

# ED NURSING<sup>®</sup>

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**MARCH 2004**  
VOL. 7, NO. 5

## 750,000 ED patients this year to feel impact of new pneumonia guidelines

*Recommendations address antibiotics, lab tests, and SARS*

An adult patient with fever and cough. This is something you probably see at least once a day and perhaps dozens of times a day in your ED during the flu season. But did you know about new recommendations that call for changes concerning when patients receive antibiotics, which diagnostic tests they are given, and whether they are discharged or admitted?

Newly updated guidelines for community-acquired pneumonia from the Alexandria, VA-based Infectious Diseases Society of America (IDSA) will have a major impact on the 1 million patients admitted for pneumonia each year, 75% of which are admitted through the ED.<sup>1</sup> **(For information on how to access the guidelines, see resource box, p. 51.)**

"In our hospital, 90% of all adult admitted pneumonia cases come through the ED," says **Rosemary Kucewicz**, RN, BSN, ED manager at Northwest Community Hospital in Arlington Heights, IL.

Approximately 30 adult pneumonia patients come to the ED each month at Harborview Medical Center in Seattle, and that number increases to 40 or 50 per month between December and March, reports **Darlene Matsuoka**, RN, BSN, CEN, CCRN, clinical nurse educator for the ED.

To significantly improve care of pneumonia patients and comply with updated guidelines, make the following practice changes:

• **Customize use of antibiotics.**

Different antibiotics now are ordered for individual populations and circumstances, says Matsuoka. "By using the IDSA guidelines for pathogen-specific

### EXECUTIVE SUMMARY

New guidelines for adult pneumonia patients will change assessment, intervention, and discharge in the ED.

- Antibiotics should be given within four hours.
- Diagnostic tests and antibiotics now are customized for individual patients.
- All adult pneumonia patients should be screened for severe acute respiratory syndrome.

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therapy and empiric therapy, the best antibiotic choices can be used for every patient," she explains.

The new guidelines recommend different antibiotics be used for healthy patients as opposed to those with comorbidities such as renal failure or aspiration pneumonia, Matsuoka says.

"We treat our patients with empiric antibiotics targeted to the specific site, treated as outpatient, in the nursing home, or admitted to the hospital, either to an intensive care unit or a regular nursing unit," says **Nina M. Fielden**, MSN, RN, CEN, an ED clinical nurse specialist at Cleveland Clinic Foundation. "Our hospital does not use fluoroquinolones unless necessary because of the concern for resistance to these drugs in our region."

The Pneumonia Outcomes Research Team Severity Index criteria are used to determine where patients should receive their treatment, she adds. (See the ED's protocol

for community-acquired pneumonia enclosed in this issue.)

• **Order different tests for specific agents.**

Conventional tests such as blood cultures, sputum gram stain, and sputum culture and sensitivity testing are ordered for infectious agents such as *Streptococcus pneumoniae*, whereas a polymerase chain reaction assay would be ordered for *chlamydia pneumoniae* or severe acute respiratory syndrome (SARS), says Matsuoka. "Specific testing may be done for the *Legionella* species," she adds.

• **Start antibiotics within four hours of arrival for pneumonia patients who are going to be admitted.**

The previous time frame called for antibiotics to be given within eight hours, so the new recommendation means quicker X-rays and laboratory testing will be needed, with earlier medical decision making about how best to treat the patient, says Matsuoka.

Average time to start antibiotics is just over three hours at Cleveland Clinic's ED, reports Fielden. "You should get the antibiotics started as soon as possible, not waiting for them to reach the inpatient unit where it may take up to eight hours to get them started," she says.

If you suspect that the patient won't take his antibiotics when he goes home because he is noncompliant or lacks financial resources to obtain the drug, admitting him for observation for fewer than 24 hours is a good way to get two doses of intravenous (IV) azithromycin in, adds Fielden.

"A patient with pneumonia that we want to have 24 hours of IV antibiotics gets his first IV administration in the ED and the second one 24 hours later in the clinical decision unit [CDU], and then goes home," she explains. "He may only be in the CDU 20 hours, as the time in the ED is not counted."

The Ohio ED treats approximately 50 patients a month for pneumonia, with about 12 admitted to the observation unit and 54% admitted to the hospital, Fielden reports.

• **Assess whether patients can be discharged home safely.**

Consider the patient's ability to take medications and care of him or herself, says Matsuoka. A patient should have no more than one of the following characteristics to be discharged, according to the guidelines:

- temperature higher than 37.8°C;
- pulse higher than 100 beats per minute;
- respiratory rate of more than 24;
- systolic blood pressure < 90;
- oxygen saturation < 90%;
- unable to maintain intake by mouth.

According to the new standards, two factors determine whether the patient is admitted: The patient's ability for

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**ED Nursing**® (ISSN# 1044-9167) 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 approximately 18 nursing contact hours. This offering is sponsored by Thomson American Health Consultants, which is accredited as a provider of continuing education in nursing 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 18 contact hours. This program (program # 0704-1) has been approved by an AACN Certification Corp.-approved provider (Provider #10852) under established AACN Certification Corp. guidelines for 18 contact hours, CERP Category A.

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self-care at home, and whether the patient meets the above discharge criteria. For example, Matsuoka points to a wheelchair-bound pneumonia patient who lived alone with a caregiver, with problems eating and drinking due to poor muscle coordination from a previous stroke.

“The patient was febrile, tachycardic, and hypoxic, so he was admitted,” she says.

- **Offer patients the pneumonia vaccine.**

At Cleveland Clinic’s ED, nurses offer the pneumonia vaccine and influenza vaccines to anyone who presents with pneumonia and is discharged home, says Fielden.

“You usually associate it with influenza season, especially this one with the increase in pneumonia and mortality,” she says. “However, you should offer the pneumonia vaccine year round, since patients get pneumonia any time of the year.”

- **Screen all adult pneumonia patients for SARS.**

The guidelines ask you to maintain a high level of suspicion for SARS when you see adult patients with pneumonia. “Pneumonia isn’t what it used to be,” says Kucewicz. “Ten years ago, pneumonia was pneumonia. Now it could be SARS or anthrax.”

It is likely that numerous other suspected cases will be reported over the coming weeks, predicts Kucewicz. “If SARS spreads, it could present a worldwide crisis. No one sees this as going away soon,” she says. **(For more information on this topic, see “SARS is ‘greatest disaster threat at this moment’: Make changes now,” *ED Nursing*, December 2003, p. 13, and “SARS cases are growing — prepare with these steps,” *EDN*, May 2003, p. 79.)**

Kucewicz points to newly updated SARS guidelines from the Atlanta-based Centers for Disease Control and Prevention (CDC), which ask you to identify patients who require hospitalization for radiographically confirmed pneumonia or acute respiratory distress syndrome without identifiable etiology, *and* who have one of the following risk factors in the 10 days before the onset of illness:

- travel to mainland China, Hong Kong, or Taiwan, or close contact with an ill person with a history of recent travel to one of these areas; *or*

- employment in an occupation associated with a risk of SARS exposure; *or*

- part of a cluster of cases of atypical pneumonia without an alternative diagnosis.<sup>2</sup>

“The numbers of pneumonia cases you are seeing need to be a trigger much more so than ever before,” says Kucewicz. “Be very alert to how many cases you are seeing, because you need to be able to connect the dots.”

The ED will likely be the first place that a SARS outbreak is detected, adds Kucewicz. “If there is a change in what’s going on in the community, we will

## SOURCES AND RESOURCES

For more information about caring for patients with community-acquired pneumonia, contact:

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**The Infectious Diseases Society of America** has published updated guidelines for treatment of adult patients with community-acquired pneumonia, including tables listing preferred treatment options and detailed management strategies. The guidelines can be accessed free at [www.journals.uchicago.edu/IDSA/guidelines](http://www.journals.uchicago.edu/IDSA/guidelines). Scroll down to “Update of Practice Guidelines for the Management of Community-Acquired Pneumonia in Immunocompetent Adults” and click on “Full text.”

**The American College of Emergency Physicians (ACEP)** has a clinical policy for adult pneumonia patients in the ED. The clinical policy can be accessed free of charge at the ACEP web site ([www.acep.org](http://www.acep.org)). Under “Quick Links,” click on “Clinical Policies,” “Clinical Policy for the Management and Risk Stratification of Community-Acquired Pneumonia in Adults in the Emergency Department.”

be the first to identify that change,” she says. You also should be alert for clusters of pneumonia among two or more health care workers who work in the same facility, she says.

When a pneumonia patient is being admitted from the ED, the charge nurse screens with the new CDC guidelines before placing the call for the bed, reports Kucewicz. “She stamps the ED nursing notes with a red-inked stamp that says ‘SARS screening negative,’”

she says. “The bed placement nurse also checks up on us by asking, ‘What is the SARS screening?’ To date, all of our SARS screening has been negative.”

Symptoms of SARS mimic those of several other respiratory diseases, including many that are more frequent during the winter, notes Kucewicz. “Some of these diseases may give rise to pneumonia,” she says.

## References

1. Mandell LA, Bartlett JG, Dowell SF, et al. Update of practice guidelines for the management of community-acquired pneumonia in immunocompetent adults clinical infectious diseases. *Clin Infect Dis* 2003; 37:1,405-1,433.
2. Centers for Disease Control and Prevention. *Clinical Guidance on the Identification and Evaluation of Possible SARS-CoV Disease among Persons Presenting with Community-Acquired Illness, Version 2*. Jan. 8, 2004. ■

# Are you undertreating pain of cancer patients?

*You may need to step outside your comfort zone*

A cancer patient with a pericardial effusion was upset about something other than her condition when she arrived at the ED at Eastern Maine Medical Center in Bangor: not being able to see her regular oncologist.

“I explained that the cancer clinic always tries very hard to see their own patients, but they must have been booked up,” says **Traci Craig**, RN, ADN, BSN, CEN, CCRN, FNE, the ED charge nurse who cared for the patient.

The first thing Craig did was to contact the clinic to urge the patient’s regular doctor to come to the ED. While waiting to hear back, she took the patient’s vital signs and oxygen saturation, applied oxygen by nasal cannula, and performed an electrocardiogram.

## EXECUTIVE SUMMARY

Cancer patients have unique needs in the ED, and pain often is undermanaged.

- Take steps to protect immunocompromised patients from infection.
- Breakthrough pain may require aggressive titration of intravenous opioids.
- Patients will need larger doses of opioids to control pain.

“The cardiologist and the oncologist came to see her, and she was admitted to the hospital without incident,” recalls Craig. “The plan was to drain the pericardial effusion and place a pericardial window.”

Cancer patients in the ED may need you to go the extra mile to meet their unique needs, urges Craig. “The medications used to treat this horrible disease cause many side effects, and often patients need to seek help in the ED,” she underscores. “The patient most likely will be very nervous about coming to the ED to treat an acute problem. In addition, we often fall short when treating cancer pain in the ED.”

To dramatically improve care of cancer patients, take the following steps:

### • **Protect patients from infection.**

Chemotherapy patients are at high risk of infection, warns Craig. “Be aware that most blood counts hit their nadir seven to 14 days after treatment,” she says. To reduce risk of infection, she recommends the following:

— **Practice frequent hand washing.** “Hand washing is the single most effective way to prevent the spread of germs from patient to patient and from staff to patient,” says Craig.

— **Give the patients masks if they will be interacting with other patients.**

— **If possible, give patients a private room with a door to prevent other patients from spreading illness.**

— **Put signage up that informs all staff to take special precautions.** “No one with cold or flu symptoms should enter the room,” says Craig. “Masks should be worn by anyone with upper respiratory symptoms.”

### • **Don’t take a rectal temperature.**

Using a rectal thermometer can cause a tear in the inner bowel and increase the chance of infection due to low white cells, advises Craig. “Also, low platelets can cause bleeding. Since the bowel is so vascular, poking a hole in the bowel can increase the risk of bleeding,” she adds.

### • **Be ready to manage “breakthrough” pain.**

Breakthrough medications are given for periods in which pain escalates, or breaks through, the long-acting opioid, explains **Judith A. Paice**, PhD, RN, FAAN, director of the cancer pain program at Northwestern University in Chicago.

“Patients may come to the ED with pain crises or for other emergencies associated with pain,” she says. “Aggressive titration, usually with an intravenous opioid, is indicated.”

Opioids can be delivered safely every 15 minutes intravenously (IV), or every hour when given orally, and increased by 50% if ineffective, advises Paice.

“For the oncology patient already on opioids, the risk of adverse effects such as respiratory depression is

## SOURCES

For more information on caring for oncology patients in the ED, contact:

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minimal,” she says.

Determine the patient’s current breakthrough dose, if he or she has used it to treat this painful event; and if so, when he/she administered the last dose, says Paice. “They may have run out of the drug or are afraid to use the medication,” she notes.

Since management at home usually is oral, an equivalent parenteral dose usually is one-third or one-fourth of that dose, says Paice. For example, 30 mg of oral morphine is approximately equal to 10 mg of IV or subcutaneous morphine, she notes, adding that intramuscular administration of most drugs is not recommended.

Often, patients may not be taking a breakthrough dose, says Paice. To determine a breakthrough dose for someone on long-acting opioids, use 10%-20% of the 24-hour opioid dose, she says. So if a patient is receiving 200 mg of long-acting oral morphine each day (100 mg every 12 hours), his or her breakthrough dose would start at 20-40 mg oral immediate release morphine every hour as needed, explains Paice.

During a pain crisis, a parenteral dose likely would be used to gain more rapid control of the pain, she adds. “Thus, the appropriate dose would start at approximately 8-12 mg IV every 15 minutes and titrated upward until the patient feels relief,” Paice says.

Remember to use a stool softener when starting pain medication, as many of these medications cause constipation, she advises.

Oncology patients may need large doses of pain medications that might be outside your comfort zone, says Paice. “Giving lower doses that might be appropriate for opioid-naive patients will place the cancer patient at risk for unrelieved pain, and if this goes on for a longer period of time, even withdrawal from the opioid,” she warns. ■

## Handle complications with invasive lines

**B**e honest: Are you entirely comfortable caring for a patient with an invasive line? If your answer is no, you could be putting a patient’s life in danger, says **Reneé Semonin Holleran**, RN, PhD, CEN, CCRN, CFRN, clinical manager of the ED at University of Utah Hospital and Clinics in Salt Lake City.

“There is the potential for life-threatening complications such as sepsis or loss of a line if you do not know how to use it properly,” she warns.

You’ll be seeing increasing numbers of patients with short peripheral catheters, midline catheters, peripherally inserted central catheters, tunneled catheters, and implanted ports, predicts **Lynn Hadaway**, RNC, CRNI, a Milner, GA-based consultant providing continuing education in infusion therapy and vascular access.

“More patients are being seen in the ED with long-term central venous catheters already in place,” she says. “These are patients living with these catheters for months or even years due to a variety of illnesses.”

Observe strict aseptic technique, and follow your ED’s policy as to when and how dressings should be changed, says Holleran. “Always instruct patients on the importance of keeping their lines clean,” she adds.

### ***Be ready for complications***

Many serious catheter-related complications can present in the ED, says Hadaway. “When these complications cannot be managed by the patient’s home care nurse, or the patient is being seen in an ambulatory setting [and the patient needs assistance when the facility is closed], the only alternative is to go to the local ED for management,” she says.

## EXECUTIVE SUMMARY

Increased numbers of patients with invasive lines are being seen in the ED, since more individuals are living with catheters for months or years.

- Observe strict aseptic technique to keep lines clean, and change dressings as appropriate.
- A local infection at the insertion site, or a tunnel or port pocket infection, requires immediate catheter removal.
- If air emboli occur while the patient is in the ED, immediately place the patient on his or her left side with the head down.

## SOURCES

For more information about caring for patients with invasive lines, contact:

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As an ED nurse, you must have a good understanding of the type of catheter and know where the tip originally was located, says Hadaway. In addition, you should know current recommendations for proper management of each type of complication, she adds.

“For instance, fever alone in a patient with mild or moderate severity of illness should not have the catheter immediately removed,” says Hadaway. “Cultures taken from the catheter and a peripheral venipuncture are needed to determine if the catheter is the cause of the fever.”

Here are three complications you may see in your ED, with recommendations for appropriate interventions:

### • **Bloodstream infection.**

Catheter-related bloodstream infection and vein thrombosis are the most prevalent complications seen in EDs, says Hadaway.

“Management depends upon the type of catheter and the patient’s condition,” she advises.

For instance, a local infection at the insertion site, a tunnel or port pocket infection requires immediate catheter removal, says Hadaway, pointing to current guidelines from the Alexandria, VA-based Infectious Disease Society of America.<sup>1</sup> **(To access the free guidelines, go to [www.journals.uchicago.edu/IDSA/guidelines](http://www.journals.uchicago.edu/IDSA/guidelines). Scroll down to “Guidelines for the Management of Intravascular Catheter-Related Infections” and click on “Full Text.”)** If elevated body temperature is present without other signs or symptoms of bloodstream infection, blood cultures are drawn from the suspected catheter and a peripheral vein, says Hadaway.

### • **Vein thrombosis.**

“There is really no consensus of opinion about the best method for treatment,” says Hadaway. Options include radiological procedures for catheter-directed thrombolysis, infusion of a thrombolytic agent through the present

catheter, and systemic anticoagulation with heparin, she points out.

### • **Air emboli.**

This is a rare complication that could occur when catheters are broken or the tubing or injection cap has become separated from the catheter hub, says Hadaway.

“This problem demands immediate attention,” she underscores. “If it occurs outside the ED, the patient may not even make it to the ED for treatment.”

Air emboli occur during catheter insertion, during tubing and injection cap changes, when accidental damage occurs to the external catheter, and when removing the catheter, she explains.

“Air emboli can occur when any central venous catheter is inserted in the ED, where catheters are frequently inserted into the subclavian or jugular veins,” says Hadaway. “These sites carry the highest risk of air emboli.”

There also are reports in the literature about catheter hubs falling off or becoming separated from the catheter and the patient arriving in the ED with an air emboli, notes Hadaway.<sup>2</sup>

This situation can occur if the ED nurse changes the tubing or injection cap attached to the catheter while the patient is still in the ED, she adds. “The patient should be lying flat and instructed to perform a Valsalva maneuver during this change,” says Hadaway. “If there is a clamp on the catheter, it also should be closed.”

The immediate action is to place the patient on his or her left side with the head down, she says. “This is an attempt to keep the air in the lower part of the right ventricle and away from the pulmonary artery,” she explains. “Oxygen is started, and the other steps are based on signs and symptoms.”

## References

1. Mermel L, Farr B, Sherertz R, et al. Guidelines for the management of intravascular catheter-related infections. *J Infus Nurs* 2001; 24:180-205.
2. Hadaway L. Action stat: Air embolus. *Nursing2002* 2002; 32:104. ■

## Elderly may be at risk for drug errors in your ED

You wrongly assume an 85-year-old woman is the correct patient because she answers to the name on the chart in front of you. You mistakenly fail to dilute a concentrated medication. You forget to ask what other medications an elderly man is taking before administering heparin.

## Sample List of 'Don't-Use' Abbreviations

Unacceptable Abbreviations	Potential Problems w/this Abbreviation	Acceptable Abbreviation
IU	Mistaken as IV or 10	Spell out "International Units."
Q.D. or q.d.	Mistaken for Q.O.D. The period after Q can be mistaken for "I."	Spell out "Daily"
Q.O.D. or q.o.d.	Mistaken for Q.D. The "O" can be mistaken for an "I."	Spell out "Every other day."
"U" (units)	The "u" can be misinterpreted as 0,4 or V (IU seen as IV) (e.g., insulin 5u seen as insulin 50).	Spell out "Units."
A "trailing zero" is present (1.0 mg).	The decimal point can be missed causing a tenfold dose error (e.g., Ativan 1.0 mg misread as Ativan 10 mg).	Do not use a trailing zero (e.g., write: Ativan 1 mg).
A "leading zero" is absent (.1 mg).	The decimal point can be missed, causing a tenfold dose error (e.g., Morphine .5 mg misread as Morphine 5 mg).	Always use a leading zero. (e.g., write: Morphine 0.5 mg)
MgSO4	Misinterpretation for morphine sulfate	Spell out the drug name: Magnesium sulfate
MSO4	Misinterpretation for magnesium sulfate	Spell out the drug name: Morphine
"µg"	Has been mistaken as "mg" when handwritten	Use "mcg."
"X3d"	Unclear if this is intended to mean three doses or for three days.	Write out "dose" or "day."

*Source:* Paula Hudon, RN, BS, CEN, adapted from recommendations of the Oakbrook Terrace, IL-based Joint Commission on Accreditation of Healthcare Organizations and the Huntingdon Valley, PA-based Institute for Safe Medication Practices.

These mistakes can harm or kill elderly patients in your ED. When researchers analyzed 192,477 medication errors reported by 482 health care facilities to MedMARx, a national database that tracks and trends medication errors, they discovered that more than one-third of all drug errors reaching the patient involved an individual 65 or older, and 55% of fatal drug errors involved elderly patients. The most common type of drug errors that caused harm to elderly patients involved prescribing errors, wrong route, and wrong administration technique. **(See resource box on p. 56 to obtain the complete report.)** To avoid drug errors in elderly patients, do the following:

- **Use two patient identifiers when administering medications.**

You should follow the "rule of rights for patient medication" to check for the right patient, medication, dose, route, and time, urges **Paula Hudon**, RN, BS, CEN, staff development educator at Cheshire Medical Center in Keene, NH. ED nurses are required to use

two identifiers when giving medications, such as comparing the patient identification bracelet and the actual written order on the chart, she says.

"Never use the room or bed number," says Hudon. "In the ED, patients are moved around continuously, so that can create error."

- **Ask the patients to state their names.**

This step should be taken before medications are administered and before any other procedure, says Hudon. "The elderly may be anxious, hard of hearing, or confused and may answer to any name called," she explains.

- **Don't use unapproved abbreviations.**

At Cheshire Medical Center, a list of unapproved abbreviations is posted in several places throughout the ED, including next to the automated medication dispenser, says **Cheryl Pinney**, RN, BSN, MBA, director of emergency services.

This is in compliance with the 2004 National Patient Safety Goals from the Oakbrook Terrace, IL-based

## SOURCES/RESOURCE

For more information on preventing medication errors in elderly ED patients, contact:

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**The MedMARx annual data summary report, *Summary of Information Submitted to Medmarx in the Year 2002: The Quest for Quality***, analyzes medication errors voluntarily reported by participating hospitals and health systems nationwide, including a synopsis of medication errors in geriatric patients. The cost of the report is \$79. To order, contact: U.S. Pharmacopeia, 12601 Twinbrook Parkway, Rockville, MD 20852. Telephone: (800) 227-8772 or (301) 881-0666. Fax: (301) 816-8148. E-mail: custsvc@usp.org.

Joint Commission on Accreditation of Healthcare Organization, says Pinney. The goals require you to adapt a comprehensive list of prohibited dangerous abbreviations, acronyms, and symbols. The list was developed based on recommendations from the Joint Commission and the Huntingdon Valley, PA-based Institute for Safe Medication Practices (ISMP). (See **the facility's list of unapproved abbreviations, p. 55. To access the ISMP list, go to [www.ismp.org](http://www.ismp.org). Click on "ISMP List of Error-Prone Abbreviations, Symbols, and Dose Designations."**)

A clinical nurse specialist performs random chart audits to find out if nurses are using correct abbreviations, she says. "We do an inservice and review with anyone using an unauthorized abbreviation," Pinney says.

### • **Have two nurses review administration of high-risk intravenous medications.**

These high-risk medications include insulin, heparin, and thrombolytics, says Pinney. Often, new nurses are hesitant to review anything with senior nurses for fear they will be labeled as not knowledgeable, she explains.

For example, one ED nurse routinely administered high-risk intravenous drugs without checking with

others, until experienced nurses brought this dangerous practice to Pinney's attention. "When I finally asked the nurse why she would not review with her colleagues, she said she didn't want them to think she didn't know anything. I made it very clear that we do this double review and signature for patient safety because we are dealing with high-risk medications," she says.

### • **Use electronic prescription.**

The ED uses a software program for discharge instructions and prescription writing called Exit-Writer (manufactured by Santa Rosa, CA-based Parker Hill Associates), reports Pinney. "This allows us to print information on medications, and the printed prescription reduces the error when the pharmacy goes to fill it," she says.

### • **Identify which medications patients are currently taking.**

Elderly patients often are taking many medications, and clinicians have to be careful that they aren't giving them medications that will counteract or interact in a manner that results in poor outcomes, Pinney says.

She recommends asking patients to list the medications they are taking, and if they can't name the exact drug, to describe what it looks like and what they're taking it for. **(For more information on this topic, see "Lower risk of adverse drug reactions in elderly," *ED Nursing*, August 2002, p. 132.)**

The computerized medical record can be accessed to determine what prescriptions the patient is on. "With appropriate clearances, we can access office visit notes and inpatient visits, if they are on-line," says Pinney. "We are working toward a complete electronic medical record." ■

## Don't miss subarachnoid hemorrhage in your ED

**D**o you know how to assess patients for subarachnoid hemorrhage (SAH), the most deadly type of stroke? A new study has dramatic implications for ED care of these patients. Researchers found that ED patients with SAH were 40% more likely to survive their hospital stay if they were treated at facilities with high volumes of SAH patients.<sup>1</sup>

Key factors linked with better outcomes include availability of subspecialists and advanced nursing staff, a team approach to care, written stroke protocols, and access to sophisticated diagnostic equipment. There are approximately 6,700 deaths attributed to SAH each year in the United States.<sup>2</sup>

Thrombolytics must be administered within the first

## EXECUTIVE SUMMARY

If a patient presents with severe headache, keep a high index of suspicion for subarachnoid hemorrhage even if there are no other neurological symptoms.

- Because patients need to be treated within 48 hours, there is a fairly wide window of time to stabilize and transfer.
- A wide range of neurological symptoms, ranging from headache to coma, is possible.
- If you transfer the patient, document the patient's neurological status at the time of the ED visit.

three hours after onset of symptoms for ischemic stroke, but there is a wider window of time for treatment of SAH patients, notes **DeWitte T. Cross III**, MD, associate professor of radiology and neurological surgery at St. Louis-based Washington University School of Medicine and the study's principal investigator.

"This is a smaller group with a specific type of hemorrhage, related in most cases to aneurysm rupture," he explains. "There is time to stabilize these patients. Usually, the goal of treatment is to treat within 48 hours of the rupture."

The wider window for treatment allows more time to arrange for transfer of these patients to a high-volume SAH facility, adds Cross. To significantly improve care of SAH patients, do the following:

- **Keep a high index of suspicion for SAH.**

There is a whole spectrum of clinical scenarios that patients may present with, says Cross. "They may complain of severe headache, period, and be neurologically intact and responsive and stable from a cardiovascular standpoint," he says.

On the other hand, they may be comatose and require intubation, Cross says. "It just depends on the degree of bleeding and the status of the patient before the hemorrhage occurred," he says.

Patients who have a hemorrhagic stroke due to SAH often present with complaints of the "worst headache of my life," as opposed to the facial droop, slurred speech, and extremity weakness that are associated with ischemic stroke, says **Cynthia Bautista**, PhD, RN, neuroscience clinical nurse specialist at Yale New Haven (CT) Hospital. "The patient also may complain of pain above and behind the eye," she adds. (See **related story on stroke assessment on p. 58.**)

When blood is in the subarachnoid space, Bautista says, the patient will present with:

- meningeal irritation, which presents as neck pain on flexion;

- photophobia;
- nausea and/or vomiting;
- positive Brudzinski's sign (when you flex the patient's head and neck, involuntary flexion of hips/legs occurs);
- positive Kernig's sign (the patient has an inability to extend leg when the thigh is flexed onto the abdomen).

- **Give patients a thorough assessment.**

If you suspect SAH, here is a partial listing of items to assess, advises Bautista:

- **Level of consciousness.** Use the Glasgow Coma Scale to assess transient loss of consciousness, recommends Bautista.

"It is the most widely recognized level of consciousness assessment tool, and it is the basis of many neurologic assessment flow sheets," she says. "It is good for serial assessments."

- **Pupil size and reaction to light.** Pupils may be dilated and nonreactive, says Bautista.

"The assessment of size and reactivity of pupils plays a key role in assessment of intracranial pressure changes," she says. "Change in pupil size, dilation, and nonreactivity is due to compression on cranial nerve III and could be the first sign of herniation."

- **Motor strength on all four extremities.** Ask the patient to lift each extremity into the air, and then provide resistance to assess strength, advises Bautista. "If motor weakness is found, there may be possible damage to the motor strip in the frontal lobe," she says.

- **Blood pressure.** Hypertension is a response to increased intracranial pressure due to bleeding and should be controlled to avoid causing additional bleeding, says Bautista.

- **Increased intracranial pressure.** This pressure could present as decreased level of consciousness, seizures, hypertension, bradycardia, or widening pulse pressure, says Bautista. "Increased intracranial pressure

## SOURCES

For more information about caring for subarachnoid hemorrhage patients, contact:

- **Cynthia Bautista**, PhD, RN, Neuroscience Clinical Nurse Specialist, Yale New Haven Hospital, 20 York St., New Haven, CT 06504. Telephone: (203) 688-3352. E-mail: cabbrain@aol.com.
- **DeWitte T. Cross III**, MD, Department of Radiology, Box 8131, Washington University Medical Center, 510 S. Kingshighway Blvd., St. Louis, MO 63110. Telephone: (314) 362-5950. Fax: (314) 362-4886. E-mail: CrossDe@mir.wustl.edu.

means some kind of herniation is possible," she says.

• **Ensure that appropriate tests are ordered for patients who present with severe headaches.**

"If a patient with a long history of migraine headache comes in and complains of a horrible headache, you may not attribute this to something different," advises Cross. "Keep the question in mind, 'Could this patient presenting with severe headache be a person with a SAH?'"

• **If the decision is made to transfer, include the patient's current neurological status at the time of the ED visit.**

This information can have important implications for the patient's care at the receiving facility, explains Cross. "It's important to know how the patient presented, because if there is a difference when they get to the second hospital, then perhaps the patient needs another intervention, such as a shunt placed or a more urgent evaluation," he says.

## References

1. Cross DT, Tirschwell DL, Clark MA, et al. Mortality following subarachnoid hemorrhage varies with hospital case volume in 18 states. *J Neurosurg* 2003; 99:810-817.
2. Johnston SC, Selvin S, Gress DR. The burden, trends, and demographics of mortality from subarachnoid hemorrhage. *Neurology* 1998; 50:1,413-1,418. ■

## Can you differentiate SAH, ischemic stroke?

Is it possible that you could miss the signs of an ischemic stroke or subarachnoid hemorrhage (SAH) when your waiting room is full of sick and injured patients?

"I think it is easy for either type of stroke to be overlooked in a busy ED," says **Judy Guzy, RN**, research coordinator of the University of California-Los Angeles Stroke Network. "Treatment should be initiated as soon as possible with either type of stroke."

To avoid missing signs of stroke, do the following:

• **Know differences in presentation for each type of stroke.**

The "worst headache of my life" is the single most important distinction when distinguishing ischemic stroke from SAH, says **Donna Zadrozny, RN, BSN**, an ED nurse at St. Joseph's Hospital and Medical Center in Phoenix. She gives the example of patient in the middle of a routine activity who suddenly passes out, awakening with severe headache and vomiting.

"Both SAH and ischemic strokes can present with a sudden onset, but patients with SAH almost always

have a headache while ischemic stroke rarely does," she says.

Patients with ischemic stroke may report numbness and tingling and then loss of function of a limb or the ability to speak, she says. "Also, in stroke, a patient may wake up with symptoms of weakness, loss of function, or unsteady gait," says Zadrozny. Here are symptoms of ischemic stroke with assessment tips for each:

— Sudden onset of numbness or weakness of the face, arm, or leg, especially on one side of the body.

Evaluate this situation by having the patient hold up each arm and leg, and ask the patient to smile for you to test facial droop, advises Guzy. "Numbness can be tested by asking the patient if a pinprick feels the same on the upper arm, leg, or face of each side," she says.

— **Sudden confusion, trouble speaking, or understanding.**

For a quick test, ask the patient to tell you the month and his or her age, and to follow two simple commands: "Open and close your eyes" and "Squeeze my hand," says Guzy.

— **Sudden trouble seeing in one or both eyes.**

Ask the patient to look directly at you, then hold up one or two fingers on the right and left periphery and ask "How many fingers?" without the patient taking his or her eyes off you, says Guzy.

"Patients who do not comply with this direction can

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## SOURCES

For more information on stroke assessment, contact:

- **Judy Guzy**, RN, Research Coordinator, University of California-Los Angeles Stroke Network, 924 Westwood Blvd, No. 300, Los Angeles CA 90024-1777. Telephone: (310) 794-0600. Fax: (310) 794-0599. E-mail: JGuzy@mednet.ucla.edu.
- **Donna Zadrozny**, RN, BSN, Emergency Department, St. Joseph's Hospital and Medical Center, 350 W. Thomas Road, Phoenix, AZ 85012. E-mail: DonnaZadrozny@chw.edu.

be evaluated by a response to threat: They blink when a hand is waived on either side," she adds.

— **Sudden trouble walking, dizziness, and loss of balance or coordination.**

A simple test for coordination is to have patients touch their noses with their fingers and then touch your finger, says Guzy. Evaluate both sides, she adds.

- **Start a stroke protocol immediately.**

A stroke is like any code situation and needs to be acted on immediately to save brain tissue, emphasizes Guzy. "Ask for the neurologist to be paged immediately," she says. "If your hospital has a stroke team, keep the emergency number available in the ED and use it."

At St. Joseph's, the stroke protocol is initiated at triage for SAH and ischemic stroke, says Zadrozny. The following steps occur: The triage nurse gets the patient a bed, obtains vital signs, starts an intravenous line, orders labs, and sends the patient to obtain a computed tomography (CT) scan of the head.

The CT scan is read immediately by the stroke team, and a diagnosis is made. If SAH is suspected, neurosurgery is consulted. If the diagnosis is stroke, thrombolytics are considered.

- **Determine the time of stroke onset.**

This doesn't refer to the time the patient was found with symptoms; instead, it means the last time the patient was known to be without symptoms, says Guzy.

"If the onset of symptoms were witnessed by someone, a very important thing for nurses to do is to keep the witness at the bedside so that the doctor can confirm the time of onset," she says.

Stroke patients may not be able to communicate

this information themselves, and they may not even recognize that they have had a stroke, says Guzy. "If the patient was brought in alone by the paramedics, question the paramedics about how the patient was found, and get the telephone number of the person calling in the report," she recommends.

- **Make the decision to transfer as soon as possible.**

Treatment must be started as soon as possible once the transfer is made, emphasizes Guzy. "Treatment doesn't stop once the decision to transfer is made," she says. "When we arrange transfers, we make sure that the transport knows to come with lights and siren. That applies to helicopter transfers that have a ground component, too." ■



## JOURNAL REVIEW

Sievers V, Murphy S, Miller JJ. **Sexual assault evidence collection more accurate when completed by sexual assault nurse examiners: Colorado's experience.** *J Emerg Nurs* 2003; 29:511-514.

Sexual assault evidence kits prepared by sexual assault nurse examiners (SANEs) are more accurate and complete, says this study from the Colorado Bureau of Investigation, based in Denver.

Researchers audited 515 evidence kits submitted from 1999 to 2002, with 279 completed by SANEs and 236 completed by non-SANE physicians and nurses. Kits collected by SANEs were more likely to have a completed chain of custody, properly sealed individual specimen envelopes, and to have collected the appropriate amount of pubic and head hair. In addition, SANEs more frequently collected the appropriate number of blood tubes, the appropriate amount of swabs, and included a vaginal fluid slide for sperm motility.

"The study provides quantitative support that the specialized education, training, and experience of SANEs will result in the improved collection of forensic evidence," wrote the researchers. **(For more information on this topic, see "Use these tips to collect evidence of sexual assault," *ED Nursing*, January 2003, p. 34.)** ■

## COMING IN FUTURE MONTHS

■ New approaches for pediatric pain management

■ Boost morale of nurses with creative scheduling

■ Updated guidelines for abdominal trauma

■ What you must do before you switch to 5-level triage

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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. ■

## CE questions

After reading this issue of *ED Nursing*, the CE participant should be able to:

- Identify clinical, regulatory, or social issues relating to ED nursing (See *750,000 ED patients this year to feel impact of new pneumonia guidelines* and *Handle complications with invasive lines* in this issue.)
  - Describe how those issues affect nursing service delivery. (See *Are you undertreating pain of cancer patients?*)
  - Cite practical solutions to problems and integrate information into the ED nurse's daily practices, according to advice from nationally recognized experts. (See *Don't miss subarachnoid hemorrhage in your ED.*)
9. Which is a current recommendation for community-acquired pneumonia, according to guidelines from the Infectious Diseases Society of America?
    - A. The same antibiotic should be ordered for all patients with suspected pneumonia.
    - B. Patients with comorbidities should not receive antibiotics.
    - C. Antibiotics should be started within four hours of arrival for admitted pneumonia patients.
    - D. Antibiotics for admitted patients should not be administered in the ED.
  10. Which is recommended to improve care of oncology patients in the ED, according to Judith A. Paice, PhD, RN, FAAN, director of the cancer pain program at Northwestern University?
    - A. Take a rectal temperature.
    - B. Use the same dosage for oral and parenteral opioids.
    - C. Avoid opioids because of risk of respiratory depression.
    - D. Use aggressive titration with intravenous opioids for breakthrough pain.
  11. Which of the following is accurate regarding caring for patients with invasive lines, according to consultant Lynn Hadaway, RNC, CRNI?
    - A. A local infection at the insertion site, a tunnel or port pocket infection requires immediate catheter removal.
    - B. Catheters should be removed immediately whenever patients present with fever.
    - C. While changing the tubing or injection cap attached to the catheter, patients should be seated upright.
    - D. If air emboli occur, patients should be placed on their right sides.
  12. Which is a common symptom of a possible subarachnoid hemorrhage, according to Cynthia Bautista, PhD, RN, neuroscience clinical nurse specialist at Yale New Haven Hospital?
    - A. Facial droop
    - B. Severe headache
    - C. Slurred speech
    - D. Extremity weakness

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

THE CLEVELAND CLINIC FOUNDATION  
COORDINATED CARE TRACK (CCT)  
**EMERGENCY DEPARTMENT**

Date/time of ED Visit: \_\_\_\_\_  
Triage/Admitting Nurse: \_\_\_\_\_  
Physician: \_\_\_\_\_  
Disposition of patient: \_\_\_\_\_

**PNEUMONIA  
COMMUNITY ACQUIRED**

Cross through any interventions which are not appropriate. Circle any intervention not completed or outcomes not met, add interventions and outcome statements as needed.

**Risk factors for severity of CAP and admission to hospital:**

- Cardiopulmonary disease:
  - COPD
  - Congestive heart failure
- Penicillin-resistant & drug-resistant pneumococci risk factors:
  - Age >65
  - Beta-lactam therapy within past 3 mos
  - Alcoholism
  - Multiple medical comorbidities
- Immune-suppressive illness (including corticosteroid therapy)
  - Exposure to a child in a day care center
- Enteric gram-negatives risk:
  - Resident of nursing home
  - underlying cardiopulmonary disease
- Multiple medical comorbidities
  - Recent antibiotic therapy
- Pseudomonas aeruginosa*
  - Structural lung disease (bronchiectasis)
  - Corticosteroid therapy (>10 mg of prednisone/day)
- Broad-spectrum antibiotic therapy for > 7 days in past month
- Malnutrition

**Assessment**

**Newly acquired respiratory symptoms:**

- Cough
- Sputum production
- Fever
- Abnormal breath sounds/crackles

**Age >65 or inadequate immune response:**

- Confusion
- Failure to thrive
- Worsening of underlying chronic illness

**Vital Signs indicating severity of illness:**

- Tachypnea >30 breaths/min
- Hypotension: SBP ≤ 60 mmHg
- Fever ≥ 40° C or < 35° C

**Antibiotics:**

Currently on antibiotic(s)  No  Yes, if yes:

**Vaccine Status:**

Pneumovax  Yes  No  N/A

If yes, when: \_\_\_\_\_

Influenza  Yes  No  N/A

If yes, when: \_\_\_\_\_

**Screen for High Risk TB/HIV:**

- IV Drug abuse
- ETOH
- Immunosuppressed patients: HIV/AIDS

**TB Assessment:**

- TB exposure
- High prevalence population(s)
- Hemoptysis, past or present
- Fever or night sweats for longer than 2 weeks
- Cold symptoms and/or cough for longer than 3 weeks
- Increased sputum or phlegm with chronic cough
- Change in appetite or weight loss without a change in eating or exercise habits

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**Emergency Department: Date: \_\_\_\_\_ Time In: \_\_\_\_\_**

**Nurse: \_\_\_\_\_ Disposition Time: \_\_\_\_\_**

**Discharge Planning**

Prepare for discharge to home or admission to CDU or hospital

Assess home care needs if being discharged

Arrange follow-up appointment with primary physician or Access Center if being discharged

Update vaccine history - If afebrile, offer influenza vaccine Sept. 15-March 1, offer pneumococcal vaccine anytime during year

**Patient Education**

Orient to ED

Explain all procedures to patient/family

Pneumonia Discharge Instructions if being discharged

Home-going hyperinflation therapy if being discharged

**Tests/Procedures/Consults**

**CXR**

**CBC w/ diff, BMP, U/A as ordered**

**Blood cultures x 2 as ordered; give prior to antibiotic administration**

ABG as ordered, in patients with chronic lung disease or severe respiratory distress

Other lab's/cultures as ordered:

**Respiratory Interventions**

RT assessment as ordered, consult for sputum gram stain & culture collection

Respiratory Care Protocols: (check all that apply)

- Aerosol Therapy
- Broncho/Pulm Hygiene
- Hyperinflation
- Suctioning
- Oxygen Therapy/Titration
- Respiratory Monitoring/Pulse oximetry

RT Consult Therapist will be notified of admission to hospital

**Nursing/Medical Interventions**

Place on monitor & pulse oximeter per RN judgment or MD order

12 lead ECG as ordered

Vital signs/respiratory assessment/monitoring status q 1 hr x 4hrs then q 4 hrs

IV/saline lock / IV fluids as ordered

Assist patient with all comfort measures

**Medications**

Oxygen titrated to keep SpO2 >92%

**IV or PO Antibiotics initiated in the ED after blood culture collection**, do not delay antibiotics if difficulty with culture collection (see CAP Antibiotic Guidelines)

**Outcome Criteria**

Patient/family satisfaction addressed

*For discharge:* improvement in patient's clinical condition: VSS, decrease in adventitious breath sounds (ie. wheezing) and decreased dyspnea, fewer secretions, SpO2 >92% on room air (or baseline w/ or w/o oxygen), able to deep breathe, cough and expectorate secretions, RR <24 or at baseline, mental status return to baseline; patient verbalizes activity/rest pattern, use of incentive spirometer at home as appropriate

*If admitted to hospital or CDU:* improvement in patient's clinical condition as appropriate to the patient's presenting complaint

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**Nurse: \_\_\_\_\_ Disposition Time: \_\_\_\_\_**

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**Medications**

Oxygen titrated to keep SpO2 >92%

**IV or PO Antibiotics initiated in the ED after blood culture collection**, do not delay antibiotics if difficulty with culture collection (see CAP Antibiotic Guidelines)

**Outcome Criteria**

Patient/family satisfaction addressed

*For discharge:* improvement in patient's clinical condition: VSS, decrease in adventitious breath sounds (ie. wheezing) and decreased dyspnea, fewer secretions, SpO2 >92% on room air (or baseline w/ or w/o oxygen), able to deep breathe, cough and expectorate secretions, RR <24 or at baseline, mental status return to baseline; patient verbalizes activity/rest pattern, use of incentive spirometer at home as appropriate

*If admitted to hospital or CDU:* improvement in patient's clinical condition as appropriate to the patient's presenting complaint

**Emergency Department: Date: \_\_\_\_\_ Time In: \_\_\_\_\_**

**Nurse: \_\_\_\_\_ Disposition Time: \_\_\_\_\_**

**Discharge Planning**

Prepare for discharge to home or admission to CDU or hospital

Assess home care needs if being discharged

Arrange follow-up appointment with primary physician or Access Center if being discharged

Update vaccine history - If afebrile, offer influenza vaccine Sept. 15-March 1, offer pneumococcal vaccine anytime during year

**Patient Education**

Orient to ED

Explain all procedures to patient/family

Pneumonia Discharge Instructions if being discharged

Home-going hyperinflation therapy if being discharged

**Tests/Procedures/Consults**

**CXR**

**CBC w/ diff, BMP, U/A as ordered**

**Blood cultures x 2 as ordered; give prior to antibiotic administration**

ABG as ordered, in patients with chronic lung disease or severe respiratory distress

Other lab's/cultures as ordered:

**Respiratory Interventions**

RT assessment as ordered, consult for sputum gram stain & culture collection

Respiratory Care Protocols: (check all that apply)

- Aerosol Therapy
- Broncho/Pulm Hygiene
- Hyperinflation
- Suctioning
- Oxygen Therapy/Titration
- Respiratory Monitoring/Pulse oximetry

RT Consult Therapist will be notified of admission to hospital

**Nursing/Medical Interventions**

Place on monitor & pulse oximeter per RN judgment or MD order

12 lead ECG as ordered

Vital signs/respiratory assessment/monitoring status q 1 hr x 4hrs then q 4 hrs

IV/saline lock / IV fluids as ordered

Assist patient with all comfort measures

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