

# ED NURSING<sup>®</sup>

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Renée Semonin Holleran (Consulting Editor), Staci Kusterbeck (Author), Glen Harris (Editorial Group Head), and Joy Daughtery Dickinson (Senior Managing Editor) report no consultant, stockholder, speaker's bureau, research, or other financial relationships with companies related to this field of study.

**MARCH 2006**  
VOL. 9, NO. 5

## ED nurses saved \$100,000 and cut drug errors to almost zero

*Mistakes are 'practically eliminated' with cutting-edge interventions*

*(Editor's note: This is the first of a two-part series on medication errors in the ED. This month, we give proven strategies to avoid drug errors. Next month, we'll report on what EDs are doing to prevent adverse outcomes by reconciling a patient's medications.)*

Stopping a nurse from giving ampicillin-sulbactam to a patient with a penicillin allergy. Reducing tobramycin dosing for an elderly patient with an elevated serum creatinine level. Correcting an intravenous dose of epinephrine that was 10 times the recommended dose.

These are all medication errors *almost* made by ED nurses at University of Rochester (NY) Medical Center. They were caught by a pharmacist before they occurred. "All of these could have resulted in potential harm or even death," says **Sandra Schneider**, MD, ED physician at the hospital and professor of emergency medicine at University of Rochester.

By working with pharmacists to substitute safer and lower-cost medications, the ED saves about \$100,000 a year, she reports.

ED nurses are at higher risk than other units for making errors, warns Schneider. "Patients come and go rapidly, and nurses are often administering medication with verbal orders to patients they have not assessed," Schneider says. "The ED has also become the safety net for hospital overcapacity." (**Note: The Joint Commission on**

## EXECUTIVE SUMMARY

ED nurses are using double-check processes, Internet discussion boards, and "no-talking" zones to cut medication mistakes. By working with pharmacists to substitute safer and lower cost drugs, one ED saved \$100,000 a year.

- Separate inpatients from outpatients to reduce confusion over medications.
- Create a web site for nurses to report medication safety concerns.
- Use actual medication errors as examples during inservices.

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Call (800) 688-2421 for details.**

**Accreditation of Healthcare Organizations has issued a *Sentinel Event Alert* on using medication reconciliation to prevent errors. To access the *Alert*, go to [www.jcaho.org](http://www.jcaho.org). Under "Top Spots," click on "Sentinel Events" and then "Sentinel Event Alert." The issue is dated Jan. 25, 2006.)**

In addition, unlike nurses in other hospital units, emergency nurses usually don't have much involvement with pharmacists — and this lack of involvement can be very dangerous for patients, says Schneider. "In most EDs, there is no check system, and there is no record kept of near misses," she says. "It is as if the ED is simply out of sight when it comes to medication error reduction."

Inpatient medication orders are written by physicians, checked by nurses, and dispensed by the pharmacy where they are checked again, then checked one last time by the nurse, Schneider explains. "This series of checks helps catch potential errors," she says. "In

the ED, the physician writes or gives a verbal order for the medication and it is dispensed and given by the nurse. This eliminates a check — or even two checks — from the system."

At University of Rochester, ED nurses work with a full-time ED pharmacist who double-checks medications before they are given, recommends medication alternatives, and mixes drips. For example, the pharmacist may alert nurses that a patient had an allergic reaction to penicillin in the past and so should be prescribed a cephalosporin antibiotic instead, says Schneider.

"During the times an emergency pharmacist is on duty, we have shown that errors are practically eliminated," she reports.

The ED's pharmacist program has decreased preventable adverse events, helped to decrease documentation errors, and reduced time to medication delivery during trauma resuscitations, says a recent study.<sup>1</sup>

During trauma cases and cardiac arrests, having a pharmacist involved with medications is a "huge benefit" for ED nurses, says **Lisa Brophy**, RN, coordinator for emergency nursing. "When making life or death decisions, there may not be time to realize that the medication may have been ordered incorrectly," she says. "Also, there may be drugs that we are not familiar with, and the pharmacist can educate the nurses on best practices specific to that drug."

The ED pharmacist also helps nurses to identify what substances patients have ingested, adds Brophy. When a 5-year-old boy was brought to the ED by his baby-sitter after ingesting several pills from an unlabeled bottle, the pharmacist was able to immediately identify them as amitriptyline, she says. "We were able to treat faster knowing what the drug was so quickly," Brophy says.

At OSF St. Joseph Medical Center in Bloomington, IL, ED nurses will be implementing a process in which all medication orders are faxed to the pharmacy for review, reports **Staci Sutton**, RN, BSN, TNS, emergency services manager.

Here are other ways ED nurses are reducing errors:

- **Separating inpatients from outpatients.**

Unlike the ED, inpatient floors have separate units for cancer patients, pediatric patients, and psychiatric patients, says Schneider. "The medications are common to many patients, allowing nurses to become familiar with dosages and side effects," she says. "In the ED, inpatients of all types and ages are thrown together with acute emergency patients." For example, sustained release medications are used often for inpatients, but they very rarely are given in the ED, and

*Continued on page 52*

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**ED Nursing®** (ISSN# 1096-4304) is published monthly by Thomson American Health Consultants, 3525 Piedmont Road, N.E., Six Piedmont Center, Suite 400, Atlanta, GA 30305. Telephone: (404) 262-7436. Application to mail at periodicals postage rates is pending at Atlanta, GA. POSTMASTER: Send address changes to ED Nursing®, P.O. Box 740059, Atlanta, GA 30374-9815.

**ED Nursing®** is approved for 12 nursing contact hours. This activity is approved by the American Association of Critical-Care Nurses (AACN) for 12 nursing contact hours annually. Provider #10852. This activity is authorized for nursing contact hours for 24 months following the date of publication. Thomson American Health Consultants is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation. Provider approved by the California Board of Registered Nursing, Provider Number CEP 10864, for approximately 12 contact hours.

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## ED Service Excellence Improvement Report

Use this form to identify *opportunities for improvement with the Emergency Department*.. This form is **not** to be used for **issues that need immediate attention or Incident Reports (use the Incident Report form)**

**Situation:**

Patient Name and Room Number (if applicable): \_\_\_\_\_  
Date and Time of Occurrence: \_\_\_\_\_  
Staff Involved (if applicable): \_\_\_\_\_

**Background:**

Improvement of the checked box below would have improved patient care, patient safety, patient satisfaction, staff satisfaction or service excellence.

- Equipment/Supplies (stocking, availability, maintenance)
- Medication Issues/Suggestions
- Delays
  - Lab
  - X-ray
  - Consultation Response
  - Admission
  - Waiting Time for ED bed
  - Waiting Time for Admission Bed
  - Discharge
- ED Staff Attitude
- Communication
- Staffing Shortage
- Cleanliness
- Other

**Assessment:**

Why do you feel this could be an issue or has happened? What have you done about it?

\_\_\_\_\_

**Recommendation:**

What can be done to prevent this from occurring or happening again?

\_\_\_\_\_

\_\_\_\_\_

I wish we had \_\_\_\_\_

Completed by: \_\_\_\_\_

Date Completed: \_\_\_\_\_

Reviewed by: \_\_\_\_\_

Date Follow-Up With Employee: \_\_\_\_\_

Place in manager's box. Thank you for your input.

*"Serving with the greatest care and love"*

long-acting insulins are used for inpatients instead of the short-acting insulins often used in the ED, says Schneider.

For this reason, admitted patients being held in the ED should be grouped together when possible, says Brophy. "Once the patient is admitted, we have an area that we can move inpatients who are awaiting their bed," she explains.

• **Having automated medication dispensers provide a prompt when a dose is selected outside the range of safety.**

To stop errors, devise systems that "check the human process," such as placing limits on the dosages of medications that can be removed from medication dispensers, says Schneider.

## SOURCES/RESOURCE

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***The Handbook on Storing and Securing Medications*** provides safe practices, tips, and case studies to help plan, implement, and improve medication storage and security. It includes information and checklists on accreditation requirements. The cost is \$75 plus \$10.95 shipping charge. To order, call (877) 223-6866 or order on-line at [www.jcrinc.com](http://www.jcrinc.com). Click on "Publications" and then "Books." Click on "Patient Safety" and then "The Handbook on Storing and Securing Medications."

If a nurse selects 5 mg digoxin, the dosage is questioned, Schneider reports. "It can still be overridden, but it does give a prompt," she says. "This is the next best thing to having a pharmacist there checking the dose."

When there is more than one form of the medication available, such as a sustained release and immediate release, have the dispenser ask the nurse, "Which one do you want?" Schneider recommends.

"Double-checks" for high-risk medications taken from the automated medication dispenser at Sentara Virginia Beach General Hospital require two nurses to put in their identification numbers and passwords, says **Kathleen Carlson**, RN, MSN, CEN, an ED staff nurse. "This is also required for narcotics if the nurse is not giving the full dose," she says. "It requires a second sign-on to waste the drug, right then and there."

High-risk drugs that require the double-check process are insulin, heparin, adrenergic drip, propofol, chemotherapy, benzodiazepine drips, calcium given intravenously, warfarin sodium, digoxin intravenous, dopamine, dobutamine, sodium nitroprusside, milrinone, 11b\111a inhibitor, magnesium sulfate, neuromuscular blocks, potassium chloride, phosphate, sodium chloride >3%, and thrombolytics.

• **Asking ED nurses for suggestions.**

At OSF St. Joseph, a form was developed for nurses to report safety concerns and ideas for avoiding medication errors. After checking a box to identify the specific problem, the nurse fills out a section asking, "What can be done to prevent this from happening again?" (See the ED's Service Excellence Improvement Form on p. 51.)

"I have received these reports for medication errors involving miscommunication between physicians and nurses, as well as look-alike medications stocked in close proximity," says Sutton, adding that she makes sure to follow up directly with nurses within one week of receiving the report.

She keeps a list of mistakes made in the ED to review at monthly staff meetings. "At times, nurses will report their own errors and discuss them openly," Sutton says.

In addition, a private ED web site allows nurses to use discussion boards to find solutions to system problems involving medications. "This plays out like a 'chat room,'" says Sutton.

• **Simulating actual errors.**

At OSF St. Joseph, ED nurses attend inservices where actual medication errors are simulated in real time to see actual outcomes. For example, when nurses hung heparin on a mannequin, it was found that the intravenous pump was programmed for 700 ml per hour, instead of 700 units per hour.

"Simulation assists in the rapid detection of possible

mistakes,” Sutton says. “It also provides us with real information on administration of medications, since the manikin is programmed to respond accordingly to each medication.”

• **Creating a “no-talking” zone.**

Signs posted around the OSF St. Joseph’s medication preparation area remind everyone that no talking is allowed, says Sutton. “Physicians have also been educated not to interrupt staff in the dispensing area to prevent errors,” she says.

At Sentara’s ED, a large mat was placed in front of the automated medication dispenser with a big stop sign saying “Quiet Zone,” to keep nurses from being distracted while obtaining medications, reports Carlson. “You cannot speak to the person on the mat.”

## Reference

1. Fairbanks RJ, Hays DP, Webster DF, et al. Clinical pharmacy services in an emergency department. *Am J Health Syst Pharm* 2004; 61:934-937. ■

# Cut door-to-cath time dramatically in your ED

*The steps you take can save a patient’s life*

Twenty minutes after a man having a heart attack came through the door of Mercy General Hospital’s ED in Sacramento, CA, a balloon was inflated in the hospital’s cardiac catheterization lab. The man did well and was discharged home two days later, reports **Becky Roberge**, RN, the ED’s clinical nurse educator.

If ED nurses hadn’t acted quickly, the outcome could have been very different, including complications such as arrhythmias, heart failure, permanent heart damage, and possibly death, she says.

## EXECUTIVE SUMMARY

To cut door-to-catheterization lab times, provide electrocardiograms (ECGs) in triage and make calls simultaneously to the cardiologist and cardiac catheterization lab. With these changes, one ED cut door-to-ECG times from 11 to 2.8 minutes, and another cut time to percutaneous coronary intervention from more than 90 minutes to 60 minutes.

- Give awards to nurses with the fastest ECG times.
- Purchase a dedicated ECG machine for triage.
- Share success stories with ED nurses.

The key to success in this case was the ED nurse’s immediate response to the emergency medical services notification that they suspected an acute myocardial infarction (AMI), says Roberge. “The longer it takes to get reperfusion to the cardiac muscle, the more chance there is for cardiac muscle damage,” she says.

ED nurses took the following steps immediately:

- The ED charge nurse notified the cardiac catheterization lab and paged the cardiologist.
- Nurses prepared a critical care treatment area.
- When the patient arrived, nurses immediately did an electrocardiogram (ECG), started an intravenous (IV) line, and drew the necessary labs. At the exact same time, the cardiologist met the patient in the ED. “The patient was transported to the cath lab five minutes after arriving,” says Roberge.

All chest pain patients need to be treated as an AMI until proven otherwise, stresses Roberge. “Having a standard process in place for rapid assessment of these patients is key,” she says. “This is a team effort, which requires collaboration from all involved.”

The sooner a patient receives percutaneous coronary intervention (PCI) and blood flow is restored to the heart muscle, the less chance of permanent damage, says **Marli Bennewitz**, RN, chest pain center/cardiac wellness coordinator. “Time is muscle,” she says. “Patients who do not have timely interventions are at a greater risk of developing heart failure in the future.”

Here are steps taken by EDs to reduce door-to-cath lab time:

• **EKGs are done at triage or before.**

As an ED nurse, you must expedite the initial assessment of all chest pain patients to determine if they are having an AMI, says Roberge. “This means that the ECG is acquired and presented to the physician within 10 minutes,” she says.

Through monthly audits of charts, nurses discovered that a lot of door-to-ECG delays were due to not actually having a physical space to do the ECGs, especially during high census times, says **Page West**, RN, CCRN, MHA, director of Mercy General’s ED.

The ED purchased a dedicated ECG machine for triage and a reclining chair. “The month before we implemented ECGs in triage, our average door-to-ECG times for our chest pain patients was 11 minutes,” she says. “Six months later, it had decreased to 2.8 minutes.”

At St. Jude Medical Center in Fullerton, CA, high-quality ECGs are faxed to the ED before the patient even arrives, resulting in door-to-balloon times of under 60 minutes for all AMI patients, reports Bennewitz. “We have been able to reduce the time to PCI from the recommended time of 90-120 minutes to 60 minutes or below,” she says.

## SOURCES

For more information on reducing door-to-cath lab times in the ED, contact:

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When the ED nurse receives a report from the field that the paramedics have a diagnostic ECG of an AMI, two things are done: The cath lab is immediately notified, and the ED physician calls in the cardiologist, says Bennewitz. "All this occurs before the patient has arrived in the ED," she says. "At night when the cath lab is closed, the nurse calls in the cath lab staff as soon as they are notified of a diagnostic ECG."

At Mercy General, ED nurses have "developed trust with the EMS personnel," says Roberge. "They know that when they bring a suspected AMI patient to our ED, we immediately act on their field assessment."

### • **Cardiologists and cath lab are notified simultaneously.**

Once you know the patient is having an AMI, valuable minutes can be saved by paging the on-call cardiologist and cath lab at the same time, says Roberge. Also, initial treatment is begun immediately, such as starting the IV, drawing labs, and giving aspirin, she says. Then, the nurse prepares the patient for transport to the cath lab.

By alerting the cath lab in advance, nonemergent cases can be held, Roberge explains. "This way, we have a cath lab suite available as soon as the cardiologist has made the decision to take the patient," she says.

### • **Clinical nurse educators share statistics with ED nurses.**

A bulletin board posts monthly statistics so ED nurses can see the difference their actions make, says Roberge.

"We also created an *AMI Newsletter* that is distributed to both the cath lab and ED staff," she says.

The newsletter lists current statistics, upcoming events, patient success stories, and a column with staff questions answered by Roberge and the hospital's manager of cardiovascular research.

### • **An "ECG award" is given.**

The award recognizes Mercy General's ED nurses on a monthly basis for the fastest door-to-ECG times, says West. "We recently invited all the recipients to a luncheon to thank them for their dedication and great work. We have also had cake celebrations for the entire ED for reduction in door-to-ECG times and recognized EMS personnel when their actions have enabled us to produce rapid door-to-cath lab times," she says. ■



## What you might be doing wrong for pediatric trauma

If a major pediatric trauma came through the doors of your ED right now, would you get sidetracked by the obvious injuries without paying close attention to trends in vital signs? Would you lack specific crash cart equipment because no one replaced or these items during slow times? Would you forget to check a bedside glucose level or fail to give pain medication?

These are all common problems when a child involved in a major trauma, especially when an ED doesn't see many of these cases, says **Laura L. Kuensting**, MSN(R), RN, CPNP, pediatric nurse practitioner and clinical nurse specialist for the ED

## EXECUTIVE SUMMARY

When a child is brought to an ED after a major trauma, mistakes include overlooking basic assessment, lacking specific equipment, and failing to keep the patient warm.

- Focus on the patient's airway, breathing, and circulation.
- Check equipment levels every day.
- Never ignore pediatric tachycardia.

at St. John's Mercy Medical Center in St. Louis.

To improve care of pediatric trauma patients, do the following:

- **Remember the basics.**

Remember the "ABCs" of airway, breathing, and circulation for every patient, while maintaining cervical-spine immobilization, says **Lanie St. Claire**, RN, ED nurse and pre-hospital liaison at Children's Medical Center Dallas.

"Although traumatic injuries are sometimes more obvious, nothing is more important than an airway," says St. Claire.

- **Keep the child warm.**

Hypothermia causes further decompensation in a patient already using compensatory mechanisms to normalize, which can deplete the pediatric patient's glucose stores very quickly, warns St. Claire.

Immediately provide a source of warmth using a warming mattress, warming lights, warm blankets, or warm intravenous fluids; otherwise the child can become cold-stressed, says Kuensting. "If you use chemical warming pads, remember that these lay under the child, not on top of the child," she adds. "Chemical warming mattresses are heavy and may impede the child's ability to ventilate. Also, it will obstruct the nurse's view of chest rise and fall."

- **Check equipment every day.**

The only way to be sure items will be there when you need them is to check equipment levels daily, says Kuensting. "You must know where the equipment is and have all the appropriate sizes," she says.

She recommends having all sizes of airway equipment, including oxygen masks/nasal cannulas, oral airways, ambu masks/bags, endotracheal tubes, and laryngoscope blades, organized in a drawer, on the wall, or in a cart.

"They should be arranged so that it is easy to see when an item is missing," says Kuensting. "Color coding the background the equipment is up against will help in identifying an appropriate size for the weight of the victim." (See list of pediatric trauma equipment your ED should have, this page.)

- **Take a specific role.**

Kuensting gives the example of one nurse clearly stating, "I am the procedure nurse," a second nurse stating, "I am the medication nurse," another stating, "I am the documentation nurse," and a fourth nurse assisting whoever needs help at the time. "The point is that everyone is assigned a job," she says.

- **Create a pediatric code/trauma form.**

The goal is to prompt nurses to document important items that are often forgotten, such as an estimated weight, a documented bedside glucose, the heating source used, pediatric trauma score and/or pediatric

## Do you have these supplies for pediatric trauma?

Here is a list of supplies for pediatric trauma immediately available to ED nurses at St. John's Mercy Medical Center in St. Louis:

- epinephrine, atropine, glucose, midazolam, vecuronium, lorazepam, adenosine, bicarbonate, dopamine, and morphine;
- all sizes of venous catheters;
- at least two intraosseous needles;
- all sizes of airway adjuncts;
- normal saline, three-way stopcocks, and intravenous tubing. ■

Glasgow Coma Score (GCS), vital signs, medications, and the names of the caregivers at the bedside, says Kuensting.

- **Take an Emergency Nursing Pediatric Course (ENPC).**

"This is an internationally recognized 'gold standard' for emergency departments and their care of children," says **Teri Howick**, RN, an ENPC instructor and nurse educator for the ED at McKay Dee Hospital in Ogden, UT.

She also recommends taking the American Heart Association's Pediatric Advanced Life Support (PALS) class. "This is a one- or two-day course in teaching general resuscitation of pediatric patients," says Howick.

Although being certified in PALS and ENPC won't give you the instant ability to handle all pediatric trauma that hits the door, it will educate you in the basics, says St. Claire. "Each time the nurse recertifies, they will more thoroughly understand the system's approach."

### Follow up after mistakes

- **Don't let the same mistakes occur twice.**

What would you do if an inappropriate procedure was performed during a resuscitation, such as inserting a central line when you already have intravenous access with two large bore catheters, failure to maintain inline immobilization during intubation, or lack of end-tidal carbon dioxide monitoring while bagging a severe head injured child? What would you do if an appropriately sized cervical collar or endotracheal tube was missing?

In many EDs, no follow-up is done after these mistakes occur, says Cook. "We as nurses need to take initiative to prevent recurrence in the future," she says. "This may be [meeting] with the physician

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**To find an Emergency Nursing Pediatrics Course near you**, go to [www.ena.org](http://www.ena.org). Under the heading "CATN II/ENPC/TNCC," click on "ENPC" and then "U.S. courses."

team leader or ED performance improvement council. Or it may require review by the trauma performance improvement committee to investigate and identify solutions."

• **Know differences in signs of adult and pediatric distress.**

"Remember, there is no benign pediatric tachycardia," says St. Claire. This is a warning to the bedside nurse to reassess the ABCs and to reevaluate your pediatric GCS, she says. "If you ignore tachycardia and wait for a falling blood pressure, you have waited too long," St. Claire says.

• **Take an active role when your patient is transported.**

If the child requires a higher level of care after stabilization, make sure that transport occurs as quickly and safely as possible, says St. Claire. "Become acquainted with your hospital's policies on transporting patients," she advises. "Ask yourself things like, 'Should an ambulance service that only offers basic life support be transporting my pediatric trauma patient?'" ■

## When disaster hits, ED nurses are at high risk

*You're on the front lines, so protect yourself*

**L**eaking chemicals. Fuel in stagnant floodwaters. Contamination from human waste. Mosquito-borne illnesses from standing water. Toxic gases and particulates from fires.

These are some of the hazardous substances faced by ED nurses during Hurricane Katrina, which underscores the need to be vigilant about using personal protective equipment during disasters, says **Bettina Stopford**, RN, FAEN, PMP, director of public health and medical emergency preparedness for homeland security support division of McLean, VA-based Science Applications International Corp. and former nursing operations manager for the ED at Denver Health Medical Center.

"Hazards to an emergency nurse can be unpredictable, depending on the type and magnitude of a disaster," she points out. "Awareness, surveillance, and consistent, stringent adherence to infection control principles will save your life."

As an ED nurse, you are at higher risk for being exposed to hazardous substances and infectious diseases during disasters, warns **Sharon S. Cohen**, RN, MSN, CEN, CCRN, clinical nurse specialist for North Broward Hospital District in Fort Lauderdale, FL. "Risks include downed power lines, falling debris, and diseases such as tuberculosis, dysentery, viral infections, and skin infections," she says.

To protect yourself at triage, take the following steps during a disaster:

• **Have patients wear a mask.**

Ask patient coming into the ED with coughing, sneezing, or respiratory type of signs and symptoms to put on a protective mask. "Although it may not protect others in the ED areas 100%, it is better than having

### EXECUTIVE SUMMARY

ED nurses are at high risk for exposure to contaminated and hazardous substances and infectious diseases.

- Ask anyone coughing or sneezing to wear a mask.
- Always use personal protective equipment when treating patients during a disaster.
- Have a high index of suspicion for flu signs and symptoms outside of flu season and for rapidly

## SOURCES

For more information on protection from hazardous substances, contact:

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them wear nothing at all," Cohen says.

- **Know when an N-95 mask is not enough.**

ED nurses are accustomed to using universal protection to protect against bloodborne pathogens, but nurses often don't protect themselves adequately from infectious disease transmission, says **Mitch Saruwatari**, MPH, national threat assessment manager at Kaiser Permanente in Pasadena, CA.

"As we know from the avian flu and SARS [severe acute respiratory syndrome], a regular N-95 might not be enough. If aerosolized, a patient exposure may require advanced levels of protection," he says.

You also must consider airborne and droplet precautions, says Stopford. "While a properly fitted N-95 style mask should be appropriate for most diseases, there are threats of weaponized diseases which will not be filtered by an N-95 mask," she says.

If it is a biological agent, respiratory protection such as a surgical mask, powered air-purifying respirator, or high-efficiency particulate air-filtered (HEPA-filtered) mask may need to be used, says Cohen. "If splash or contamination by liquid is possible, then splash protection such as nitrile gloves, Tyvek chemical protective suit and eye protection, and chemical booties is needed," she says.

N-95 masks are only for respiratory protection and will not protect against splashes into the eyes or other skin areas, notes Cohen. "These are meant to be worn

in normal oxygen environments, not low oxygen environments such as a fire," she says.

Also, the mask must be worn correctly to offer maximum benefit, Cohen adds. "Over time as particulate builds up, the mask will be more difficult to breathe through and possibly offer less filtering potential."

- **Have a high index of suspicion.**

Add epidemiological screening questions to your routine assessments, says Stopford. "Be aware of emerging threats, pay attention to public health alerts, and become familiar with patterns of suspicious diseases," she says. These suspicious diseases include flu signs and symptoms outside of flu season and rapidly progressing respiratory symptoms, especially in patients not in high-risk categories, says Stopford.

Despite your best efforts, the fact remains that as an ED nurse, you won't always know when a patient with an unusual illness or chemical exposure walks in the door, notes Saruwatari. "It's important to develop appropriate screening protocols and work closely with local public health and response agencies to get early warning of potential dangers entering your facility," he says. ■

## Nurses cut stroke care delays, assist with echoes

*Having nurses do injections saves valuable minutes*

When a 40-year-old woman came to the University of California-Irvine's ED for transient ischemic attack of unknown origin, the echocardiogram was done right in the ED — and showed a right-to-left shunt at the atrial level.

She was referred to cardiology for further work-up. "After additional testing, an atrial septal closure device was inserted in the cath lab, and the patient is now

## EXECUTIVE SUMMARY

By having ED nurses perform the required injections for echocardiograms, patient care is improved by identifying atrial shunts and speeding treatment.

- The test is done on patients being admitted with cerebrovascular accident or transient ischemic attack.
- The goal is to rule out shunts at the atrial level.
- Nurses are trained to agitate saline by cardiology supervisors and nurse practitioners.

## SOURCES

For more information on nurses assisting with echocardiograms in the ED, contact:

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doing well,” recalls **Margaret Knoll**, RDCS, a supervisor at the hospital’s cardiac diagnostic center. Knoll had inserviced the ED nurses on performing injections done for echocardiograms.

ED nurses now assist with agitated saline or bubble echocardiograms for all stroke, cerebral vascular accident (CVA), or transient ischemic attack (TIA) patients. There are two goals: to detect shunting and speed up treatment, reports **Marla Gain**, RN, ED clinical educator at University of California-Irvine. “This procedure requires only a few moments of the nurse’s time and is done at the patient’s bedside in the ED,” she explains.

Agitated saline is used for the following patients:

- with enlarged right hearts on echo;
- to evaluate for patent foramen ovale and atrial septal defect;
- to evaluate for pulmonary artery pressures;
- with atrial septal aneurysm.

Agitated saline or bubble echoes are required on the ED’s stroke clinical pathway, on all patients being admitted with the diagnosis of CVA or TIA, to rule out shunts at the atrial level, says Knoll. “We have identified patients with previously unknown atrial shunts, both patent foramen ovale and atrial septal defects.”

By doing these studies in the ED, they can speed up treatment, diagnosis, and discharge, says Knoll. “That benefits this patient and all other patients in the EDs.”

Before the ED nurses were trained, cardiac sonographers would have to wait for the cardiology fellow or nurse practitioner to come to the ED to do the injections of agitated saline, which take fewer than five minutes of the nurse’s time, says Knoll.

Nurses were trained with hands-on inservices held in the ED during change of shifts by the cardiology supervisor and nurse practitioners. “The most difficult challenge for nurses was learning the manual dexterity to agitate the saline,” notes Knoll.

Here are the steps that occur:

- The sonographer brings the cardiac ultrasound system to the patient’s bedside, gathers and prepares the supplies: Two 10-ml luer-lok syringes, a three-way stopcock, three 10-ml normal saline vials, 8-inch extension tubing, an 18-gauge needle, and alcohol prep pads.

- The ED nurse agitates the saline, injects the saline when instructed to do so by the sonographer, instructs the patient about the procedure, does the second injection if needed, and documents the action in the patient’s medical record.

ED nurses also help the cardiac sonographers to inject a contrast agent that improves the echocardiogram image, says Knoll.

“There are two contraindications to doing this procedure: pregnancy and known ventricular septal defect,” adds Gain. ■

## WEB ALERT



## Site gives free pain management sources

Do you want to improve pain management in your ED? Massachusetts General Hospital’s “MGH Cares About Pain Relief Initiative” site offers a wealth of free resources, including current recommendations, accreditation standards, and more.

By clicking on “Guidelines,” you can access more than a dozen pain management guidelines or policy

statements from the American Pain Society, the National Comprehensive Cancer Network, the American Geriatric Society, and the American Academy of Pediatrics.

By subscribing to the “Pain Relief Connection” monthly e-mail newsletter, you can access pain-related news such as new products, safety information, journal

### Vital Signs

**Site:** MGH Cares About Pain Relief Initiative

**Address:** [www.massgeneral.org/painrelief](http://www.massgeneral.org/painrelief)

**Contact:** **Thomas Quinn**, Project Director, MGH Cares About Pain Relief, Massachusetts General Hospital, Founders 605, Boston, MA 02114. Telephone: (617) 726-0746. E-mail: PainRelief@Partners.org.

articles, and patient resources. “Anyone can subscribe to it or read it on-line,” says **Thomas Quinn**, project director.

The resources can help you comply with requirements from the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) for assessment and management of pain, adds Quinn. “Pain is still a significant issue for the JCAHO, and they are still looking hard at this,” he says. “If during a patient tracer, surveyors don’t see a pain assessment or follow-up done in the ED, then they will dig further.”

The Joint Commission also requires that information is provided to patients and their families about pain management, adds Quinn. At Massachusetts General, a “Pledge to Patients” promises that pain will be taken seriously. (**Click on “Pledge to Patients” and “Guide for Patients and Families” to view this resource.**)

“In the ED, very frequently the presenting complaint is pain,” says Quinn. “Once the patient says they have pain, an appropriate assessment has to be done, and the pain must be managed.” ■



## JOURNAL REVIEW

Hobgood C, Villani J, Quattlebaum R. **Impact of emergency department volume on registered nurse time at the bedside.** *Ann Emerg Med* 2005; 46:481-489.

ED nurses spend most of their time on indirect patient care — but they spend very little time on tasks that could be performed by ancillary staff, says this study from the Department of Emergency Medicine at the University of North Carolina in Chapel Hill.

During 2000 to 2002, researchers used direct observation of 49 nurses at one-minute intervals during 63 shifts, and they documented the amount of time nurses spend on direct patient care (25.6%), indirect patient care (48.4%), non-nursing care (6.8%), and personal time (19.1%). To see how volumes and acuity affected how nurses spend their time, researchers also collected staffing data, patient census, and patient triage scores every half-hour, but the results remained steady regardless of these variables.

“The study demonstrates that as nurse workload increases, nurses change their task allocation predictably, with direct patient care and indirect patient

care rising in lockstep at the expense of nurse personal time,” the researchers wrote.

The fact that ED nurses spent almost twice the amount of time on indirect patient care “should partially dispel the myth that the primary role of the skilled nurse is as a bedside care provider,” say the researchers. Based on these findings, the researchers concluded that adding nonlicensed personnel such as nursing assistants, respiratory therapists, or phlebotomists to handle some tasks “might not be cost-effective, given the high costs of ancillary staff.”

According to the researchers, more effective solutions include computerized documentation systems, more time-efficient charting, and automated dispensing systems. ■

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### 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.

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. ■

### COMING IN FUTURE MONTHS

■ EDs share solutions for medication reconciliation

■ Reports from the first unannounced JCAHO surveys

■ Steps to take for drug-resistant bacteria cases

■ Dramatically improve trauma education in your ED

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## CE 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 of the following is recommended to reduce medication errors, according to Sandra Schneider, MD, professor of emergency medicine at University of Rochester?
  - A. Group admitted inpatients in separate areas from outpatients.
  - B. Avoid involving hospital pharmacists with mixing intravenous drips.
  - C. Don't separate inpatients and outpatients in the ED.
  - D. Take the necessary steps to go on diversion more frequently.
10. Which of the following is recommended to reduce door-to-cath lab time for heart attack patients, according to Becky Roberge, RN, the clinical nurse educator Mercy General Hospital?
  - A. Wait for cardiologists to arrive before contacting the cardiac catheterization lab.
  - B. Page cardiologists and cardiac catheterization lab simultaneously.
  - C. Stop doing electrocardiograms at triage.
  - D. Avoid implementing a system using faxed electrocardiogram reports.
11. Which should be done to improve care of pediatric trauma patients, according to Laura L. Kuensting, MSN, RN, CPNP, pediatric nurse practitioner for the ED at St. John's Mercy Medical Center?
  - A. Give each nurse a specific role.
  - B. Don't document estimated weights.
  - C. Assume that pediatric tachycardia is benign.
  - D. Consider ambulances with basic life support capabilities sufficient.
12. What occurred as a result of doing echocardiograms in the ED, according to Marla Gain, RN, ED clinical educator at University of California-Irvine?
  - A. The procedure requires more nursing time than anticipated.
  - B. Shunts too often are going undetected.
  - C. Previously unknown atrial shunts are being detected.
  - D. Patient flow is impeded during high-census times.

**Answers: 9. A; 10. B; 11. A; 12. C.**