is a good chance that it will be inaccurate,

EXECUTIVE SUMMARY

Estimates of adult patients' weights in the ED are only correct one-third of the time, and are even less accurate for obese and underweight patients.

- Remember that estimates are likely to be inaccurate.
- Weigh patients if at all possible for high-risk medications.
- Underweight patients are at high risk for overdosing.

SOURCES

For more information on estimating patient weights in the ED, contact:

- **Christopher A. Kahn**, MD, Clinical Instructor, Department of Emergency Medicine, University of California-Irvine, Building 1A, Room 1009, 101 The City Drive S., Orange, CA 92868. Phone: (714) 456-5239. Fax: (714) 456-5390. E-mail: ckahn@uci.edu.
- **Dotty Kuell**, RN, BSN, CEN, Emergency Department, FirstHealth Moore Regional Hospital, 155 Memorial Drive, Pinehurst, NC 28374. Phone: (910) 715-1118. E-mail: dkuell@firsthealth.org.
- **Mark Sargent**, RN, Clinical Manager, Emergency Department, Baylor Regional Medical Center at Plano, 4700 Alliance Blvd., Plano, TX 75093. Phone: (469) 814-2529. E-mail: MarkSa @BaylorHealth.edu.

says Kahn. "Don't be surprised if something you are titrating per kilogram doesn't quite have the effect you intended," he says. "Be vigilant and ready to titrate to effect, rather than assuming the weight is accurate and that the dosing therefore must be correct."

Make every effort to weigh patients who might be receiving any weight-based medications with significant risk of poor outcomes, advises Kahn. "There is no 'set it and forget it' in emergency nursing," he says. "If you have someone whose pressure is a little bit high for a minute, chances are you are going to notice that and it is going to be OK."

However, if your next patient could require thrombolytics and you have one bed in the department with a built-in scale, then put the patient in that bed, says Kahn. "If you have a sling scale or weight-measuring gurney available, maybe you can have someone weigh the patient while you are working on getting the medication from the pharmacy," he says. "Take that minute and a half, if it's available, to weigh the patient."

Obese, underweight at risk

ED staff tended to overestimate the weight of underweight patients, Kahn says.

"If you look at someone and guess they are 50 kilos and they are only 40 kilos, that's a 25% error," he says. "And the last thing you want to do is overdose someone on thrombolytics by 25%. You are not going to get additional benefit, but you will certainly get additional risk."

Your ED should have stretchers with scales available, or floor scales that can weigh the patient and stretcher, says **Dotty Kuell**, RN, BSN, CEN, manager of the ED at FirstHealth Moore Regional Hospital in Pinehurst, NC. "The weight of each stretcher should be readily available for an easy computation of the weight." First Health Moore's ED uses stretchers with built-in scales manufactured by Kalamazoo, MI-based Stryker, and the stretcher weight is automatically deducted by zeroing the stretcher before patient placement. "You can also have scales built into your floor. In this case, the stretcher weight should be painted on the foot of the stretcher where anyone can easily see it," says Kuell.

Obese and underweight patients should be treated with sensitivity and appropriate equipment used, adds Kuell. "These individuals already have an image problem. Using under or oversized equipment will do more to damage that," she says.

However, just as obese patients have the right to compassionate care, ED nurses have the right to safely move patients, notes Kuell. "We have slide boards and lift teams right now, but are investigating the purchase of a lift for transferring patients from vehicle to stretcher," she reports.

References

1. Kahn CA, Oman JA, Rudkin SE, et al. Can ED staff accurately estimate the weight of adult patients? *Am J Emerg Med* 2007; 25:307-312.
2. Sanchez LD, Imperato J, Shapiro N. Weight estimation by emergency department personnel. *Acad Emerg Med* 2004; 11:546. ■

Patients with serious head injuries on the rise in EDs

Take immediate action to rule out brain injury

ED nurses at Denver's University of Colorado Hospital knew the following from the emergency medical services (EMS) call: The 70-year-old woman had fallen that day from a standing position and was alert and oriented when paramedics arrived at her home. But on the way to the ED, she became unconscious and went into respiratory distress. The patient had a history of recent frequent falls, and she had developed a massive subdural hematoma.

The ED nurse receiving the report thought first about ruling out a stroke, as opposed to a traumatic brain injury, which the patient was later found to have had, says **Jean M. Marso**, RN, BSN, trauma coordinator. "With the push for rapid recognition of stroke patients gaining much attention nationwide, that was the initial algorithm followed by the nursing staff," she says.

If a trauma alert had been called before the woman arrived in the ED, trauma surgeons would have been present when the patient arrived, and she would have immediately been seen in the resuscitation room, says Marso. In addition, X-ray, electrocardiogram, and respiratory therapy technicians would have been in the resuscitation room, and the operating room (OR) and trauma intensive care unit would have been notified, she adds.

EXECUTIVE SUMMARY

Always rule out traumatic brain injury when patients report a fall, even if the fall is minor. To reduce delays in treatment of head-injured patients:
- assist with intubation before taking the patient to CT scan;
- have portable equipment available;
- notify technicians of the need for an emergency head CT, and alert X-ray so they are standing by.

Hospital admissions for serious brain injuries increased nearly 38% from 2001 to 2004, says a new report from the Agency for Healthcare Research and Quality.[1] **(To access a complete copy of the report, go to www.hcup-us.ahrq.gov/reports/statbriefs/sb27.jsp.)** Patients hospitalized for Type 1 traumatic brain injuries, the most serious type of brain injury, totaled 144,700 in 2004, and 82% of these cases came through the ED.

Severe traumatic brain injuries have a 13% rate of in-hospital death, and many patients that survive require rehabilitation or nursing home care, says **Claudia Steiner**, MD, MPH, one of the study's authors. "ED nurses need to know that the majority of cases are the most severe type, and that many of these are the result of either falls or motor vehicle crashes," says Steiner. "These very severe head injuries will need immediate and expert care."

Always rule out trauma first for elderly patients who fall, especially those on anticoagulant therapy, says Marso. "These patients have an increased risk for a traumatic head bleed, regardless of the significance or insignificance of the fall," she says. When patients have a history of frequent falls involving hitting their head or have a coagulopathy, a mechanical fall can be enough of a mechanism for a severe head bleed to develop, Marso explains.

With the above patient, the nurse who received the EMS report thought that the woman's fall didn't seem to indicate a mechanism severe enough to cause an acute injury, says Marso. "Therein lays the problem," she says. "This woman had had several recent falls. This last fall caused a subacute subdural hematoma, which she had from her previous falls, to expand into an acute subdural hematoma."

Time is of the essence in head-injured patients for reducing morbidity and mortality, says Marso. "Watch the clock. Head-injured patients need to get a CT scan safely and expediently," she says. She advises the following:

- Be prepared for airway stabilization. Be ready to assist with intubation before going to CT.
- Have portable equipment on hand, including a transport ventilator.
- Have the respiratory therapist available for transport to CT.
- Communicate clearly with all involved team members.

"This is of the utmost importance for the rapid, smooth sequence of events needing to occur for head-injured patients," says Marso. "Notify CT scan of the need for an emergent head CT as soon as possible so that they can clear the table for this patient." In addition, if you anticipate that the patient will be intubated, you'll need a chest X-ray to confirm tube

Head Injuries

Patients with multisystem injuries, including head injuries, are stabilized and treated as per Advanced Trauma Life Support protocol. The trauma team is activated for all patients with a Glasgow Coma Scale (GCS) score of less than 10 with significant trauma.

Neurosurgical consultation is obtained immediately once it is determined a significant head injury has occurred, for the below criteria:

— Patients with abnormal neurological or other physical findings.
— Patients with evidence of skull fracture on X-ray or physical examination.
— Patients with an abnormal computerized tomography scan.
— Patients with a GCS score of 13 or less.

A brief neurological exam must be documented prior to paralysis and sedation for intubation.

The ED nurse accompanies any critical or potentially unstable patient to all out-of-department procedures.

All impaled objects are stabilized in place and removed only in the operating room.

Nursing documentation shall include:

- an initial GCS on arrival, one hour post-arrival, and at discharge;
- neurological assessment every hour;
- ongoing neurological assessment for patients with a significant head injury or persistent neurological deficit.

The ED physician may suture simple open-scalp wounds.

Source: University of Colorado Hospital, Denver.

SOURCES

For more information on caring for head-injured patients in the ED, contact:

- **Jean M. Marso**, RN, BSN, Trauma Coordinator, University of Colorado Hospital, 4200 E. Ninth Ave., Mail Stop: A021-630, Denver, CO 80262. Phone: (303) 372-8905. Fax: (303) 372-0267. E-mail: jean.marso@uch.edu.
- **Claudia A. Steiner**, MD, MPH, Senior Research Physician, Agency for Healthcare Research and Quality, 540 Gaither Road, Rockville, MD 20850. Phone: (301) 427-1407. E-mail: Claudia.Steiner@ahrq.hhs.gov.

placement. "Give X-ray a heads-up so they can be standing by," says Marso. "And if the CT indicates an emergent need for operative intervention, let the OR know immediately so they can prepare an OR suite."

Your ED should have a policy for head-injured patients that specifies the frequency of neurological checks, advises Marso. "Adhere to those checks, so that any adverse trend in a patient's status is readily noted," she says. **(See the ED's policy for head-injured patients, p. 93.)**

The baseline frequency of neurological checks must be followed consistently for all head-injured patients, regardless of how minor the mechanism might seem, warns Marso. "Never omit or decrease baseline neurological checks as outlined in your policy. That policy is a safeguard against missing a declining trend in a patient's neurological status," she says.

Reference

1. Russo CA, Steiner C. Hospital admissions for traumatic brain injuries, 2004. Agency for Healthcare Research and Quality, Rockville, MD. March 2007. Accessed at www.hcup-us.ahrq.gov/reports/statbriefs/sb27.pdf. ■

Here are interventions for common ED drug overdoses

Symptoms can be life-threatening

A woman dies of respiratory arrest in the back of a car on her way to the ED — not due to acute asthma exacerbation, congestive heart failure, or pulmonary embolism, but from abuse of pain medications.

The woman came to the ED frequently for abdominal pain, with a history of kidney failure and subsequent dialysis, says **India Owens**, MSN, CEN, manager of clinical operations for the ED at Indiana University Hospital in Indianapolis. "She was given fentanyl lollipops by her primary provider, but she would shop around at various EDs to get other pain medications," she recalls.

The woman often presented severely obtunded and would require intervention to reverse the effects of the drugs she had taken or to support her airway until the medications cleared on their own, says Owens. "It is a race against them overcoming the body or the body overcoming them," she says. Although ED nurses referred her to chronic pain clinics and advised her about unintentional overdoses, this type of behavior continued for over three years until the woman's death, says Owens.

EXECUTIVE SUMMARY

ED visits for nonmedical use of prescription and over-the-counter drugs are increasing. Anti-anxiety drugs, prescription pain relievers, and methadone are the most common drugs involved.

- These overdoses can cause respiratory depression that can progress to respiratory arrest.
- Patients may require intubation.
- Ask patients direct questions about abuse of medications.

Anti-anxiety drugs, prescription pain relievers, and methadone are the most common drugs involved in ED visits for abuse of prescription and over-the-counter drugs, which have increased 21% from 495,732 visits in 2004 to 598,542 visits in 2005, according to a new report from the Rockville, MD-based Drug Abuse Warning Network.[1] **(To obtain a complete copy of the report, see resource box on p. 95. For "Your next patient may be abusing prescription drugs: Here's what to do," see *ED Nursing*, October 2006, p. 133.)**

At Hoag Memorial Hospital Presbyterian in Newport Beach, CA, ED nurses are seeing an increased number of patients of all age groups abusing anti-anxiety drugs, prescription pain relievers, and methadone, from adolescents to the elderly, says **Carla Schneider**, RN, director of the Emergency Care Unit. "The most serious side effects are respiratory depression, arrest, or the patient becomes unconscious. All of these conditions warrant intubation," Schneider says.

Patients risk respiratory arrest

Overdoses of anti-anxiety drugs, pain relievers, or methadone can cause respiratory depression, which can progress to respiratory arrest, says Schneider. "Other interventions frequently include psychiatric evaluation and social worker support," she says.

Patients are combining anti-anxiety drugs with alcohol, which is a particularly dangerous combination, says **Donna L. Mason**, RN, CEN, nurse manager for adult emergency services at Vanderbilt University Medical Center in Nashville, TN.

To treat an overdose of any of these medications, use a reversal agent and perform supportive measures until the drug has run its course, says Mason. "The use of reversal agents such as [naloxone], however, present their own risks for the chronic user," she notes.

If the patient has real pain due to neuropathies, cancer, or other chronic conditions, the use of reversal

SOURCES/RESOURCE

For more information on ED patients abusing prescription and over-the-counter medications, contact:

- **Donna L. Mason**, RN, CEN, Nurse Manager, Vanderbilt University Medical Center, Adult Emergency Services, 1211 Medical Center Way, Room 1314 VUH, Nashville, TN 37232-7240. Phone: (615) 343-7223. Fax: (615) 322-1494. E-mail: donna.mason@vanderbilt.edu.
- **India Owens**, MSN, CEN, Manager, Clinical Operations, Emergency Department, Indiana University Hospital, 550 N. University Blvd., Indianapolis, IN 46202. Phone: (317) 278-8306. E-mail: IOwens@clarian.org.
- **Carla Schneider**, RN, Director, Emergency Care Unit, Hoag Memorial Hospital Presbyterian, One Hoag Drive, Newport Beach, CA 92663. Phone: (949) 764-5926. E-mail: cschneider@hoaghospital.org.

A complete copy of the Drug Abuse Warning Network's 2005 report on *National Estimates of Drug-Related Emergency Department Visits* is available free on the web at dawninfo.samhsa.gov. Click on "New DAWN Publications," and "DAWN ED Publications."

agents rapidly clears the body of the narcotic, leading to sudden and severe pain, explains Mason. "Until the reversal agent is cleared from the system the patient cannot effectively be treated for pain," she says. "Sudden withdrawal of pain medication in the chronic user can also result in seizures."

Since ED nurses at Vanderbilt are required to do an alcohol screening for every patient, it is easy to add in questions about drug use and abuse, says Mason. "They go hand in hand," she says. "When I ask, I tell them I am about to ask a tough question and hope they will not be offended by it. Then I ask about illegal drug abuse and legal drug abuse."

At Indiana University, ED nurses do a "brief intervention" for any patient with multiple ED visits, an inability to focus on anything but pain medications, a history of lost prescriptions, and patients who specifically ask for narcotics, says Owens. She gives this example of what nurses might say: "Mr. Smith, it seemed to me I had been seeing a lot of you in the ED over the past few weeks and so I checked our records. You have been here 10 times in the past three weeks. I wanted to say that during that time, I have become concerned about you and the amount of hydrocodone you are taking and some of the health risks you are experiencing as a result. Driving while using hydrocodone has brought you into the ED on one occasion, and tonight you are here after a fall. This type of accident could lead to your death or the death of someone else. I really am concerned about your welfare and want you to be able to lead a full life. I would like you to consider counseling to help you find some ways to cope with your pain that do not involve so much dependence on narcotics. I hope you will let me give you some information on counseling or set you up to meet with a counselor. Could I help you with that?"

"The underlying theme is concern, and advising them of the potential and real consequences of the risky behavior," says Owens.

Reference

1. Substance Abuse and Mental Health Services Administration, Office of Applied Studies. *Drug Abuse Warning Network, 2005: National Estimates of Drug-Related Emergency Department Visits.* DAWN Series D-29, DHHS Publication No. (SMA) 07-4256, Rockville, MD, 2007. ■

CE instructions

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. ■

COMING IN FUTURE MONTHS

- How to learn from "near misses" made in your ED
- Lessons from ED nurses on the front lines in Iraq
- What surveyors will ask you about medications
- Cut delays in assessment of ped psychiatric patients

CNE *objectives/questions*

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.

21. Which is recommended when caring for gunshot wounds in the ED, according to Julie McInnis, RN, BSN?
A. Always document whether a wound was exit or entrance.
B. Assume that the larger wound is the exit wound.
C. Rely on the patient's self-report of their injury.
D. Determine when and where the patient was shot.

22. What is recommended for pediatric pain management for minor painful procedures, according to Kelly D. Young, MD, MS?
A. Avoid giving pain medications unless specifically requested.
B. Offer infants sucrose on a pacifier.
C. Use heel sticks instead of venipuncture.
D. Don't use topical anesthetics.

23. Which is true regarding estimating a patient's weight, according to a study published in the *American Journal of Emergency Medicine*?
A. Nurses almost always guessed correctly.
B. Nurses can safely assume that dosage is correct based on estimates.
C. Nurses should weigh all patients for weight-based medications with significant risk of bad outcomes.
D. Nurses tended to underdose underweight patients.

24. Which is true regarding patients with traumatic brain injury, according to Jean M. Marso, RN, BSN?
A. Rule out trauma first for elderly patients on anticoagulants.
B. Always rule out stroke before brain injury.
C. Don't alert X-ray or CT technicians unless you know surgery will be required.
D. Perform neurological checks less frequently for minor falls.

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