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Most ED nurses lack lifesaving pediatric equipment and training

Taking steps now could save a child's life

When a 2-year-old girl came to the Emergency Center at Carondelet St. Mary's Hospital in Tucson, AZ, with difficulty breathing and a bluish appearance, nurses set about preparing for an emergency tracheostomy to save the child's life. Suddenly, they determined a key piece of equipment was missing.

"We realized we didn't have a tracheostomy set small enough for this child — just adult sizes," says **Diana Platt Lopez**, RN, BSN, CCRN, CEN, the ED's clinical educator.

Fortunately, an airway was established without a tracheostomy, but otherwise the child could have died, she notes. As a result of that case, the ED ordered pediatric tracheostomy sets. "We split the cost with the OR since they were fairly expensive and there's a slim likelihood of needing them often," says Lopez.

Like most EDs, St. Mary's sees only a few children each year with significant airway problems, says Lopez. "Usually the physicians can intubate; but in this case, they were worried that intubation might not be successful due to an

EXECUTIVE SUMMARY

Only 6% of EDs have all recommended supplies and equipment for pediatric patients, says a new study. Often missing are laryngeal mask airways, vascular access supplies, and Magill forceps. To improve pediatric care, ED nurses should:

- Consider making Pediatric Advanced Life Support (PALS) and pediatric triage training mandatory.
- Purchase a computer module in pediatric emergencies as an annual competency requirement.
- Have a team including ED nurses assess whether pediatric protocols need updating.
- Work with pharmacy to make premixed medications and dosage protocols safer for children.

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epiglottitis," she says. "In that case, you only get one pass at intubation. If not successful, you are left with few options."

When a very sick or seriously injured child comes to your ED, you want any potentially lifesaving piece of equipment to be readily available and you want your staff to have the training and skills to save the child's life — every time. However, this is not the case in the vast majority of EDs, according to a new study.¹

Researchers surveyed 1,489 ED nursing and medical directors about whether their EDs were compliant with guidelines from the American Academy of Pediatrics/American College of Emergency Physicians.² (For information on how to access guidelines, see resource box, p. 39.) They found that only 6% of EDs had all recommended equipment, and half lacked laryngeal mask airways used for ventilating children. Only 12% of EDs had vascular access supplies for

children, and 17% lacked Magill forceps for removing foreign bodies from a child's airway.

Marianne Gausche-Hill, MD, the study's lead author, says, "Death could potentially result due to the lack of the right equipment. Clearly, we have some work to do." Gausche-Hill also is director of the pediatric emergency medicine fellowship program at Harbor—University of California, Los Angeles Medical Center in Torrance.

The new research sends an urgent message to ED nurses: "Be proactive, evaluate your equipment and policies, and pay attention to the needs of children," urges Gausche-Hill.

It isn't easy for most

The study findings were not at all surprising to **Mindi Huckabee**, RN, BSN, CEN, director of emergency services at Trident Medical Center in Charleston, SC. "Unless you are a dedicated pediatric ED, the ability to have all necessary equipment and competent staff is not easy," Huckabee says. To improve care of pediatric patients, do the following:

- **Give nurses additional training.**

SOURCES

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At St. Mary's, a Broselow tape-based code cart is used, along with a cart for specialty pediatric items, says Lopez. "However, it is always a concern that we not only have the right equipment, but also that the staff have the training and skills required to provide emergency care to the pediatric population," she says.

At Trident's ED, all nurses are required to attend Pediatric Advanced Life Support (PALS) and pediatric triage training, given by Fairview, NC-based Triage First. The triage course teaches ED nurses to identify

the "worst-case scenario," says Huckabee. "For any child who comes in emergently, the chart is reviewed for quality assurance," she adds. "When we review the decisions made by our triage nurses, the benefits of the training is obvious."

Specialized pediatric training is key for nurses in nonpediatric EDs, says Huckabee. "You can train everyone and have all the right equipment; but if the process is not practiced, the staff do not stay comfortable," she says. "This is one reason that we have the

RESOURCES

- **A 2007 report from The Institute of Medicine titled *Emergency Care for Children: Growing Pains*** covers pediatric emergency care planning, preparedness, coordination, and funding, and pediatric training in professional education. The hardback costs \$43.95 (a web-only discount is available for \$39.56) plus \$5 shipping, and a PDF download is \$34. To order the report, contact: The National Academies Press, 500 Fifth St. N.W., Lockbox 285, Washington, DC 20055. Phone: (888) 624-8373 or (202) 334-3313. Fax: (202) 334-2451. E-mail: zjones@nas.edu.
- **A December 2007 American Academy of Pediatrics (AAP) policy statement** gives recommendations for improving safety for pediatric patients in emergency departments. To obtain a copy of the policy statement at no charge, go to the AAP web site (www.aap.org). Click on "Professional Education and Resources." On the right side of the page, click on "AAP Policy," then "AAP Policy Statements." Scroll down to the bolded title "Patient Safety in the Pediatric Emergency Care Setting." Or to access the guidelines developed by AAP and the American College of Emergency Physicians, on the same page click on the bolded title "Care of Children in the Emergency Department: Guidelines for Preparedness."
- **Joint Commission Resources (JCR) has launched a new consulting program** to help hospitals improve the safety of ED services for children. Consultants identify the gaps between adult care procedures and evidence-based pediatric processes, including medication safety and infection control. For more information, contact JCR. Phone: (630) 268-7400. Web: www.jcrinc.com.
- **An online pediatric triage program offered by Triage First** consists of clinical presentation scenarios for the Emergency Severity Index (ESI) or the Canadian Emergency Department Triage and Acuity Scale (CTAS). The ESI or CTAS module is a prerequisite for the pediatric module. The cost for two modules for an individual is \$129. Discounts are available for groups. For more information, contact: Triage First, P.O. Box 1924, Fairview, NC 28730. Phone: (828) 628-8022. Fax: (828) 628-8025. www.triagefirst.com.
- **The Pediatric Emergency Assessment, Recognition, and Stabilization (PEARS)** is a seven-hour video-based course with instructor-led discussion. Key topics covered are respiratory compromise and arrest recognition and management, circulatory compromise and arrest recognition and management, shock recognition and management, and resuscitation team concepts. For more information, contact the American Heart Association at (877) 242-4277 or go to www.americanheart.org/cpr and click on "PEARS."
- **Video training kits for medical and traumatic pediatric emergencies** are available for \$198 including shipping. Included are two VHS tapes or DVDs, an *Emergency Care of Crashing Kids* handout and pediatric pocket reference guide. Peds-R-Us also offers full-day, half-day, and one-hour seminars on pediatric emergency topics. For more information, contact: Peds-R-Us Medical Education, P.O. Box 601, Dyer, IN 46311. Phone: (888) 280-7337. Fax: (866) 449-7337. E-mail: education@peds-r-us.com.
- **The Emergency Nursing Pediatric Course** provides pediatric emergency nursing knowledge and psychomotor skill experience. For more information, go to the Emergency Nurses Association web site (www.ena.org). Scroll down to "CATN II/ENPC/TNCC" and click on "ENPC." Or contact the ENA's Course Operations Department by telephone at (800) 900-9659 or e-mail courseops@ena.org.

mandatory training.” Although the Emergency Nursing Pediatric Course (ENPC, offered by the Emergency Nurses Association) is not mandatory, it is recommended, and many ED nurses have attended the course, adds Huckabee. **(See information in resource box, p. 39.)**

“We are sponsoring an ENPC class at our facility so that our nurses can further their education regarding pediatric emergency care,” says Tracy. ED nurses will be reimbursed for the cost of the class, and 12 nurses already have signed up for the next course, she says.

A computer-based learning module for pediatric emergency care recently was purchased from Dyer, IN-based Peds-R-Us Medical Education. **(See resource box, p. 39.)** “This is helping the nurses’ comfort level and overall competence,” says Tracy. “They have asked for more pediatric education and training.” The module is now a part of the annual competency for ED nurses, who receive a certificate after completing the training, says Tracy.

Kanabec Hospital in Mora, MN, has set a goal of all ED nurses being PALS-trained, reports **Dorothy A. Kohl**, RN, CEN, ED manager. “At the present time, only our primary nurse has that as a requirement. But we have four PALS instructors and are working through all of our nursing staff.” The ED also is looking into offering the American Heart Association’s Pediatric Emergency Assessment, Recognition, and Stabilization (PEARS) course to nurses, says Kohl. **(For more information on the PEARS courses, see resource box on p. 39.)**

Recent cases of critically ill children at Kanabec involved a child who drank antifreeze and one with acute meningitis. Both of these children could have died if ED nurses lacked training, says Kohl. “We are a small critical access hospital and yet we are well prepared for pediatric patients,” she reports. “Our department has a Broselow cart with medications and all equipment needed to manage critically ill children, from newborn to puberty. Having staff trained has made the difference between life and death.”

- **Order missing equipment.**

Many EDs tend to focus on the needs of the patients that they see the most of and may overlook children, says Tracy. “Time has to be spent thinking about what education and supplies are needed to have on hand,” she says. “Every time we get a pediatric patient in and we run into a concern regarding unavailability of equipment, it is immediately ordered.”

- **Have a team assess pediatric care.**

At Carondelet St. Mary’s, a Pediatric Care Practice Workgroup is reviewing protocols, equipment, and education needs. The team, co-led by an ED nurse and

ED physician who is board-certified in pediatrics, is made up of 10 ED nurses from the day and night shifts, one ED patient care technician, and the ED nursing director.

“They are meeting routinely and working on issues identified in our assessment gap analysis to make sure that our care of pediatric patients is as it should be,” says Lopez. “We will include other disciplines on an as-needed basis, such as pharmacy, respiratory therapy, medical imaging, and social work.”

All areas of pediatric care will be evaluated, including equipment and supplies, triage, fast track, trauma, medication safety, and behavioral health emergencies, says Lopez.

- **Look at medication protocols.**

At Kanebec Hospital, a joint collaborative between the ED and pharmacy looked at premixed medications and dosing protocols for children, says Kohl. “We changed premixed dopamine and dobutamine so there was only one concentration hospitalwide,” she says. “Pharmacy also calculated all of our IV push drugs for codes, such as epinephrine and atropine, and made sure we had the appropriate drug and concentration in those carts.”

A protocol change was made for the ED’s Broselow cart so that if a module is opened, it is replaced as opposed to only a single piece of equipment, says Kohl. “Our pre-hospital also has the Broselow bag. When they call in with a pediatric patient, they say, ‘Yellow on the Broselow,’ so we can have supplies ready to go on arrival.” *[Editor’s note: The pediatric code blue supply list used by CSM Cardondelet Health Network is available with the online version of ED Nursing. If you’re accessing your online account for the first time, go to www.ahcmedia.com. Click on the “Activate Your Subscription” tab in the left-hand column. Then follow the easy steps under “Account Activation.” If you already have an online subscription, go to www.ahcmedia.com. Select the tab labeled “Subscriber Direct Connect to Online Newsletters. Please select an archive.” Choose “ED Nursing,” and then click “Sign on” from the left-hand column to log in. Once you’re signed in, select “2008” and then select the February 2008 issue. For assistance, call Customer Service at (800) 688-2421.]*

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Don't delay epinephrine for anaphylactic shock cases

A 6-year-old girl comes to your ED with wheezing and lethargy. Emergency medical services (EMS) reports a previous history of asthma. What would you suspect?

"We proceeded as if she were having an asthma attack," says **Susan Richards**, RN, CNIV, a pediatric emergency services nurse at Virginia Commonwealth University Medical Center in Richmond. "She was intubated immediately upon arrival. She was being ventilated by EMS using a bag valve mask and had no spontaneous respiratory effort."

The girl's father arrived moments later and told nurses the girl had gone to bed after eating a shrimp dinner because she felt ill. "The father, now at the bedside, also reported that her lips seemed swollen, and the staff reported swelling to the left anterior neck region," says Richards. When the girl's clothing was removed, nurses saw hives on her shoulder blades and abdomen.

Subcutaneous epinephrine, intravenous steroids, diphenhydramine, and a beta II-blocker were given. Within minutes, the child's hives dissipated. She was admitted to the pediatric intensive care unit for observation, extubated in the morning, and was awake and alert by lunchtime.

Get the best report possible and have a high index of suspicion for anaphylaxis, advises Richards. "This child had a history of asthma, with several admissions in the past," she says. "Every child in our city was wheezing, or so it seemed, and we had been treating

EXECUTIVE SUMMARY

Give epinephrine immediately to children with anaphylaxis, even if respiratory signs and symptoms are not yet present.

- Don't assume that wheezing is asthma.
- Prescribe self-injectable epinephrine before the child is discharged.
- Watch patients for four hours after symptoms resolve before discharge.

SOURCES

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asthma patients all shift."

It was only after more information was received from her father that nurses realized asthma wasn't the cause of the girl's symptoms, says Richards. "We were fortunate that only minutes lapsed prior to her father arriving and the anaphylactic event was recognized," she says. "A poor outcome could have occurred if the event were not recognized quickly."

At triage, ask about any hospital admissions in the past, food or environmental allergies, and unusual diet choices in the previous 24 hours, says Richards. "These are questions you can be asking the parents as you are assessing the child, putting them on a monitor and removing clothes," she says. Cover exposed parts quickly, and remember to keep them warm, Richards says. "Try not to isolate them from the parents," she emphasizes. "Keep families together."

Give immediate injection

Delayed injection of epinephrine may cause death in pediatric patients, according to updated guidelines from the American Academy of Pediatrics (AAP). Epinephrine is an effective treatment option for anaphylaxis if it is injected into the lateral leg immediately, say the guidelines, which recommend a lateral thigh intramuscular epinephrine injection of 0.01 mg per kg, but no more than 0.3 mg total, for children with anaphylaxis (using 1:1,000 dilution). (*Editor's note: To access the guidelines, go to www.pediatrics.org/cgi/content/full/119/3/638.)*)

The take-home message for ED nurses is: Don't be afraid to give a child epinephrine, says **Susan Fuchs**, MD, associate director of pediatric emergency

medicine at Children's Memorial Hospital in Chicago. "It is not necessary to wait for respiratory signs and symptoms to give the epinephrine," she notes.

There are numerous ways children and adults can present with anaphylaxis, says Fuchs. "Some develop respiratory symptoms; some feel faint secondary to hypotension; some have swelling of the face, lips, or tongue; and others have a feeling of impending doom," she says.

After the anaphylactic child is stabilized and a possible trigger is identified, consider giving training about epinephrine autoinjection, recommends **Scott H. Sicherer**, MD, co-author of the clinical report and chair of the AAP's Section on Allergy and Immunology. "A big mistake would be to treat the episode but not provide any additional guidance about potential recurrence," he says.

When the child is discharged from the ED, remember to prescribe self-injectable epinephrine for emergency use, which comes in fixed doses of 0.15 or 0.3 mg. "For a child, a reasonable weight to switch from prescribing the 0.15 mg dose to the 0.3 mg dose is about 55 pounds," adds Sicherer.

Symptoms of anaphylaxis may return within the first hour or sometimes longer, warns Sicherer. "For food-induced anaphylaxis, watch the patient at least four or more hours without further symptoms prior to discharge, and longer if initial symptoms were more severe," he says. ■

ED sepsis interventions dramatically cut deaths

Patients avoid ICU admission

Immediately after a 70-year-old man presented with fever, tachycardia, low blood pressure and abdominal pain, ED nurses gave acetaminophen, started two large-bore intravenous (IV) lines of normal saline infusing wide open, obtained all blood work including cultures and lactate, obtained a portable chest X-ray and electrocardiogram, and administered antibiotics with lab results pending.

By the time the labs came back showing an elevated white count and lactate, the patient's heart rate and temperature were down and the man reported feeling better. "Due to early intervention and early administration of antibiotics, this patient avoided an ICU admission and continued to improve on a step-down unit," says **Kelly Powers**, RN, an ED nurse at Christiana Care Health System in Wilmington, DE. "This is a

EXECUTIVE SUMMARY

With early ED interventions for severe sepsis and septic shock, more patients receive antibiotics, corticosteroids, and central venous pressure/central venous oxygen saturation monitoring. At one ED, mortality rates decreased from 39.5% to 20.8%.

- Provide nurses one-on-one education.
- Call an in-house "sepsis alert" to bring staff to the patient's bedside.
- Report successful patient outcomes.

reflection of what early recognition, early intervention and teamwork can do for patient outcomes."

There is growing evidence that early interventions for sepsis and septic shock can save lives in the ED. After a severe sepsis protocol was implemented in Loma Linda (CA) University Medical Center's ED, 100% of patients received central venous pressure/central venous oxygen saturation (CVP/Scvo₂) monitoring compared with 64.8% before, and 100% received antibiotics compared with 89.7% previously. More patients received corticosteroids (29.9% compared with 16.2%), which is given if patients are on vasopressor therapy or if adrenal insufficiency is suspected. Mortality rates decreased from 39.5% to 20.8%.^{1,2}

At Christiana Care, a "Sepsis Alert" program decreased mortality rates for patients with severe sepsis to 30.2% from 61.7% during a two-year period. An ED order set was created, and nurses were given one-on-one education about sepsis, use of antibiotics, and setting up CVP lines.

Patricia Burchell, RN, BSN, an ED nurse at Christiana Care, says, "We stress the importance of early recognition of sepsis patients and early administration of antibiotics within the first hour." The ED interventions increased the percentage of patients receiving antibiotics within an hour from 86% to 97%, and they decreased the average time from triage to first antibiotic administration from 2.9 hours to under two hours.

An in-house "sepsis alert" is called to bring extra help to the patient's bedside, as is already done with trauma and cardiac patients, says Burchell. The alert is called when the patient has an elevated white blood cell count, when fluid boluses fail to return vital signs to normal range, or for elevated lactate levels over 4 mmol/L. Educating more than 100 emergency nurses about the new interventions was a challenge, says Powers. Inservices were given during different shifts, with

Continued on page 44

Emergency Department Adult Sepsis Orders Loma Linda University Medical Center

✓	Attending Physician:
	Diagnosis: <input type="checkbox"/> Severe Sepsis <input type="checkbox"/> Septic Shock
	Condition: Critical
	Allergies:

Routine Emergency Department Orders	
	Cardiac Monitoring & Continuous Pulse Oximetry
	Vitals q 1 hr with Progress Note Documentation by Nurse or MD
	Activity: Bed Rest
	Diet: NPO
	IV Saline lock with flush of Normal Saline 3 mL q 12 hours
	Calibrate & Initiate Central Venous Pressure and ScvO ₂ Monitoring after line placement verified by MD
	Alert MD if Central Venous Pressure is < 8 mmHg or > 15 mmHg
	Alert MD if Systolic Blood Pressure is < 90 mmHg or > 160 mmHg
	Alert MD if ScvO ₂ < 70%
	Alert MD if Hemoglobin (or Hemacue) is ≤ 9 g/dL
	Alert MD if Lactate > 2 mmol/L

Diagnostics	
	Blood culture & sensitivity, urine culture & sensitivity, sputum culture sensitivity, urinalysis, CBC with differential,
	Comprehensive metabolic panel, Troponin I, D-Dimer, PT/PTT/INR reason:
	Lactate level (drawn in grey tube on ice) now and repeat in 6 hours reason:
	Venous blood gas from central line & arterial blood gas reason:
	Chest X-ray reason:
	Physician Signature: _____ Date: _____ Time: _____

Medications (Check or circle one or more as needed. Date and time must be entered for each order)		
Physician	Date and	
Signature	Time	Allergies:
		Intravenous fluids - NS 500 mL IV bolus until Central Venous Pressure 8 to 12 mmHg, then continue NS to run at 150 mL/Hour
		Antibiotics - See Parenteral Antibiotic Order Form
		Vasopressors - (SBP = Systolic Blood Pressure)
		Norepinephrine 8 mg/D ₅ W 250 mL at 2-20 mcg/min., titrate to SBP > 90 mmHg
		Dopamine 800 mg/D ₅ W 250 mL at 5-20 mcg/kg/min., titrate to SBP > 90 mmHg
		Phenylephrine 10 mg/NS 250 mL at 40-200 mcg/min., titrate to SBP > 90 mmHg
		Vesopressin 20 units/NS 100 mL at 0.01-0.04 units/min., titrate to SBP > 90 mmHg
		Epinephrine 1 mg/NS 250 mL at 2-10 mcg/min., titrate to SBP > 90 mmHg
		Dobutamine 500 mg/NS 250 mL at 2.5-20 mcg/kg/min., titrate to ScvO ₂ > 70% maintaining SBP > 90 mmHg and Heart Rate < 140 per min
		Nitroglycerin 100 mg/D ₅ W 250 mL at 10-60 mcg/min., titrate to SBP < 140 mmHg
		Type & Cross 2 units
		Tranfuse ____ unit PRBC - See Blood Transfusion Order Form
		Dexamethasone 2 mg IV q 6 hr
		Xigris (Drotrecogin alfa activated) - See Separate Medication Order Form

Source: Loma Linda (CA) University Medical Center.

SOURCES

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- **Teri D. Reynolds**, RN, BSN, Clinical Educator, Department of Emergency Services, Loma Linda (CA) University Medical Center. E-mail: TReynold@llu.edu.

check-off sheets used to verify attendance, and during orientation, new nurses attended a lecture with a slide show and were given handouts with the ED's new order set and information about sepsis care, she adds.

Charts of sepsis patients are reviewed each month to determine how long it took to start antibiotics, to place a central line, and complete a fluid bolus, says Powers. "We then take what we learn and give feedback to staff nurses, both good points and what needs to be improved," she says. For example, ED nurses are praised for short times to fluid resuscitation, but they are reminded that Scvo₂ monitoring needs to be done for every patient.

When implementing Loma Linda's sepsis protocol, technology and education were the biggest challenges, says **Teri D. Reynolds**, RN, BSN, clinical educator in the department of emergency services.

"With extended stays in the ED and patient acuity on the rise, ED nurses are being asked to increase their technological skills to those of ICU nurses," she says. "What used to be an ED motto of 'stabilize and move' is now 'stabilize and provide extended care.'"

ED nurses must be comfortable using CVPs, arterial lines, Scvo₂ monitors, and the many drips and medications now ordered for sepsis patients, says Reynolds. "Complicating things further is the problem of the nursing shortage. Educating new graduates and nurses with little experience can be very challenging," she says.

The ED hired a full-time sepsis educator to provide group and individual training to day and night shift nurses, review sepsis charts, and provide feedback to the staff, says Reynolds. **(See the order set used by emergency nurses on p. 43.)**

Positive outcomes are shared with ED nurses. For example, an 88-year-old man presented with altered level of consciousness, decreased blood pressure,

decreased oxygen saturation, and extreme hypothermia. "The triage nurse was able to spot signs of sepsis," says Reynolds. "The bedside nurse took immediate action and initiated our sepsis goal-directed therapy."

Labs and cultures were sent, fluids were started, and a central line was placed with Scvo₂ monitoring, all within one hour. During the next hour the patient was placed on vasopressors to support his blood pressure, given intravenous antibiotics, and continued fluid resuscitation. "Due to the timely recognition of sepsis by the ED nurses and their prompt actions, this patient was able to walk out of the hospital doors all on his own and return to his family and normal daily activities," says Reynolds.

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Use proven strategies for MRSA in your ED

Secret observers check for hand washing

Methicillin-resistant *Staphylococcus aureus* (MRSA) infections have made headlines recently, and EDs are being hit hard.

"There has been a steady incline in community-acquired cases seen in our ED over the last several years," reports **Leigh Chapman**, BSN, infection control

EXECUTIVE SUMMARY

EDs are seeing increasing numbers of methicillin-resistant *Staphylococcus aureus* (MRSA) infections. To prevent spread:

- Keep isolation gowns, gloves, and personal protective gear at the patient's bedside.
- Use a "secret shopper" to observe if nurses practice hand hygiene.
- Remind emergency medical services workers to wash hands.

practitioner at St. Joseph Medical Center in Towson, MD.

A recent study reported that nearly 19,000 people died in the United States in 2005 after being infected with a virulent drug-resistant strain of MRSA, which suggests that invasive infections with MRSA may be twice as common as previously thought.¹ “The study suggests that MRSA is an important cause of infection in health care facilities in this country, and that health care facilities need to do more to control it,” says **John A. Jernigan**, MD, MS, acting deputy chief for the Centers for Disease Control and Prevention. **(For more information on this topic, see “Dramatic rise in CA-MRSA: What it means for your ED,” *ED Nursing*, March 2005, p. 58, and “Expect a surge in drug-resistant bacteria,” *EDN*, April 2006, p. 65.)**

To reduce the spread of infection in your ED, the most important thing emergency nurses can do is achieve 100% adherence to existing infection control recommendations, says Jernigan. “This includes hand hygiene before and after each and every patient contact, and use of gown and gloves when indicated — for example, while caring for a patient with draining wound,” he says.

Isolation is a challenge

A big challenge facing ED nurses is being able to isolate MRSA patients promptly, says **Durenda Juergensen**, RN, BSN, MHA, director of nursing for emergency services at St. Joseph.

“The challenge comes from not always being aware that patients are MRSA carriers,” she says. “MRSA is not limited to nursing home patients. Anyone can have it, from children to adults, and many do not know if they are a carrier or not. We are seeing between five to eight patients a week with MRSA who then become inpatients.”

At St. Joseph, patients are isolated for up to one year after a hospital admission during which they were identified as a MRSA carrier. “This helps to protect other patients,” says Juergensen. “In the ED, this information is identified during the full registration process. This then alerts the nurse to place the patient in contact isolation.”

Since MRSA has not been diagnosed yet with many patients, there is a delay in isolation, says Juergensen. “But in order to help protect patients and staff, we practice universal precautions on all patients, treating all bodily fluids as contaminated,” she says.

When a patient is identified as needing contact isolation, an isolation cart is immediately placed outside the patient’s door and a “contact isolation” sign posted at the patient’s door. “In order to assist in prompt isolation practices, we keep isolation gowns, gloves, and personal

SOURCE/RESOURCE

For more information, contact:

- **Durenda Juergensen**, RN, BSN, MHA, Director of Nursing, Emergency Services, St. Joseph Medical Center, Towson, MD. E-mail: Durenda.Juergensen@catholichealth.net.

A guidance on management of multidrug-resistant organisms is available free of charge from the Centers for Disease Control and Prevention’s Healthcare Infection Control Practice Advisory Committee. To access the guidance, go to www.cdc.gov/ncidod/dhqp/pdf/ar/mdroGuideline2006.pdf.

protective gear at the bedside,” says Juergensen. “The patient and family are educated on performing safe isolation practices while they are in the ED.”

Agency nurses continually are reminded about the ED’s hand hygiene practices to help decrease the spread of MRSA, and a “secret shopper” type of process identifies staff who need additional reminders, says Juergensen. “I have implemented this process in the ED as a method to internally monitor hand washing and counsel staff on the spot with a simple reminder,” she says.

An ED staff member observes 10 people each week for compliance with hand washing before and after entering patient rooms, and he or she reminds staff of the process when they are observed being noncompliant.

“The secret shopper is changed every three months,” says Juergensen. “I prefer to keep the same person so that they observe consistently.”

The shopper is required to do observations at different times, locations in the ED, and different days of the week, she explains. “Presently in the ED, for November 2007, we were 100% compliant with hand washing for the observations made,” Juergensen reports.

Nurses are not the only ones that need reminding to do hand washing, adds Juergensen. “All medical personnel who come in contact with the patient — physicians, EMS, and other hospital staff — sometimes need reminding, too,” says Juergensen. “When EMS comes in, staff will remind them by saying, ‘Don’t forget to wash your hands,’ or ‘Remove your gloves before leaving the room.’”

Reference

1. Klevens RM, Morrison MA, Nadle J, et al. Invasive

Some ED seizure patients should get immediate CT

If a seizure patient comes to your ED, one of the first questions you need answered is “What diagnostic testing is needed?”

“I think there is some confusion on who needs it emergently. An immediate CT scan could affect a patient’s outcome with hemorrhage, so a decision can be made about emergent neurosurgical intervention,” says **Donna Avanecean**, RN, FNP-C, CNRN, a nurse practitioner in the Stroke Center at Hartford (CT) Hospital.

Prompt imaging is needed for seizure patients with an abnormal neurological examination, focal seizure onset, history of AIDS, and infants younger than six months, according to new guidelines from the American Academy of Neurology.¹ “The recommendations for when to order imaging are very useful,” says Avanecean. “The one question that always comes up in the need for patients presenting with seizures is what imaging is necessary.”

An initial noncontrast CT allows you to rule out the obvious reasons for seizure such as hemorrhage, tumor, or other mass occupying lesion, says Avanecean.

Obtaining a thorough history is important and may help guide diagnostic tests, says **Lauren Brandt**, RN, MSN, CNRN, clinical director of the Neurosciences, Brain, & Spine Center at Brackenridge Hospital in Austin, TX. Brandt recommends you ask patients the following: Is this the first seizure? How long has it lasted? Was there anything that preceded it, such as hallucinations, smells, or visual changes? Seizures can present in multiple different ways, not just the classic “tonic-clonic”

EXECUTIVE SUMMARY

An immediate CT scan is needed for ED seizure patients with an abnormal neurological examination, focal seizure onset, history of AIDS, or infants younger than six months, according to new guidelines.

- Rule out hemorrhage, tumor, or other mass occupying lesion.
- Ask patients about hallucinations, smells, or visual changes that preceded the seizure.
- Remember that seizures can present in many different ways.

type, she says. In partial seizures, the patient may not have impaired consciousness, and the seizure itself manifests itself with local extremity jerking, head turning, and emotional disturbances, she says. “Generalized seizures can be the classic tonic-clonic movements, but may also show as absence seizures,” says Brandt. “The patient has a momentary lapse of awareness and all ongoing activity stops until the seizure stops.”

Patients may present with atonic seizures, involving a sudden loss of muscle tone and the patient dropping to the floor, says Brandt. “Immediate diagnostic tests are especially important in new onset of seizures, if they are prolonged, if the seizure type has changed from typical seizure presentation, or if there is a suspected injury due to the seizure,” she adds.

Reference

1. Harden CL, Huff JS, Schwartz TH, et al. Reassessment: Neuroimaging in the emergency patient presenting with seizure (an evidence-based review): Report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology. *Neurology* 2007; 69:1,772-1,780. ■

Ultrasound can tell you if a child is dehydrated

Using ultrasound at the patient’s bedside is a noninvasive way to diagnose intravascular volume depletion in children with gastroenteritis, says a new study.¹

Researchers looked at 36 children between 6 months and 16 years with clinical evidence of dehydration. Bedside ultrasound measurements of the inferior vena cava and aorta were taken before and immediately after intravenous (IV) fluids were administered, and these levels were compared to a group of 36 children who did not undergo ultrasound.

As measured by bedside ultrasound, the inferior vena cava and aorta ratio was lower in children clinically assessed to be dehydrated. The level increases with administration of IV fluid boluses, say the researchers.

Because ultrasound is rapid and noninvasive, it can help improve patient flow and cause less pain than using standard laboratory tests to evaluate dehydration, says **Lei Chen**, MD, the study’s author and faculty at Yale University School of Medicine in New Haven, CT.

Although ED physicians perform the ultrasounds, ED nurses could be trained to do them, says Chen. “We have trained nurses to perform bladder ultrasounds prior to urethral catheterizations in young children,” she says.² “We foresee similar possibilities for

this modality in the future.”

References

1. Chen L, Kim Y, Santucci KA. Use of ultrasound measurement of the inferior vena cava diameter as an objective tool in the assessment of children with clinical dehydration. *Acad Emerg Med* 2007; 14:841-845.
2. Chen L, Hsiao AL, Moore CL, et al. Utility of bedside bladder ultrasound prior to urethral catheterization in young children. *Pediatrics* 2005; 115:108-111. ■

Don't rely on BNP levels to detect CHF for trauma

B-type natriuretic peptide (BNP), a neurohormone secreted by the heart in response to fluid overload, has been shown to be elevated in medical patients with left ventricular dysfunction, which speeds diagnosis of congestive heart failure (CHF) patients. But can it also detect CHF in critically ill trauma patients?

Researchers looked at 50 trauma patients and found that there was no relationship between elevated BNP levels and echocardiographic evidence of CHF.¹ “The BNP is a great test for medical patients, to decide if the cause of their hypoxia is CHF or pulmonary disease,” says **Kenneth Waxman**, MD, one of the study’s authors and director of surgical education and trauma services medical director at Santa Barbara (CA) Cottage Hospital. “It’s a wonderful test and it’s verified, but it hasn’t really been looked at in trauma patients.”

Therefore, BNP is *not* a good way to differentiate the causes of hypoxia or determine whether a trauma patient has CHF, he says. “There is a trend to do a lot of BNPs in the ED, to kind of screen for heart failure,” Waxman says. “Nurses should keep in mind that the BNP just doesn’t work for trauma patients. For example, in head-injured patients, we found elevated BNPs in people who didn’t have heart failure.”

At Santa Barbara Cottage Hospital, ED nurses obtain the blood sample for CHF patients, administer medication for the patient as ordered by the ED physician, and monitor the effects of these medications, says **Kelly Kam**, RN, trauma and pre-hospital manager.

“BNP is a very useful test in helping to diagnose why a patient may be short of breath,” Kam says. “Continuous

EXECUTIVE SUMMARY

B-type natriuretic peptide (BNP) testing is used in EDs to speed diagnosis of congestive heart failure (CHF), but it isn’t an accurate way to detect CHF in critically ill trauma patients, according to new research.

- Elevated BNPs may be found in trauma patients even if they don’t have CHF.
- For nontrauma patients, BNP can determine the severity of heart failure.
- Frequently reassess the CHF patient’s airway, breathing, circulation, and neurological status.

monitoring of airway, breathing, and circulation are the No. 1 priority. Any intervention to maintain these should not be withheld while awaiting this lab value.”

The test has become standard of care in the ED and is used “on a daily basis” to help make or confirm a diagnosis of CHF, says Kam. “This test also acts as a marker to determine the severity of the heart failure if the test is positive,” she says. “It will also show how well the prescribed treatment is working.”

Frequently reassess the CHF patient’s airway, breathing, circulation, and neurological status and their response to any medications given, says Kam.

CNE instructions

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

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

After completing this semester’s activity with the **June** issue, you must complete the evaluation form provided in that issue and return it in the reply envelope provided in order to receive a certificate of completion. When your evaluation is received, a certificate will be mailed to you. ■

COMING IN FUTURE MONTHS

■ Prevent rapid deterioration of your elderly patients

■ Stop patients from being harmed by warfarin

■ Be ready for risks of procedural sedation in children

■ Dramatically improve care of traumatic brain injuries

Document and report these findings, she says. “Any compromise in these particular areas is cause for alarm and requires immediate intervention,” Kam says.

Reference

1. Stewart D, Waxman K, Brown C, et al. B-type natriuretic peptide levels may be elevated in the critically injured trauma patient without congestive heart failure. *J Trauma-Injury Inf Crit Care* 2007; 63:747-750. ■

CNE objectives/questions

Participants who complete this activity will be able to:

- **identify** clinical, regulatory, or social issues relating to ED nursing;
 - **describe** how those issues affect nursing service delivery;
 - **integrate** practical solutions to problems and information into the ED nurse’s daily practices, according to advice from nationally recognized experts.
5. Which is recommended to improve care of sepsis patients in the ED, according to Patricia Burchell, RN, BSN?
 - A. Patients should be given corticosteroids only if they are not on vasopressor therapy.
 - B. Central venous pressure monitoring should not be done in EDs.
 - C. Antibiotics should be given within one hour of the patient’s arrival.
 - D. Corticosteroids should not be given if adrenal insufficiency is suspected.
 6. Which is true regarding pediatric patients with anaphylaxis in the ED, according to Scott H. Sicherer, MD?
 - A. Epinephrine should not be given unless respiratory signs and symptoms are present.
 - B. Children always will present with swelling.
 - C. Children with food-induced allergies can be safely discharged when symptoms resolve.
 - D. If a trigger is identified, training should be given about epinephrine autoinjection.
 7. Which seizure patients require an immediate computerized tomography scan, according to a *Neurology* study?
 - A. Patients with an abnormal neurological examination.
 - B. Patients with focal seizure onset.
 - C. Infants younger than 6 months.
 - D. All of the above
 8. Which is true regarding B-type natriuretic peptide testing, according to Kelly Kam, RN?
 - A. It can determine the severity of heart failure.
 - B. It is a good way to determine whether a trauma patient has congestive heart failure.
 - C. Levels are never elevated in head injured patients without heart failure.
 - D. The test can’t tell you how well a treatment is working.

Answers: 5. C; 6. D; 7. D; 8. A.

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**CSM CARONDELET HEALTH NETWORK
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SIDE OF CART

<u>Exp.Date</u> (month / year)	<u>Item</u>	<u>SPD Location/Billing #</u>
___	1 Adult Resuscitator	1510
___	1 Pediatric Resuscitator	7294
___	1 Infant Resuscitator	7299
___	1 Box Exam Gloves (medium)	1157
___	1 Pocket Mask	9325
___	1 Full Oxygen Tank	Prep

TOP DRAWER BIN

___	1 Laryngoscope Small Handle	Prep
___	2 Batteries in Handle	2298
___	1 Blade Miller Size 0 (straight)	Prep
___	1 Blade Miller Size 1 (straight)	Prep
___	1 Blade Miller Size 2 (straight)	Prep
___	1 Blade Mac Size 1 (curved)	Prep
___	1 Blade Mac Size 2 (curved)	Prep
___	1 Blade Mac Size 3 (curved)	Prep
___	1 Blade Wis Hipple Size 1.5	Prep
___	1 Plastic Bag (for Used Blade)	Prep
___	2 Batteries Size AA	2298
___	1 McGill Forceps	Prep
___	1 Adhesive (Cloth) 1" Tape	Prep
___	1 Broselow Tape	Prep

PINK/RED DRAWER 3-9 KG

___	2 Oral Airway Size 00 (4 cm)	3909
___	2 Oral Airway Size 0 (5cm)	1558
___	2 Yankauer Suction Tip Fine Capacity	9380
___	2 Endotrach Stylet Newborn 5 Fr	7233
___	2 ET Tube Uncuffed Size 2.5	7215
___	2 ET Tube Uncuffed Size 3.0	7213
___	2 ET Tube Uncuffed Size 3.5	7214
___	2 Oxisensor Neonatal (Lavender)	7378
___	2 Oxisensor Infant (Gold)	6676
___	2 O2 Infant Mask	2755
___	2 Butterfly IV Needle 23g	2031
___	2 Butterfly IV Needle 25g	2032
___	2 IV Catheter 22g x 1"	2190
___	2 IV Catheter 24g x 5/8"	2191
___	2 Illinois Bone Marrow Needle	9206
___	2 Suction Catheter 6 Fr	7230
___	2 Suction Catheter 8 Fr	7210
___	2 Feeding Tube 5 Fr	9214
___	2 Feeding Tube 8 Fr	2610
___	2 Foley Catheter 6 Fr	7865
___	1 Newborn BP Cuff Complete	JSPD
___	1 Infant BP Cuff Complete	JSPD

PURPLE DRAWER 10-11 KG

<u>Exp.Date</u> (month / year)	<u>Item</u>	<u>SPD Location/Billing #</u>
___	2 Oral Airway Size 1 (6 cm)	1557
___	2 Yankauer Suction Tip Fine Capacity	9380
___	2 Endotrach Stylet Newborn 5 Fr	7233
___	1 ET Tube Uncuffed Size 3.5	7214
___	2 ET Tube Uncuffed Size 4.0	7202
___	1 ET Tube Uncuffed Size 4.5	9061
___	2 Oxisensor Pediatric (Pink)	7373
___	1 O2 Pediatric Mask	9561
___	2 Butterfly IV Needle 23g	2031
___	2 Butterfly IV Needle 25g	2032
___	2 IV Catheter 20g x 1"	2189
___	2 IV Catheter 22g x 1"	2190
___	2 IV Catheter 24g x 5/8"	2191
___	2 Illinois Bone Marrow Needle	9206
___	2 Suction Catheter 10 Fr	7220
___	2 Feeding Tube 8 Fr	2610
___	2 Feeding Tube 10 Fr	9771
___	2 Foley Catheter 8 Fr	1903
___	2 Foley Catheter 10 Fr	9162
___	1 Child BP Cuff Complete	Prep

YELLOW DRAWER 12-14 KG

___	2 Oral Airway Size 1 (6 cm)	1557
___	2 Yankauer Suction Tip Fine Capacity	9380
___	2 Endotrach Stylet 10 Fr	8381
___	1 ET Tube Uncuffed Size 4.0	7202
___	2 ET Tube Uncuffed Size 4.5	9061
___	1 ET Tube Uncuffed Size 5.0	9062
___	2 Oxisensor Pediatric (Pink)	7373
___	2 O2 Pediatric Mask	9561
___	2 Butterfly IV Needle 21g	2221
___	2 Butterfly IV Needle 23g	2031
___	2 IV Catheter 18g x 1 1/4"	2188
___	2 IV Catheter 20g x 1"	2189
___	2 IV Catheter 22g x 1"	2190
___	2 Illinois Bone Marrow Needle	9206
___	2 Suction Catheter 10 Fr	9215
___	2 Feeding Tube 10 Fr	9771
___	2 Foley Catheter 10 Fr	9162
___	1 Child BP Cuff Complete	Prep

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WHITE DRAWER 15-18 KG

<u>Exp.Date</u> (month / year)	<u>Item</u>	<u>SPD Location/Billing #</u>
___	2 Oral Airway Size 1 (6 cm)	1557
___	2 Yankauer Suction Tip Fine Capacity	9380
___	2 Endotrach Stylet 10 Fr	8381
_____	1 ET Tube Uncuffed Size 4.5	9061
_____	2 ET Tube Uncuffed Size 5.0	9062
_____	1 ET Tube Uncuffed Size 5.5	9063
___	2 Oxisensor Pediatric (Pink)	7373
___	2 O2 Pediatric Mask	9561
___	2 Butterfly IV Needle 21g	2221
___	2 Butterfly IV Needle 23g	2031
_____	2 IV Catheter 18g x 1 ¼"	2188
_____	2 IV Catheter 20g x 1"	2189
_____	2 IV Catheter 22g x 1"	2190
_____	2 Illinois Bone Marrow Needle	9206
___	2 Suction Catheter 10 Fr	9215
___	2 Feeding Tube 10 Fr	9771
___	2 Stomach Tube (Levin) 12 Fr	9769
___	2 Foley Catheter 10 Fr	9162
___	2 Foley Catheter 12 Fr	2182
___	1 Child BP Cuff Complete	Prep

BLUE DRAWER 19-23 KG

___	2 Oral Airway Size 1 (6 cm)	1557
___	2 Oral Airway Size 2 (7 cm)	1554
___	2 Yankauer Suction Tip Fine Capacity	9380
___	2 Endotrach Stylet 14 Fr	1136
_____	1 ET Tube Uncuffed Size 5.0	9062
_____	2 ET Tube Uncuffed Size 5.5	9063
_____	1 ET Tube Cuffed Size 6.0	1567
___	2 Oxisensor Pediatric (Pink)	7373
___	2 O2 Pediatric Mask	9561
___	2 Butterfly IV Needle 21g	2221
___	2 Butterfly IV Needle 23g	2031
_____	2 IV Catheter 18g x 1 ¼"	2188
_____	2 IV Catheter 20g x 1"	2189
_____	2 Illinois Bone Marrow Needle	9206
___	2 Suction Catheter 10 Fr	9215
___	2 Stomach Tube (Levin) 12 Fr	9769
___	2 Salem Sump Tube 14 Fr	2105
___	2 Foley Catheter 10 Fr	9162
___	2 Foley Catheter 12 Fr	2182
___	1 Child BP Cuff Complete	Prep

ORANGE DRAWER 24-29 KG

<u>Exp.Date</u> (month / year)	<u>Item</u>	<u>SPD Location/Billing #</u>
___	2 Oral Airway Size 3 (8 cm)	1555
___	2 Oral Airway Size 4 (9 cm)	1556
___	2 Yankauer Suction Tip Fine Capacity	9380
___	2 Endotrach Stylet 14 Fr	1136
_____	1 ET Tube Uncuffed Size 5.5	9063
_____	2 ET Tube Cuffed Size 6.0	1567
___	2 Oxisensor Pediatric (Pink)	7373
___	2 Oxisensor Adult (Blue)	2823
___	2 O2 Adult Mask(#1041)	1488
___	2 Butterfly IV Needle 21g	2221
___	2 Butterfly IV Needle 23g	2031
_____	2 IV Catheter 18g x 1 ¼"	2188
_____	2 IV Catheter 20g x 1"	2189
_____	2 Illinois Bone Marrow Needle	9206
___	2 Suction Catheter 10 Fr	9215
___	2 Salem Sump Tube 14 Fr	2105
___	2 Salem Sump Tube 16 Fr	2248
___	2 Salem Sump Tube 18 Fr	2251
___	2 Foley Catheter 12 Fr	2182
___	1 Adult BP Cuff Complete	8994

GREEN DRAWER 30-36 KG

___	2 Oral Airway Size 3 (8 cm)	1555
___	2 Oral Airway Size 4 (9 cm)	1556
___	2 Yankauer Suction Tip Fine Capacity	9380
___	2 Yankauer Suction Tip(Adult)	1315
___	2 Endotrach Stylet 14 Fr	1136
_____	1 ET Tube Cuffed Size 6.0	1567
_____	2 ET Tube Cuffed Size 7.0	1568
___	2 Oxisensor Adult (Blue)	2823
___	2 O2 Adult Mask(#1041)	1488
___	2 Butterfly IV Needle 21g	2221
_____	2 IV Catheter 16g x 1 ¼"	7516
_____	2 IV Catheter 18g x 1 ¼"	2188
_____	2 IV Catheter 20g x 1"	2189
_____	2 Illinois Bone Marrow Needle	9206
___	2 Suction Catheter 14 Fr	1481
___	2 Salem Sump Tube 18 Fr	2251
___	2 Foley Catheter 12 Fr	2182
___	1 Adult BP Cuff Complete	8994

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BOTTOM DRAWER—IV SUPPLIES/ MISC

<u>Exp.Date</u> (month / year)	<u>Item</u>	<u>SPD Location/Billing #</u>
_____	__ 1 Armboard 9 inch	1790
_____	__ 1 Armboard Molded 6 inch	9201
_____	__ 1 Armboard Infant 4 inch	Prep
_____	__ 2 ea IV Plumset Tubing(11943)	1483
_____	__ 1 IV Set Buretrol	1405
_____	__ 1 IV Start Kit	2638
_____	__ 1 Blood Gas Kits	1576
_____	__ 1 Penrose Drain ½ inch	2117
_____	__ 1 Penrose Drain ¼ inch	2253
_____	__ 1 Central Line Kit 2-Lumen	9977
_____	__ 3 ea Syringes 10 ml LL	Prep
_____	__ 3 ea Syringes 3 ml LL	Prep
_____	__ 3 ea Syringes 1 ml TB	Prep
_____	__ 3 ea Hypo-Needles 18 g (1 ½")	Prep
_____	__ 3 ea Hypo-Needles 20 g (1")	Prep
_____	__ 3 ea Hypo-Needles 22 g (1")	Prep
_____	__ 3 ea Hypo-Needles 25g (5/8")	Prep
_____	__ 1 CO2 EZ Cap Detector Adult	9562
_____	__ 1 CO2 EZ Cap Detector Peds	9026
_____	__ 2 Philips—Adult Multifunction Electrodes	9636
_____	__ 2 Philips—Pediatric Multifunction Electrodes	9327
_____	__ 2 Electrodes Adult (3 pkt)	Prep
_____	__ 2 Electrodes Pediatric	1731
_____	__ 1 O2 Nasal Cannula Pediatric	9564
_____	__ 2 Stopcock 3-Way	1508
_____	__ 2 5 in 1 Connector Sterile	2194
_____	__ 2 Nasal Tube Attachments	3317
_____	__ 3 Clave Connector	1500
_____	__ 1 Scissors S/B Sterile	Prep
_____	__ 3 Lubricant Jelly packets	Prep

Chest Tubes

__	1 ea Size 10 fr	7223
__	1 ea Size 12 fr	9070
__	1 ea Size 16 fr	OR
__	1 ea Size 20 fr	OR
__	1 ea Size 24 fr	OR
__	1 ea Size 32 fr	OR

Needle Aspiration Kit

_____	__ 1 Syringe 10 ml LL	Prep
_____	__ 1 Butterfly IV Needle 25g	2032
_____	__ 1 IV Catheter 18g x 1 ¼"	2188
_____	__ 1 IV Catheter 20g x 1"	2189
_____	__ 3 Alcohol Wipes	Prep

UNIT SPECIFIC ITEMS (stay on unit)

(Nursing units are responsible for maintaining these)

AED –Difibrillator/monitor
Patient Cable for multifunction defib electrode pads
Defibrillator Paddles
Instruction book for AED

Red bag with
3-lead cable system
1 PulseOx cable (if applicable)

Suction Machine

Doppler

Cart # _____

Checked By:

SPD: Date: _____ By: _____ / _____

Pharmacy: Date: _____ By: _____ / _____

Earliest SPD Expiration Date: _____

Earliest Pharmacy Expiration Date: _____

Source: Carondelet St Mary's Hospital, Tucson, AZ.