



## IN THIS ISSUE

- New ED protocols affect whether trauma patients survive . . . . . cover
- Take these steps immediately for your trauma cases. . . . . 51
- How to tell if patients have overdosed on prescription drugs . . . . . 53
- You may be surprised at adverse effects of pediatric sedation . . . . 54
- Adverse drug events are common for these three medications . . . . . 56
- Study says white patients more likely to get narcotics in EDs . . . 57
- Protect yourself and your patient when restraints are used . . . . . 58

**Statement of Financial Disclosure:**  
 Stacey Kusterbeck (Author), Coles McKagen (Associate Publisher), Joy Daughtery Dickinson (Senior Managing Editor), and Darlene Bradley (Nurse Planner) report no consultant, stockholder, speaker's bureau, research, or other financial relationships with companies related to this field of study.

**MARCH 2008**  
 VOL. 11, NO. 5

## Boost your trauma patient's chance of survival with these interventions

*ED nurses seeing outcomes previously 'unheard of'*

**W**hen a man with a severe liver injury from blunt abdominal trauma arrived at Vanderbilt University Medical Center's ED, he had no recordable blood pressure and a barely palpable carotid pulse. "His heart rate went to 30 when he hit the door. The next step is almost certain death," says **Bryan Cotton**, MD, assistant professor at Vanderbilt's Division of Trauma and Surgical Critical Care, located in Nashville, TN. Immediately, the ED's new Trauma Exsanguination Protocol (TEP) was activated, and the man was given two units of packed red blood cells. "We went straight to the OR [operating room]," says Cotton. "His liver was cracked in half all the way to the cava." The man's initial pH on an arterial blood gas was 6.8, and his base deficit was 28. Without the new protocol, the patient almost certainly would have continued bleeding and returned to the OR or needed interventional radiology embolization and consumed a large amount of blood products in the intensive care unit (ICU), says Cotton. "Instead, he was out of the OR in just over one hour and was extubated the following morning," says Cotton. "For him to come off the OR table alive is a miracle." The new protocol, which begins with aggressive interventions done by ED nurses, has increased survival rates for severely injured trauma patients by more than 70%.<sup>1</sup> "It was a mindset change that we're stopping the fluids, we are going

## EXECUTIVE SUMMARY

Early ED interventions dramatically improve outcomes of critically ill trauma patients, with one study showing survival rates increased by 70%. Another study found that aggressive glucose control in the ED is linked to higher survival rates for trauma.

- Blood products are utilized more quickly.
- ED nurses rapidly send out a type and screen.
- Glucose levels are monitored while patients still are in the ED.

**EDN NOW AVAILABLE ONLINE: [www.ahcmedia.com/online.html](http://www.ahcmedia.com/online.html). Call (800) 688-2421 for details.**

straight to the OR, and we're mobilizing the blood bank for a massive amount of blood products, not just red cells," says Cotton. "There is a quicker utilization of blood products, a lowering of expectation on blood pressure, and less dependence on crystalloids."

The protocol reduces the amount of crystalloids the patient receives immediately post-trauma, says **Stoney W. Greenlee**, RN, an emergency nurse in Vanderbilt's adult ED. "This reduces the amount of time needed for uncrossmatched blood, increasing the patient's chances of a positive outcome by providing unlimited blood for volume resuscitation," he explains.

The earlier the protocol is activated, the better the patient's chances of survival, adds Cotton. "So we encourage nurses to use it quicker and then apologize if they jumped the gun," says Cotton. "We don't wait until the patient leaves the ED — that's a little too late. The outcomes seem to be a lot worse."

ED nurses now start blood products immediately via two large bore intravenous (IV) lines or a central line, says **Michael Warnecke**, RN, a charge nurse in Vanderbilt's adult ED. "These are usually placed on pressure bags," he says. "We will start an antibiotic and prep the patient for emergent transfer to the OR. We strive to be transporting to the OR within 17 minutes."

Previously, a decision would have to be made about the patient getting a computerized tomography (CT) scan while still in the ED, he explains. "Now based on the patient's condition and vital signs, we will expedite to the OR after starting blood and antibiotics," says Warnecke. "This makes the decision to OR faster, which results in better patient outcomes."

For the sickest trauma patients, there is no time to wait for a CT scan to be done in the ED, says Cotton. "You intubate them. You start fluids. You start blood. You make your decision, and you run to the OR," he says.

If physicians ask for the two packs of red blood cells to be hung while the patient still is in the ED trauma bay, that is a cue for nurses to start the protocol, says Cotton. The first step is making sure that the type and screen gets upstairs, so the blood bank can start choosing the product type specific instead of universal. "If the team is pulling blood products into the ED and reaching straight for the blood to begin with, this should prompt the trauma team to enact the protocol," says Cotton. "The ED nurse is key in identifying a patient that might benefit from this."

At this point, the normal priorities of the resuscitation team are "redirected," says Cotton. "This is a special one, so we're going to tolerate some hypotension, we're not going to give a lot of crystalloid, and we're going to make sure the type is crossed so we can minimize the amount of universal products that we have to utilize," he says.

Many trauma patients bleed to death because the transfusions given do not contain sufficient amounts of appropriate blood products to stimulate coagulation, explains Cotton. "Giving clotting factors and platelets with blood early in the care of patients with life-threatening hemorrhage — as opposed to the traditional method of saline, more saline, blood, then adding clotting factors and platelets later on — results in improved survival," Cotton says.

### ***Glucose levels are key***

Critically ill trauma patients have a better chance of survival if glucose levels are monitored while patients are still in the ED, says another study.<sup>2</sup> Researchers found that high blood sugar levels were linked to higher mortality levels in 896 trauma patients.

#### **Subscriber Information**

Customer Service: (800) 688-2421 or Fax (800) 284-3291. World Wide Web: <http://www.ahcmedia.com>. E-mail: [customerservice@ahcmedia.com](mailto:customerservice@ahcmedia.com).

Subscription rates: U.S.A., one year (12 issues), \$299. Add \$17.95 for shipping & handling. Outside U.S., add \$30 per year, total prepaid in U.S. funds. Discounts are available for group subscriptions. For pricing information, call Tria Kreutzer at (404) 262-5482. Missing issues will be fulfilled by customer service free of charge when contacted within 1 month of the missing issue date. Back issues, when available, are \$37 each. (GST registration number R128870672.)

Photocopying: No part of this newsletter may be reproduced in any form or incorporated into any information retrieval system without the written permission of the copyright owner. For reprint permission, please contact AHC Media LLC. Address: P.O. Box 740056, Atlanta, GA 30374. Telephone: (800) 688-2421, ext. 5491, Fax: (800) 284-3291.

**ED Nursing**® (ISSN# 1096-4304) is published monthly by AHC Media LLC, 3525 Piedmont Road, N.E., Six Piedmont Center, Suite 400, Atlanta, GA 30305. Telephone: (404) 262-7436. Periodicals postage paid at Atlanta, GA 30304. GA. POSTMASTER: Send address changes to ED Nursing®, P.O. Box 740059, Atlanta, GA 30374-9815.

AHC Media LLC is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation.

This activity has been approved for 10 nursing contact hours using a 60-minute contact hour.

Provider approved by the California Board of Registered Nursing, Provider # 14749, for 10 Contact Hours.

This program has been approved by the American Association of Critical-Care Nurses (AACN) for 9 Contact Hours, Category A, file number 10852.

This activity is authorized for nursing contact hours for 24 months following the date of publication.

**ED Nursing**® is intended for emergency department nurse managers, supervisors, unit managers, and quality assurance personnel.

Opinions expressed are not necessarily those of this publication. Mention of products or services does not constitute endorsement. Clinical, legal, tax, and other comments are offered for general guidance only; professional counsel should be sought for specific situations.

Editor: **Stacey Kusterbeck**.

Senior Vice President/Group Publisher: **Brenda Mooney**

([brenda.mooney@ahcmedia.com](mailto:brenda.mooney@ahcmedia.com)).

Associate Publisher: **Coles McKagen**

([coles.mckagen@ahcmedia.com](mailto:coles.mckagen@ahcmedia.com)).

Senior Managing Editor: **Joy Daughtery Dickinson**

([joy.dickinson@ahcmedia.com](mailto:joy.dickinson@ahcmedia.com)).

Senior Production Editor: **Nancy McCreary**.

Copyright © 2008 by AHC Media LLC. **ED Nursing**® is a registered trademark of AHC Media LLC. The trademark **ED Nursing**® is used herein under license. All rights reserved.



#### **Editorial Questions**

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

## SOURCES

For more information on ED trauma protocols, contact:

- **Kelly Bochicchio**, RN, BSN, MS, Research Manager, Division of Clinical and Outcomes, R. Adams Cowley Shock Trauma Center, Baltimore. Phone: (410) 328-7488. E-mail: kbochicchio@stapa.umm.edu.
- **Bryan A. Cotton**, MD, FACS, Department of Surgery/Trauma and Emergency Surgery, Vanderbilt University Medical Center, Nashville, TN. Phone: (615) 936-0189. Fax: (615) 936-0185. E-mail: bryan.cotton@Vanderbilt.edu.
- **Stoney W. Greenlee**, RN, Adult Emergency Department, Vanderbilt University Medical Center, Nashville, TN. Phone: (615) 343-7373. E-mail: stoney.greenlee@vanderbilt.edu.
- **Ellen Plummer**, RN, Senior Partner, Trauma Resuscitation Unit, R. Adams Cowley Shock Trauma Center, Baltimore, MD. Phone: (410) 328-3261. E-mail: eplummer@umm.edu.
- **Michael Warnecke**, RN, Charge Nurse, Adult Emergency Department, Vanderbilt University Medical Center, Nashville, TN. E-mail: michael.b.warnecke@vanderbilt.edu.

“Emergency nurses may likely be initiating tight glucose control therapy earlier and more aggressively than they have in the past,” says **Kelly Bochicchio**, RN, BSN, MS, co-author of the study and research manager for the Division of Clinical and Outcomes Research at the R. Adams Cowley Shock Trauma Center in Baltimore.

ED nurses now start insulin drips for early aggressive glucose control, instead of waiting until after the patient is transferred to the ICU, says Bochicchio. “ED nurses will be obtaining serum glucose levels more frequently as standard procedure and initiating insulin infusions earlier,” she says.

This timing is important as patients are often kept in the ED for several hours before being transferred to the ICU due to bed availability or obtaining diagnostic tests, Bochicchio says.

Document the patient’s glucose level and what insulin dose adjustments were made, she says. “It is standard procedure to check serum glucoses every hour during intensive insulin therapy to ensure patient safety,” Bochicchio says. “Nurses will have to be highly vigilant to ensure accurate and close glucose monitoring to prevent the untoward effects of hypoglycemia.”

Initial lab work includes electrolytes including glucose level, and if the patient is a known diabetic, a bedside glucose level is taken as a baseline, says **Ellen Plummer**, RN, senior partner and former trauma/emergency/critical care nurse at Cowley’s Trauma Resuscitation Unit. “We repeat the glucose within an hour if it is elevated and initiate either subcutaneous insulin or an insulin drip based on the glucose level results,” she says.

Even trauma patients with no known history of diabetes may have a significantly elevated glucose, which might have contributed to the patient’s injury, says Plummer. “For example, the patient’s elevated glucose may have caused them to have altered mentation or to pass out while driving, leading to a crash,” she says.

Plummer recently cared for a man who had gone to an outside ED with a wound on his foot that worsened to a necrotizing fasciitis wound. The man had no known history of diabetes, but he had a glucose level in the 500 range. “By the time he transferred to us, he had received two doses of subcutaneous insulin,” says Plummer. “On arrival, his glucose was in the 380 range with repeated glucoses still ranging in the mid-300s. We initiated the insulin drip protocol, started at three units per hour and, within three hours, had his glucose well below 200,” she says.

## References

1. Cotton BA, Gunter OL, Au BK, et al. Damage control hematology: The impact of a trauma exsanguination protocol on survival and blood product utilization. *J Trauma* 2008 (In press).
2. Bochicchio GV, Manjari J, Bochicchio KM, et al. Early hyperglycemic control is important in critically injured trauma patients. *J Trauma* 2007; 63:1,353-1,358. ■

## Use these tips for severe trauma injuries in your ED

*Delays can dramatically affect outcomes*

**O**n the way to being rushed to a Level 1 trauma center after being hit by a car, a boy’s airway suddenly filled with blood. As a result, he was diverted to Arlington Heights, IL-based Northwest Community Hospital’s ED, where nurses immediately suctioned the child to clear his obstructed airway. Two large bore intravenous lines (IVs) were started to ensure the patient’s volume was stabilized due to the blood loss.

“We were able to intubate him, ensuring his stability, and they were able to continue on to the Level 1 hospital,” says **Laura Aagesen**, RN, MBA, Northwest’s trauma coordinator. “The child was discharged

## EXECUTIVE SUMMARY

To prepare for severely injured trauma patients, check equipment every shift and use a standardized approach. Intubations, needle decompression, or pericardiocentesis may be needed for a life-threatening injury.

- Assess for undetected injuries even for a patient who appears stable.
- Suspect poor perfusion and shock with altered mental status, restlessness, anxiety, or confusion.
- Establish large-bore intravenous lines to give boluses, warmed fluids, or blood.

to a rehabilitation facility and later was able to go home to his family. Without clearing the airway and establishing a more definitive airway, the patient would have died.”

No matter what the size or capabilities of your ED, always be ready for a trauma case to come through your doors, says Aagesen. “Do equipment and stock checks every shift so equipment is available and ready to use in seconds,” she recommends. “Severely injured patients will at times appear at your doorstep.”

To improve care of trauma patients, do the following:

- **Always use a standardized approach.**

“This ensures your initial evaluation will capture all injuries, both severe and minor,” says Aagesen. “Using the ABCs allows you to intervene on a life-threatening injury and avoid depleting your already critical patient of oxygen and fluids which are essential for survival.”

Once you are sure the tongue or foreign body is not obstructing the patient’s ability to breathe, move on to assessing the patient’s breathing, Aagesen says. “The rate, depth, and labor of respirations, along with breath sounds, are an indication of the effectiveness of a patient’s ability to breathe,” she says. “Circulation is then evaluated by the overall appearance of the patient.”

Altered mental status, restlessness, anxiety or confusion, skin temperature, and color can be indicators of poor perfusion and risk for shock, says Aagesen. “Large-bore IVs need to be established to ensure the ability to give large boluses or warmed fluids or blood to the patient,” she says.

Your findings may call for intubations, needle decompression, or pericardiocentesis to correct a life-threatening injury, says Aagesen. “Immediate intervention is the key to the patient’s stabilization and recovery,” she says.

- **Don’t underestimate the severity of injury.**

“This often results in being taken off-guard when

diagnostics such as a [computerized tomography] scan reveal life-threatening injuries, or when the patient’s mental status or vital signs become unstable,” says Aagesen.

Your patient may appear to be stable and doing well on arrival, but if injuries go undetected, the patient could deteriorate slowly, she says. “Quick interventions to rule out such injuries should be done with a heightened sense of urgency, similar to a patient with chest pain being ruled out for a myocardial infarction,” says Aagesen.

One elderly man’s condition suddenly deteriorated after he presented for a trip and fall injury with normal vital signs. His heart rate gradually climbed to the 130s and his blood pressure dipped to 90/30. “When I went to fix his gown, I saw his ribs were purple. I did a full body check and found the simple abrasions that he presented with were now hematomas and large areas of ecchymosis,” says **Regina Curry**, RN, an ED nurse at Thomas Jefferson University Hospital in Philadelphia.

The man’s nose started to bleed profusely, and Curry alerted the ED physician, placed another intravenous line, and sent for a second complete blood count. “The hemoglobin came back at five. This patient then became an ICU [intensive care unit] candidate and required 1:1 nursing to stabilize him,” she says.

- **Give each ED nurse a specific role.**

At Thomas Jefferson’s ED, each nurse has a specific role when an unstable critically ill trauma patient arrives, says Curry. “One nurse is designated to document, and the other will get IV access and have critical care medications on hand ready to administer,” she says. “They will get the equipment for intubation and central line insertion at the bedside ready to go.”

Potentially lifesaving treatments in the ED include airway management, putting tourniquets on arterial

## SOURCES

For more information about improving care of trauma patients, contact:

- **Laura Aagesen**, RN, MBA, Trauma Coordinator, Northwest Community Hospital, Arlington Heights, IL. Phone: (847) 618-4005. E-mail: laagesen@nch.org.
- **Regina Curry**, RN, Emergency Department, Thomas Jefferson University Hospital, Philadelphia. E-mail: reginacurry@usa.net.
- **John Kelly**, RN, MBA, Nurse Manager, Emergency Department, Boston Medical Center. Phone: (617) 414-4208. Fax: (617) 414-4205. E-mail: john.kelly@bmc.org.

bleeding, and placing chest tubes — and all of these require a team approach, says **John Kelly**, RN, MBA, nurse manager of the ED at Boston Medical Center. “It is crucial that we all work together for the patient and that we get the patient where they need to go,” he says. “Whether that is to the operating room, surgical ICU, or CT, unnecessary delays can have a dramatic impact on a trauma patient’s outcome.” ■

## Overdoses of prescription meds may be unintentional

*Med reconciliation reveals life-saving information*

If your next patient had altered mental status and lethargy, would you suspect an unintentional overdose of pain medication?

Patients may not remember to remove transdermal pain patches when putting on a new one and suffer an unintentional overdose, says **Karen Hust**, RN-CEN, MSN, BSN, ADN, clinical educator for the ED at St. Joseph’s/Candler Hospital in Savannah, GA.

When Hust was caring for an elderly woman with central nervous system (CNS) depression, a stroke protocol was initiated. “It wasn’t until after CT [computerized tomography], when performing a skin assessment prior to admission, that we realized this patient was had four transdermal pain patches applied to her skin,” says Hust. “The CT was negative, and the CNS problems resolved after removal of the patches.”

Poisonings now are the second leading cause of unintentional injury death, with 20,950 deaths in 2004, according to the Centers for Disease Control and Prevention.<sup>1</sup> Patients often accidentally take double

doses of their medication, which can be life-threatening depending on the drug and dosage, says **Scott Wiley**, RN, of the Blue Ridge Poison Center in Charlottesville, VA. “If an elderly woman is on three different blood pressure medicines and takes both morning and evening doses, she has taken six doses, all of which can affect blood pressure,” he notes. “Even fairly innocuous substances can be a problem in the right dose.”

Signs that a patient’s overdose of prescription opioid analgesics or sedatives could be life-threatening include abnormal vital signs, lethargy, unresponsiveness, and disorientation, says **Michelle Langrehr**, RN, MSN, FNP-C, an emergency nurse at St. Francis Hospital in Wilmington, DE. Ask these two questions at triage, she advises: Do you use any prescription pain medications? Do you use any street drugs or alcohol?

“It is not uncommon for patients, especially the elderly, to unintentionally overdose on their pain medication,” says Hust. “This is why medication reconciliation is so valuable. Looking at the medications upon first contact provides a significant amount of information.”

If you suspect an overdose of prescription medication, assess for the following, says Hust:

- Hypotension and bradycardia.
- Respiratory rate and effort. “Hypoxic drive may be overridden,” says Hust.
- Hypoxemia.
- Signs and symptoms of noncardiogenic pulmonary edema: dyspnea, cough, frothy sputum, rales, and rhonchi.
- CNS depression related to hypoxia and respiratory depression. “Seizures are common,” says Hust. “Patients that have taken barbiturates may present initially as euphoric and decline from mild sedation to coma and death.”
- Slurred speech; miosis; nystagmus; emotional lability; and impaired memory, judgment, and attention.
- Hypoglycemia, nausea and vomiting, decreased gastrointestinal motility, and urinary retention.
- Pruritus, flushing, and urticaria.
- Neuromuscular changes such as involuntary muscle twitching, hypoactive reflexes, flaccidity, or unsteady gait.

Regardless of the toxic agent, airway, breathing and circulation are always your highest priority, says Hust. Bedside glucose should be done rapidly, she says. “Accurate vital signs should be obtained frequently and trended, including pulse oximetry and at least one measurement of temperature,” Hust says. “Rhythm strips should be reviewed and placed on the chart.”

Identify the drug causing the symptoms as early as possible, before the patient loses the ability to communicate or family members leave your ED, says Hust. “Obtain all prescription information, including pill counts

### EXECUTIVE SUMMARY

Have a high index of suspicion for unintentional overdoses of prescription drugs, which may involve accidental double doses of pain medications or sedatives.

- Look for transdermal pain patches during skin assessments.
- Abnormal vital signs, lethargy, unresponsiveness and disorientation may mean a patient’s condition is life-threatening.
- Consider oral N-acetylcysteine for potentially toxic acetaminophen ingestions.

## SOURCES

For more information on ED patients with unintentional overdoses, contact:

- **David P. Betten**, MD, Assistant Clinical Professor, Department of Emergency Medicine, Sparrow Hospital, Lansing, MI. Phone: (517) 364-4120. Fax: (517) 364-3725. E-mail: [bettend@msu.edu](mailto:bettend@msu.edu).
- **Karen Hust**, RN-CEN, MSN, BSN, ADN, Advanced Clinical Educator, Emergency Department, St. Joseph's/Candler, Savannah, GA. Phone: (912) 819-6267. Fax: (912) 691-9224. E-mail: [hustk@sjchs.org](mailto:hustk@sjchs.org).
- **Michelle Langrehr**, RN, MSN, CRNP, Emergency Department, St. Francis Hospital, Wilmington, DE. Phone: (302) 421-4343. E-mail: [mblangrehr@comcast.net](mailto:mblangrehr@comcast.net).

and identification of unknown pills," she says. "Search all patient belongings for clues to the causative agent."

### Consider oral medication

For patients with potentially toxic acetaminophen, treatment with oral N-acetylcysteine (NAC) for 20-48 hours is safe and effective, says a new study.<sup>2</sup> Of 195 patients contacted by researchers who were treated with NAC for 48 hours or less, 96% reported no symptoms consistent with hepatic failure.

"While the use of [intravenous] IV NAC is increasing, there's an increasing body of evidence that oral NAC given for shorter durations than the traditional 72 hours of treatment may be just as effective in a subset of acetaminophen-poisoned patients," says the study's author, **David Betten**, MD, assistant clinical professor in the Department of Emergency Medicine at Michigan State University College of Human Medicine in East Lansing.

ED nurses should consider oral NAC in patients especially for patients with underlying respiratory disease, since anaphylactoid reactions are much more common with IV NAC in these patients, says Betten. "Oral NAC is extremely safe, and with pre-dosing with antiemetics, [it] is usually well tolerated."

### References

1. Paulozzi L. Unintentional poisoning deaths — United States, 1999-2004. *MMWR* 2007; 56:93-96.
2. Betten DP, Cantrell FL, Thomas SC, et al. A prospective evaluation of shortened course oral N-acetylcysteine for the treatment of acute acetaminophen poisoning. *Ann Emerg Med* 2007; 50:272-279. ■

## Adverse effects from ED sedation are common

When children have procedural sedation in the ED, at least 42% have at least one adverse effect, according to a recent study of 547 children.<sup>1</sup> Parents were called 24 hours after discharge from the ED and reported these adverse effects: lethargy (12%), vomiting (7%), behavioral changes (7%), headache (6%), balance/gait disturbances (5%), nausea (4%), sleep disturbances (4%), nightmares (4%), hallucinations (2%), and ear pain (0.2%).

After recovery and discharge from the ED, minor adverse effects do occur in otherwise healthy children who have undergone procedural sedation in the ED, says **Janet Luhmann**, MD, one of the study's authors and an ED physician at St. Louis (MO) Children's Hospital.

### Educate before discharge

Educate parents prior to discharge about the likelihood a minor adverse effect might occur and what types of adverse effects might be anticipated, she says. Provide an emesis basin or bag for the drive home since vomiting can occur, Luhmann recommends. "We learned from parents that adverse effects typically resolve within one day," she says. "Many children had perceived changes in behavior in the first day after discharge. Sometimes these were subtle but certainly noted by the parent."

Younger children may cry more than usual, or children may have disturbances in their usual sleep and

*Continued on page 56*

## EXECUTIVE SUMMARY

After pediatric sedation, 42% of children experienced at least one adverse effect, says a new study. Children may experience lethargy, vomiting, headache, disturbances in sleep or balance, nausea, or hallucinations.

- Tell parents what possible adverse effects to expect, including behavior changes.
- Give parents an emesis basin or bag in case of vomiting.
- Vital signs should be stable, with sufficient time elapsed after the administration of reversal agents before discharge.

# Instructions After Pediatric Sedation

Your child received medicine today for sedation during a test or treatment. Medicine used for sedation helps relieve anxiety, decrease discomfort, and provides optimal conditions to perform a radiological exam or a procedure. This sheet gives you information on how to best care for your child after he or she has received sedation.

The test or treatment that your child had was:

- |  |   |
|--|---|
| <input type="checkbox"/> CT SCAN/MRI SCAN  | <input type="checkbox"/> ORTHOPEDIC REDUCTION |
| <input type="checkbox"/> LACERATION REPAIR | <input type="checkbox"/> OTHER _____          |

The medicine that your child received was:

- |  |                                   |
|--|-----------------------------------|
| <input type="checkbox"/> Midazolam       | <input type="checkbox"/> Fentanyl |
| <input type="checkbox"/> Pentobarbital   | <input type="checkbox"/> Ketamine |
| <input type="checkbox"/> Chloral hydrate |                                   |

## Safety

- Some effects of the medication may linger. Plan to watch your child closely for the next 24 hours.
- When traveling in the car, tilt the car seat slightly back, but be sure that your child's head remains upright. If the head falls forward, your child could have trouble breathing.

## Activity

- Your child may be slightly dizzy and groggy for up to eight hours. Plan quiet activities, such as videos, TV, and quiet music.
- Your child should not do anything that requires concentration or coordination. Some examples are bike riding, rollerblading, swimming, or studying.
- Older patients should not drive a car or operate machinery for at least 24 hours.
- Be sure to support your child when walking to avoid tripping and falling, especially on stairs.

## Medications

If your child is taking any medications which cause sleepiness or sedation, please discuss with your doctor if your child should take next scheduled dose (to avoid excess drowsiness).

## Diet

- Give clear liquids for the first few hours at home. Some examples are water, ginger-ale, half-strength apple juice, popsicles, Jell-O, broth, tea. Return to your child's regular diet when he or she feels ready and is awake and alert.
- You may go back to breast-feeding as soon as he/she wakes up after the procedural sedation.
- If your infant takes formula, give one feeding of water or Pedialyte before giving formula.
- Do not give your child a heavy meal for the next few hours or stop at a fast food restaurant on the way home. Some children may have an upset stomach or vomit once or twice.
- Older patients should not drink alcohol for at least 24 hours after sedation.
- Remember, your child has had adequate hydration from the intravenous fluids he/she received today. If he/she prefers not to eat or drink for a few hours, do not be concerned.

## Sleeping

- Your child may sleep for the next 4-8 hours. Have your child sleep on his or her side for the next 24 hours. This will prevent choking in case your child vomits.
- Make sure your child does not fall asleep while food/fluids are in his/her mouth, to avoid choking.
- Children who nap or go to bed for the night within two hours after leaving the hospital need to be checked intermittently. To check your child, awaken him or her briefly two hours after he or she goes to sleep. Watch the breathing pattern and skin color.

## Call 911 or your local emergency number if:

- Your child's breathing appears difficult, shallow, slow or different than usual.
- Your child's skin color has become extremely pale or gray.

## Call the Emergency Department at (617) 355-6611 if:

- It is difficult to wake your child from sleeping.
- Your child vomits more than twice.
- You have any questions or concerns.

## Information about your child's visit today and medications received:

Child's Weight: Kg \_\_\_\_\_ Lbs. \_\_\_\_\_

Additional medications received: \_\_\_\_\_

Source: Children's Hospital, Boston.

eating patterns, says Luhmann. “Discussing this information with parents prior to discharge might provide reassurance that minor adverse effects are usually common and brief,” she says. “However, it is essential that parents are advised to seek medical attention immediately if the symptoms are severe or prolonged.”

### **Hospital provides written instructions**

At Children’s Hospital Boston, patients and their caregivers are provided with post-sedation written discharge instructions, including an explanation of potential or anticipated post-sedation behavior and problems, any limitations of activities that are recommended, and the 24-hour contact number of a responsible practitioner, says **Francine M. Falvo-Caruso**, RN, BSN, an ED nurse. (See the information given by ED nurses on p. 55.)

ED nurses at Children’s Hospital score the patient using an assessment tool that evaluates motor activity, respirations, consciousness, and room air saturation. “Patients are discharged upon meeting the post-procedure criteria score,” says Falvo-Caruso. “It is imperative that all guidelines are met prior to discharge to home.”

Before discharge, the child’s level of cognition should be returned or progressing toward baseline, says Falvo-Caruso. “Vital signs should be stable and within the patient’s baseline, and sufficient time should have elapsed after the last administration of reversal agents such as naloxone or flumazenil, if used.”

### **Reference**

1. Steurer LM, Luhmann J. Adverse effects of pediatric emergency sedation after discharge. *Pediatrics* 2007; 120:1,229-1,237. ■

## **Adverse events high in elders for these 3 drugs**

*Blood thinners may be linked to traumatic injuries*

One-third of the estimated 177,504 ED visits by elderly patients for adverse drug events were caused by warfarin, insulin, and digoxin in 2004 and 2005, says a new study.<sup>1</sup>

Interventions targeting warfarin, insulin, and digoxin use could prevent more ED visits for adverse events, says **Dan Budnitz**, MD, MPH, CDR, USPHS, the study’s lead author and a researcher with the Centers for Disease Control and Prevention’s Division of

### **EXECUTIVE SUMMARY**

A new study found that one-third of ED visits by elderly patients for adverse drug events were caused by warfarin, insulin, and digoxin over a two-year period. EDs should implement interventions to improve medication safety for these three drugs, according to a study from the Centers for Disease Control and Prevention.

- Perform a head-to-toe assessment to uncover bruising hidden by clothing.
- Give patients a sheet listing any changes made to their medications.
- Remember that patients don’t have to be elderly or have serious medical problems to take blood thinners.

Healthcare Quality Promotion.

“ED nurses play a key role in medication safety from the time a patient arrives by collecting a medication history, to the time the patient is discharged, by explaining any medication changes or follow-up which may be needed,” says Budnitz.

To avoid adverse drug events, inform patients of the following, says Budnitz:

- how to take their warfarin, insulin, or digoxin, and particularly explain any changes that were made;
- whether newly prescribed medications or new diagnoses may interact with the medications;
- when and how to monitor medications with blood testing;
- what are warning signs of problems;
- who to call and where to go if problems occur.

ED nurses at Alegant Health Immanuel Medical Center in Omaha, NE, are seeing significant numbers of elderly patients with adverse reactions caused by warfarin, insulin, and digoxin, says **Linda L. Jensen**, RN, MSN, CEN, ED educator and emergency medical services coordinator. “We have seen patients with either high or low prothrombin time/international normalized ratios [INRs] as a result of lack of understanding the dosing regimen, lack of assistance with medication administration by caregivers, knowledge gaps regarding nutritional considerations, and lack of follow-up appointments with primary caregivers for lab studies,” says Jensen.

ED patients may present with altered level of consciousness caused by dangerously low blood sugars related to new insulin regimens, says Jensen. “The elderly diabetic patient is often dependent upon others to assist with medication administration and monitoring

physical symptoms,” says Jensen. “This is a challenge for many elderly patients, especially if they lack interested, knowledgeable, and engaged family members or caregivers.”

After the primary assessment has eliminated life-threatening problems for these patients, do a head-to-toe comprehensive nursing assessment to uncover problems such as bruising hidden by clothing, says Jensen. “Always involve the patient in the assessment to the best of their ability,” says Jensen. “Sometimes no one directs questions to them just because they are elderly. They certainly deserve the respect and dignity of being allowed to answer on their own behalf.”

Obtain a complete, current medication list by asking the patient for this information, examining medication bottles, contacting the pharmacy where the patient fills prescriptions, and obtaining the most recent hospital medical records, advises Jensen. “There are numerous sources that we need in order to put all those pieces together,” she says.

### **Ask about blood thinners**

If elderly patients report a fall injury, ask them if they are on any kind of blood thinner, even a daily aspirin, and determine the dosage they are taking, says **Sarah L. Anderson**, PhD, RN, CEN, SANE-A, clinical manager for the ED at University of Virginia Health System in Charlottesville. “Some patients come in with typed lists of exactly what they take. But others come in with a bag filled with all of the medications they are taking, sometimes more than one bottle of warfarin of different strengths. So we don’t know if they are taking multiple dosages,” says Anderson. “It may take a lot of investigative work to figure out what they are actually taking.”

A patient may come in with a headache and report a fall injury that occurred several days ago, notes Anderson. “If the patient is on any blood thinner, symptoms of an injury might not show up for one or two weeks,” she says.

One patient came to University of Virginia’s ED with a nosebleed that stopped when nurses applied gentle pressure for a short time, but returned several hours later with it bleeding profusely. “The patient was taking their warfarin exactly as prescribed. The INR levels had been checked earlier in the week, and they were fine,” Anderson recalls. “But they were way too high at that time [when the patient returned.]”

Most patients will be instructed to hold their evening dose of warfarin and then follow up with their physician in the morning to see if they need to adjust the dosage, says Anderson. “If the levels are dangerously high, you need to give medication to reverse it,” she adds. At

discharge, patients are given a form that states the medications the patient was taking before the ED visit, with a separate list of the changes made, says Anderson.

Remember that patients don’t have to be elderly or have serious medical problems to be taking blood thinners, says Anderson. “There are so many reasons why patients might be on blood thinners,” she says. “Anytime trauma is involved, it is one of the differential things to think about.”

### **Reference**

1. Budnitz DS, Shehab N, Kegler SR, et al. Medication use leading to emergency department visits for adverse drug events in older adults. *Ann Intern Med* 2007; 147:755-765. ■

## **White ED patients more likely to get narcotics**

**W**hite ED patients are more likely to receive narcotics such as oxycodone and morphine than patients of other races or ethnicities, says a new study.<sup>1</sup>

Researchers examined 156,729 pain-related ED visits in 500 hospitals over 13 years and found differences in urban and rural hospitals, in every region of the United States, and for all types of pain. Opioid narcotics were given for severe pain in 31% of whites, 28% of Asians, 24% of Hispanics, and 23% of blacks.

Signs of painkiller abuse may be overlooked in white patients, or minority patients may be less likely to keep complaining about their pain, says study co-author **Mark J. Pletcher**, MD, MPH, an assistant adjunct professor in the Department of Medicine at the University of California, San Francisco.

As an ED nurse, you need to put aside your thoughts and feelings about the patient’s race, creed, national

### **EXECUTIVE SUMMARY**

White ED patients are more likely to receive narcotics than other patients in both rural and urban hospitals and in all U.S. regions, according to a new study. To ensure consistent management of pain:

- Give patients with acute pain a high acuity level at triage.
- Implement nonpharmacological interventions immediately.
- Have assistive personnel ask patients about pain.

origin, sexual orientation, socioeconomic class, or ability to pay, and provide the highest quality of care to everyone equally, says **Christian N. Burchill**, PhD, RN, an ED nurse at Hospital of the University of Pennsylvania in Philadelphia. “That is part of our professional code of conduct,” Burchill says. “Pain treatment is a totally subjective experience, and we need to advocate for the best treatment possible.”

Here are ways to ensure all ED patients receive consistent pain management:

- **Assign the patient a high acuity level.**

“Patients are flagged in our tracking system indicating acute pain and are triaged as an Emergency Severity Index Level 2,” says **Ann Heywood**, RN, BSN, CEN, SANE, clinical practice coordinator for the Emergency Care Center at Champlain Valley Physicians Hospital Medical Center in Plattsburgh, NY.

The patient’s chart is brought to the ED physician for early pharmacological support, and nurses implement nonpharmacological measures immediately, such as ice, elevation, or dimmed lights, says Heywood.

- **Ask the right questions.**

Most patients that present to any ED have some complaint of pain, says Burchill. “Understanding the where, when, and how long is key to making the right triage decision and starting the pain management process.”

Ask patients these questions, advises Burchill: Have you had this pain before? How was it treated? How effective was that treatment at keeping the pain manageable? “That gives you a clue as to how to start the process and some sense of their tolerance for analgesics,” says Burchill.

- **Make clear statements about a patient’s pain.**

“Ensuring that my physician colleague understands who has the worst pain or appears the most uncomfortable is key to getting treatment started,” says Burchill. “I’ve found that many nurses *ask* for pain medication for their patient. I believe that we need to make clear statements about patients’ pain and not take a lower position in the relationship.”

Instead of saying, “Can I give this patient some pain medication?” Burchill recommends saying, “This patient is having severe pain. We need to treat it before we can proceed with our exam.”

- **Make pain part of every interaction.**

“If you are running from room to room, keep pain

assessment in the back of your mind and ask every time you see a patient or their family,” says Burchill. “Use family members as your partners in pain control, and document that interaction.” For example, document, “Discussed pain control with Mr. Smith’s family, who reports that he was treated with morphine the last time with good relief. Encouraged them to report how well the pain control plan is working.”

- **Utilize support people.**

“Encourage your assistive personnel to be involved in the pain control process,” says Burchill. “They can ask a patient about the effectiveness of interventions, and give you a sense of who is in pain and who is relatively comfortable.”

Inform these individuals which patients are getting what medications and when so they can check on how well the treatment plan is working, advises Burchill. “If you’re using a 0-10 pain scale, the assistive personnel can certainly ask the patient to give a number, document that, and share it with you,” he says.

## Reference

1. Pletcher MJ, Kertesz SG, Kohn MA, et al. Trends in opioid prescribing by race/ethnicity for patients seeking care in U.S. emergency departments. *JAMA* 2008; 299:70-78. ■

## Know risks of restraint with violent patients

**A**fter an intoxicated and combative man broke loose from restraints, he struck two ED nurses and threw a computer at another nurse at a New York hospital in December 2007. Could this happen at your ED?

“This incident should be used as a means to sharpen our own practices by learning and gaining knowledge from their unfortunate experience,” says **Mary J. Ross**, RN, BSN, CEN, charge nurse in the Emergency Medicine Trauma Center at Methodist Hospital in Indianapolis.

At Methodist, ED nurses are required to assess and document the status of all patients in restraints every 15 minutes, says Ross. “We have four locked rooms, along

### COMING IN FUTURE MONTHS

■ Stop medication errors by acting on near-misses

■ Speed treatment of acute myocardial infarction

■ Use preprinted order sheets to revamp asthma care

■ Give trauma patients immediate pain relief at triage

## EXECUTIVE SUMMARY

A patient recently broke loose from restraints and assaulted emergency nurses at a New York hospital. The incident highlights the need for nurses to examine restraint practices. To ensure safety of yourself and your patient:

- Document the status of restrained patients every 15 minutes.
- Continually observe patients, in person or with monitor.
- Give medications to de-escalate unsafe behaviors.

with two more equipped with cameras for close monitoring,” she says. Suicidal patients and individuals who are being involuntarily detained for a medical evaluation are placed in these rooms, with security sitting outside and monitoring continuously, she says.

“Whenever possible, we use chemical restraints, although oftentimes both are needed,” says Ross. **(For more information on this topic, see “Focus is on education for restraint and seclusion,” *ED Nursing*, August 2007, p. 118.)**

When an intoxicated patient is put into restraints at Northwest Community Hospital in Arlington Heights, IL, ED nurses give ziprasidone or haloperidol intramuscularly, says **Carol A. Ziolo**, RN, LCPC, clinical educator. “The least restrictive alternatives should be used, and medications definitely should be given when a patient is put in restraints,” she says.

At Northwest, restrained patients are continually observed in person or on a monitor with audio features — a practice that could have prevented the New York incident, says Ziolo. “The person observing the patient would have seen that the patient was getting out of the restraints, and an intervention could have occurred before he was able to hurt anyone,” she says.

### ***Weigh risks and danger***

There are risks to the patient from physical restraints, including positional asphyxia and cardiac arrest, says Ziolo. “Restraints are only used when the patient’s behavior is more dangerous than the use of restraints,” she says. “Intoxicated patients can be extremely unpredictable.”

For this reason, medications are used if possible before resorting to physical restraints, says Ziolo. “We also give medications after the patient is put in restraints, to de-escalate unsafe behaviors so restraints can hopefully be removed as soon as possible,” she says.

**Susan Allard**, RN, CMC, now an ED case manager at University of California — Los Angeles Medical Center, was caring for a patient in her previous ED when he suddenly began thrashing, yelling, and striking anyone who came near him.

“He had all the signs of substance abuse and was a good-sized man who we were having difficulty keeping on the stretcher,” she says.

ED nurses isolated the man in a private room, dimmed the lights, and had everyone speak only in slow soft tones while security stayed close by, says Allard. “He focused in on one nurse in particular and appeared to be listening to her,” she says. “We all stopped talking and backed off while she just kept on assuring him that he was safe, where he was, and who we were.”

The nurse was able to give him a mild sedative, and when the medication took effect, the man was markedly calmer and cooperative, so restraints weren’t needed, says Allard. “This nurse stayed with him through his

## **Online bonus book for *ED Nursing* subscribers**

Readers of *ED Nursing* who recently have subscribed or renewed their previous subscriptions have a free gift waiting — *The 2008 Healthcare Salary Survey & Career Guide*.

The report examines salary trends and other compensation in the hospital, outpatient, and home health industries.

For access to your free 2008 online bonus report, visit [www.ahcmedia.com](http://www.ahcmedia.com). ■

## **CNE 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.

After completing this semester’s activity with the **June** 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. ■

assessment and work-up and was able to talk him down each time that his agitation increased,” she says. “It was ultimately determined that he was having a psychotic episode and adverse reactions to new medications that he was taking. The entire staff was delighted at not having to use restraints.” ■

## 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.
9. Which is recommended to improve survival rates of critically ill trauma patients?
    - A. Less toleration for hypotension.
    - B. More dependence on crystalloids.
    - C. Always waiting for a computerized tomography scan to be done in the ED.
    - D. Minimizing the amount of universal products that are utilized.
  10. Which may be an indication of poor perfusion and risk for shock in trauma patients, according to Laura Aagesen, RN, MBA?
    - A. Altered mental status.
    - B. Restlessness.
    - C. Anxiety or confusion.
    - D. Any of the above
  11. Which is true regarding adverse effects from ED pediatric sedation, according to a study published in *Pediatrics*?
    - A. More than half of children reported vomiting.
    - B. Nearly half of children reported at least one adverse effect.
    - C. Adverse effects always will occur within the first hour of recovery.
    - D. Symptoms usually were severe and prolonged.
  12. Which is recommended for elderly patients with an adverse drug event caused by warfarin, according to Sarah L. Anderson, PhD, RN, CEN, SANE-A?
    - A. Take blood levels only if patients are bleeding.
    - B. Suspect bleeding from trauma only within 48 hours of the injury.
    - C. If patients are taking aspirin and not warfarin, bleeding is not a concern.
    - D. If blood levels are high, stop the medication or administer reversal agents.

**Answers: 9. D; 10. D; 11. B; 12. D.**

### EDITORIAL ADVISORY BOARD

**Consulting Editor: Darlene Bradley, RN, PhD, CNS, CCRN, CEN, MICN, FAEN, Director Emergency/Trauma Services, University of California Irvine Medical Center**  
Orange

**James J. Augustine, MD, FACEP**  
Director of Clinical Operations  
Emergency Medicine  
Physicians  
Canton, OH  
Medical Director, Atlanta Fire  
Department and  
Hartsfield-Jackson Atlanta  
International Airport

**Kay Ball,**  
RN, MSA, CNOR, FAAN  
Perioperative Consultant/  
Educator  
K&D Medical  
Lewis Center, OH

**Sue Dill, RN, MSN, JD**  
Director  
Hospital Risk Management  
OHIC Insurance Co.  
Columbus, OH

**Linda Kosnik, RN, MSN, APN**  
Vice President of Clinical  
Services  
Vistaar Healthcare Solutions  
Parsippany, NJ

**Darlene Matsuoka, RN, BSN, CEN, CCRN**  
Clinical Nurse Educator  
Emergency Department  
Harborview Medical Center  
Seattle

**Trudy Meehan, RN, CHE**  
Principal  
Meehan Consultants

**Reneé Semonin Holleran**  
RN, PhD, CEN, CCRN, CFRN  
Nurse Manager, Adult  
Transport Service  
Intermountain Health Care  
LifeFlight  
Salt Lake City

**Barbara Weintraub**  
RN, MPH, MSN  
Manager  
Pediatric Emergency Services  
Northwest Community Hospital  
Arlington Heights, IL

#### To reproduce any part of this newsletter for promotional purposes, please contact:

*Stephen Vance*

**Phone:** (800) 688-2421, ext. 5511

**Fax:** (800) 284-3291

**Email:** stephen.vance@ahcmedia.com

**Address:** AHC Media LLC  
3525 Piedmont Road, Bldg. 6, Ste. 400  
Atlanta, GA 30305 USA

#### To reproduce any part of AHC newsletters for educational purposes, please contact:

*The Copyright Clearance Center for permission*

**Email:** info@copyright.com

**Website:** www.copyright.com

**Phone:** (978) 750-8400

**Fax:** (978) 646-8600

**Address:** Copyright Clearance Center  
222 Rosewood Drive  
Danvers, MA 01923 USA