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February
2000

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New regs require safer needle devices — Is your ED out of compliance?

Use needleless systems — or face fines of up to \$70,000

Is your ED doing enough to reduce your risk of getting stuck with a contaminated needle? If your ED doesn't take steps to comply with regulations aimed at reducing needlestick injuries, your hospital could be fined up to \$70,000, warn experts.

Five California hospitals have already been fined for failure to implement state law and change their practices, reports **Diana Meyer**, RN, MSN, CCNS, CCRN, CEN, clinical nurse specialist for emergency services at Pomona Valley (CA) Hospital Medical Center.

"The financial penalties to organizations have already begun," Meyer notes. "But of course, the greatest risk is to our future when we fail to protect the health of our work force. The cost is extremely high to the individual, the organizations, and our communities."

**Special
Report:
Needlestick
Safety
in the ED**

EXECUTIVE SUMMARY

A new compliance directive from the Washington, DC-based Occupational Safety and Health Administration is requiring facilities to use safer needle devices and review a plan to reduce needlestick injuries on an annual basis. If hospitals don't comply with regulations, they face possible fines of up to \$7,000 for serious violations and \$70,000 for willful violations.

- You must become familiar with safer needle devices and enlist help of managers, as needed.
- You also should be familiar with your facility's data about needlestick injuries, high-risk areas, and the organization's needlestick and blood-borne pathogen exposure prevention plan.
- Special devices may be needed to prevent incompatibility of systems with other hospitals and paramedics.

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Although regulations to prevent those injuries have existed for several years, there are still between 600,000 and 800,000 needlesticks per year, according to current estimates. A just-published directive will enforce stringent standards for prevention of needlestick injuries, so surveyors will be taking a close look at your ED.

There is also a flurry of activity on the legislative front: Four states have passed laws to reduce needlestick injuries, and a federal bill is pending. (See **related stories on California state law and a federal bill to reduce needlestick injuries, p. 43; and key points of the federal bill, p. 44.**)

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The compliance directive, just published by the Washington, DC-based Occupational Safety and Health Administration, warns EDs that haven't already switched to safer systems must do so now. If they don't, the hospital can be fined

up to \$7,000 for serious violations, and \$70,000 for willful violations.

Your ED must review its plan for injury reduction each year, including use of safer devices, such as needleless systems or needles with self-sheathing. One downside with the needleless systems is that there is a danger of incompatibility of systems when patients are transported by ambulance or transferred to other facilities, experts caution.

However, overall, the change will have a positive impact on your clinical practice, stresses **Vicki Cadwell, RN, MS, CEN, CCRN, MICN, ED clinical educator at St. Jude Medical Center in Fullerton, CA,** which recently converted to safer needle devices.

"Sharps safety is certainly an issue in the ED, where a controlled chaos is the norm," Cadwell says. "Sharps can often get set down, rather than disposed of immediately and properly. This exposes many people — including physicians, nurses, students, and housekeepers — to risk."

You are at risk for HIV, AIDS, hepatitis B and C viruses, and other bloodborne pathogens, emphasizes Cadwell. "Once there is a change in thinking about sharps safety, involving every part of the ED team, it will be easier to accept a new way of doing things," she predicts.

Here are steps you should take to prevent needlestick

injuries and comply with the regulations:

- **Don't be afraid of using new devices.**

It may be difficult to get accustomed to all the new systems, Meyer notes.

"The process of change does not become any easier despite the importance of protecting ourselves and others," she says. "ED nurses have adopted new technology many times already. But in the beginning, when you feel awkward with a new system, frustration can build up."

For example, the new angiocaths are not difficult to learn how to use, but most do require a change in how nurses have been starting IVs, notes Meyer.

Present a united front

Inservices need to be held prior to changing to any new safety product, says **Dianne Kirkpatrick, RN, COHN-S,** coordinator of employee health services at St. Jude. "These can be done by the vendor in conjunction with education and employee health," she recommends. "The key to success is a united front to support implementation and usage of these devices."

Support from administration, clinical nurse specialists, and educators is essential to break through the initial resistance, stresses Meyer. "Time and practice, as well continued improvement in the technology, will eventually defeat any naysayers about the new systems," she says.

- **Know your hospital's data and plan.**

ED managers should share their facility's data on needlesticks and high-risk areas, advises Meyer.

"You should also be educated about the organization's needlestick and bloodborne pathogen exposure prevention plan, which includes the importance of reporting all exposures so the organization may evaluate its systems for improvement," Meyer says.

- **If you are injured, report it.**

It is important to report a needlestick injury, stresses Cadwell. "The key to success of exposure control plans is in tracking rates of exposures to determine if devices are indeed decreasing the number of needlesticks," she adds.

If you are stuck with a needle, immediately follow your facility's needlestick protocol, urges Cadwell.

- **Be aware of cost issues.**

Although the regulations state that safer devices should be used "regardless of cost," the reality is that

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cost issues are a consideration for all health care institutions, notes Kirkpatrick

An average 300-bed hospital will spend over \$71,000 to convert to safer syringes and needles, estimates **Kevin Seifert**, vice president and general manager of advanced protection technologies at Becton Dickinson & Co., a manufacturer of safer needle devices based in Franklin Lakes, NJ.

There may be increased cost of disposal of the new products, Cadwell notes. "Needle disposal boxes may need to be larger to accommodate the increased size of some of the devices and systems," she says. "Also, many of these devices take up more space, creating storage issues for some facilities."

Many of the new devices are costlier up front, but there is a potential savings down the road, due to decreased risk and medical costs caring for those with an exposure, Cadwell explains. And the costs of the new systems are changing, reports Meyer. "Increasing

competition is driving down the costs," she says.

• **Be aware of transport issues.**

During interfacility transport, the transporting nurse should ensure compatibility with his/her equipment, says Cadwell. "That may mean changing out entire tubing sets before taking the patient to ensure that you can use your IV pumps."

There may be problems with fire services/paramedic agencies that arise, notes Cadwell. If a paramedic unit uses one system and the receiving hospital uses another, the system might need to be replaced, she says.

"Potential risk to patients might be infection from 'opening the system' or excessive manipulation. You'd also risk losing your access while changing out tubing."

• **Use a system that functions as an adapter.**

At St. Jude, a product is used that has an adapter to fit over IV ports, notes Cadwell.

"This eliminates the need to change the entire system and jeopardize patient safety for quick IV access. This reduces the potential for incompatibility of systems." **(For information on ordering this system, see InterLink products under list of vendors, p. 45.)**

However, for this type of system to work, the equipment should be readily accessible for immediate usage, advises Kirkpatrick. ■

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Needlestick Safety
in the ED**

SOURCES

For more information about needleless systems, contact:

- **Vicki Cadwell**, RN, MS, CEN, CCRN, MICN, Clinical Educator, Emergency Department, St. Jude Medical Center, 101 E. Valencia Mesa, Fullerton, CA 92835. Telephone: (714) 992-3979. Fax: (714) 447-6415. E-mail: vcadwell@sjf.stjoe.org.
- **Diana Meyer**, RN, MSN, CCNS, CCRN, CEN, Emergency Services, Pomona Valley Hospital Medical Center, 1798 N. Garey Ave., Pomona, CA 91767. Telephone: (909) 865-9577. Fax: (909) 865-9623. E-mail: meyerrn@socal.rr.com.
- **Kevin Seifert**, Vice President/General Manager, Advanced Protection Technologies, Becton Dickinson & Co., One Becton Drive, Franklin Lakes, NJ 07417. Telephone: (800) 219-7174 or (201) 847-6800. E-mail: kevin_seifert@bd.com.

Single copies of the Occupational Safety and Health Administration (OSHA) Compliance Directive, *Enforcement Proceedings for Occupational Exposure to Bloodborne Pathogens*, dated Nov. 5, 1999, are available at no charge. It can be found on the OSHA Web site. Go to www.osha.gov, and click on "directives." Or contact:

- **OSHA**, Publications Office, Room N3101, 200 Constitution Ave. N.W., Washington, DC 20210. Telephone: (202) 693-1888.

Update: Federal bill to reduce needlestick injuries

If you don't contact your congressman and urge him or her to support legislation to reduce needlestick injuries, it may not pass this year, warns **Kathi Ream**, RN, director of government affairs for the Des Plaines, IL-based Emergency Nurses Association, which supports the bill.

On May 20, 1999, Reps. Pete Stark (D-CA) and Marge Roukema (R-NJ) introduced the Health Care Worker Needlestick Prevention Act of 1999, a bill to reduce the risk of bloodborne diseases from accidental needlestick injuries sustained by thousands of health care workers every year. As of press time, 156 representatives have cosponsored the bill, reports Ream.

On the Senate side, a companion bill, S.1140, was introduced by Sens. Barbara Boxer (D-CA) and Harry Reid (D-NV) on May 26, 1999. As of press time, only three other Senators have signed on as cosponsors:

Health Care Worker Needlestick Prevention Act of 1999

Federal legislation would reduce the risk of blood-borne diseases from accidental needlestick injuries sustained by thousands of health care workers every year, according to Reps. **Pete Stark** (D-CA) and Marge Roukema (R-NJ), who jointly introduced the Health Care Worker Needlestick Prevention Act of 1999 (HR-1899).

Here are the key points of the legislation, according to Stark:

- **The bill would amend the Occupational Safety and Health Administration's (OSHA's) blood-borne pathogens standard to require all health care facilities to use needle systems and sharps with engineered protections, such as retractable needles.** In carrying out the requirement, employers would work with direct health care workers who use such devices to ensure the appropriate selection of technology.
- **The bill would require employers to create and keep a sharps injury log containing detailed information about any sharps injuries that occur.** Employers would be required to adequately train direct health care workers on the use of needleless technologies and systems with engineered sharps protections. Between 600,000 and one million health care workers suffer needlestick injuries every year; however, at the present time, there is no uniform collection of data on sharps injuries to enable those incidents to be tracked, learned from, and prevented.
- **The bill would establish a new clearinghouse**

within the National Institute of Occupational Safety and Health (NIOSH) to collect data on engineered safety technology designed to help prevent the risk of needlesticks and other sharps injuries. NIOSH would have access to the sharps injury logs. In order to carry out those new tasks, the institute is authorized \$15 million in new funding.

- **The Department of Health and Human Services would promulgate new regulations regarding conditions of participation in Medicare for those hospitals that are not covered by OSHA so that all hospitals across the country would, in effect, be covered by those new bloodborne pathogens requirements.**
- **Safe needle technology will not be immediately, universally available, and appropriate for all uses in the health care arena.** Recognizing this fact, the bill provided for an exceptions process if an employer can demonstrate circumstances in which the technology:
 - does not promote employee safety;
 - interferes with patient safety;
 - interferes with the success of a medical procedure;
 - is not commercially available in the marketplace.

[Editor's note: For a summary of the bill, contact Congressman Pete Stark, 239 Cannon Building, Washington, DC 20515. Telephone: (202) 225-5065. Fax: (202) 226-3805. E-mail: petemail@stark.house.gov. Web site: www.house.gov/stark/bills.html.] ■

John Kerry (D-MA), Charles Schumer (D-NY), and Paul Wellstone (D-MN).

"The more cosponsors we get, the more likely it is the bill will pass this year," says Ream.

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A compliance directive issued by the Washington, DC-based Occupational Safety and Health Administration (OSHA) instructs OSHA surveyors to strictly enforce exist-

ing regulations to reduce needlestick injuries. However, it is aimed at OSHA officers — not directly at hospital administrators, notes Ream. "The directive instructs officers to fine hospitals if they don't comply. But the reality is, many times hospitals won't comply until they get cited."

The OSHA directive is a good first step, but federal legislation is needed, Ream argues. "Hospitals should be cleaning up their act now, but the OSHA directive isn't forcing them unless they are inspected, whereas once the

law is passed, they will have to comply, period."

In introducing the bill, Stark stated that health care workers shouldn't have to risk their lives while saving the lives of their patients. "The technology exists today to prevent the vast majority of these injuries," he said. "Safe needle devices are used in some facilities across the country, but our bill would make use of safe technology the norm rather than the exception."

Last year, California became the first state to pass a law to protect health care workers from accidental needlesticks. Four states have passed needlestick injury prevention legislation: California, Maryland, Tennessee, and Texas, reports Ream. **(See chart summarizing state needlestick legislation, inserted in this issue.)**

The Health Care Worker Needlestick Prevention Act is modeled after the California law, says Ream. "It amends the Occupational Safety and Health Act to require that employers utilize needleless systems or other engineered safety mechanisms to prevent the spread of bloodborne pathogens."

SOURCES

For more information on The Health Care Worker Needlestick Prevention Act, contact:

- **Kathi Ream**, Government Affairs, Emergency Nurses Association, Suite 403, 205 S. Whiting St., Alexandria, VA 22304. Telephone: (703) 241-3947. Fax: (703) 534-9036. E-mail: enagov@aol.com.

Members of the Emergency Nurses Association (ENA) can access sample letters for local representatives asking them to sponsor the bill. Go to the ENA Web site, click on the "members only" section, and click on "legislative action center."

The ENA has a position statement, *Bloodborne Infectious Diseases*. Single copies of position statements are available at no charge. All ENA position statements can be accessed from the Web: www.ena.org. Or to obtain copies, contact:

- Emergency Nurses Association, 915 Lee St., Des Plaines, IL 60016. Telephone: (800) 243-8362 or (847) 460-4000. Fax: (847) 460-4001.

The bill also includes an exception process, since those products may not be appropriate for all medical care settings.

In other provisions, the legislation enhances current needlestick reporting requirements and establishes a national clearinghouse to collect data on safe technologies. The clearinghouse will serve as a resource for employers by designing a training curriculum for selection and use of those devices. ■

More needleless products available on the market

The selection of needleless products is growing quickly, says **Diana Meyer**, RN, MSN, CCNS, CCRN, CEN, clinical nurse specialist, Emergency Services at Pomona Valley (CA) Hospital Medical Center.

"It now appears that most of the dominant vendors have products on the market," she says.

Additionally, the quality of the product is improving, Meyer adds. "For example, I recently received a brand new angiocath that blunts the end of the stylet

when removed from the angio. This is a product that does not require any change in current IV start practices, so it will be much more readily accepted by practicing nurses."

Here is a partial listing of safer needle devices with contact information:

- **InterLink products.**

These systems have an adapter that fits over IV ports. For more information, contact Baxter Healthcare Corp., One Baxter Parkway, Deerfield, IL 60015. Telephone: (800) 933-0303. Web site: www.baxter.com.

- **NMT Safety Syringe.**

When the user fully depresses the plunger after administering the injection, the needle automatically retracts from the patient and is encapsulated within the syringe. Retraction takes place before the needle is withdrawn. For more information, contact New Medical Technology, 1500 W.

Oak St., Suite 200, Zionsville, IN 46077. Telephone: (317) 733-9560. Fax: (317) 733-9563. Web site: www.new-medical-technology.com.

- **Protectiv catheters.**

When the user inserts the retractable needles, a sheath goes over them. For more information, contact Johnson & Johnson Medical, Product Quality Services, 2500 Arbrook Boulevard, Arlington, TX 76014. Telephone: (800) 423-5850. Press 3. Fax: (817) 262-4799. Web site: www.jnjmedical.com.

- **Safe-1 Safety Syringe.**

A safety sheath covers the needle when the user pushes a button on the syringe. It permanently locks over the needle with a twist of the sheath. The shield can also be temporarily activated before the injection for protection during transit. For more information, contact Safety 1st Medical, 1740 E. Garry Ave., Suite 108, Santa Ana, CA 92705. Telephone: (800) 997-2331. Fax: (949) 476-5559. Web site: www.safety1stmedical.com.

- **Safe-Point.**

After injection, the user slides the safety sheath forward to cover the needle until it is locked in place. For more information, contact: North American Medical Products, 3 Walker Way, Albany, NY 12205. Telephone: (800) 488-6267 or (518) 218-0402. Fax: (518) 218-0405. E-mail: namp1inc@msn.com.

- **Safety Glide Needle.**

After injection, the user pushes the needle's plastic shield forward with the fingertip until the shield locks over the needle tip. For more information, contact Becton Dickinson, 1 Becton Drive, Franklin Lakes, NJ 07417. Telephone: (888) 237-2762 or (201) 847-6800. Fax: (201) 847-6475. Web site: www.bd.com.

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- **Ultrasafe.**

The user inserts a prefilled glass syringe or prefilled cartridge into a plastic guard. After injection, the user slides the guard over the needle into a locked position. For more information, contact Safety Syringes, 1925 Palomar Oaks Way, Suite 204, Carlsbad, CA 92008. Telephone: (877) 477-0776 or (760) 918-9908. Fax: (760) 918-0565. Web site: www.safetysyringes.com.

- **VanishPoint's Automated Retraction product line.**

Includes 1-cc, 3-cc, 5-cc, and 10-cc syringes and blood collection tube holder. For more information, contact Retractable Technologies, 622 S. Mill St., Lewisville, TX 75057-4632. Telephone: (888) 703-1010 or (972) 221-6644. Fax: (972) 221-9786. Web site: www.vanishpoint.com.

- **Walrus Needleless Systems.**

These can be customized to your current system. Anesthesia induction valves, swabable sites, and pre-pierced Ys are available. For more information, contact Arrow/Walrus, 30G Commerce Way, Woburn, MA 01801. Telephone: (800) 886-6741. Fax: (781) 935-5931. ■

Get ready for digital X-rays: Here are the benefits

Digital X-rays will revamp the way you give care in the ED by improving accuracy in reading films, getting patients out the door faster, and accessing old films instantly, predicts **Matthew Rice**, MD, JD, an ED staff physician at the department of emergency medicine at Madigan Army Medical Center in Fort Lewis, WA.

When ED patients have X-rays taken, the films are put in a special machine that digitizes them. A computer

EXECUTIVE SUMMARY

Digital X-rays improve overall efficiency, quality of films, and patient care, according to ED experts.

- Since films from digital X-rays can be enhanced to improve quality, the number of films redone is reduced, which reduces radiation exposure and improves patient flow.
- Less storage space is needed, since films are digitally stored.
- Filmless X-rays can be modified and enhanced so that small fractures can be visible.

scanner reads the X-ray plate and stores it in a database.

Digital X-rays have improved the ED's overall efficiency and enhanced the ability to move patients through faster, notes Rice. "With this system, we are saving at least 25% of throughput time for the average patient that needs an X-ray. This has made a tremendous difference in our ability to provide care to patients 24 hours a day." (See **Guest Column on the impact of digital X-rays, p. 47.**)

Madigan Army's ED was one of the first places in the country to use filmless X-rays, Rice notes. "It's easy to see the benefits, once you get used to looking at a computer screen instead of a light board," he says. "More and more hospitals are moving to it every year."

Here are some benefits of digital radiography:

- **Previous X-rays are easier to access.**

Obtaining information from radiology in the past has been time-consuming, and X-rays were sometimes lost, says Rice. "Now it's as easy as going to a file in the computer and pulling up the old X-rays from a patient, so you can compare past and previous results," he explains.

- **There is significant cost and space savings.**

Savings are mostly computed in terms of the film saved, according to **Brian Duggan**, MSN, RN, a senior consultant for information technology aggregation for Premier in Charlotte, NC. "Each film costs about \$2.50. The standard cost savings is estimated at 80% of a hospital's film budget," he adds. "That savings would be the payback figure used to calculate return on investment."

About a tenth of the storage space is needed, since films are digitally stored, notes Rice. "Right now, all of the films we've taken for the last nine years will fit into the space of a large room stored on hard disks, as opposed to the size of an entire house," he says.

Also, money is saved in not having to buy X-ray film or developing fluid, and staff aren't needed to file films and retrieve them 24 hours a day, he says.

- **X-rays are better quality.**

"The digital equipment uses techniques that allow you to get a better film the first time you take it," says Rice.

- **Patient flow is improved.**

Since films are better quality, the number of films redone is reduced by approximately one-third, says Rice. "The fewer films you take, the quicker you can get patients moving through the system," he adds.

- **The process provides good opportunities for education.**

Films can be stored in a database of teaching files, so that a set of chest X-rays or CT scans can be shown to staff right in the ED, without having to retrieve old films. "It's easy during slow times to have educational

sessions, because you can sit by the computer with staff and review interesting X-rays," notes Rice.

Typically, there will be two 21-inch monitors side by side for comparison purposes, says Duggan. "These screens are very high-resolution and cost less than \$1,500 each," he adds. "The cost is dropping rapidly, and many radiologists have similar units in their homes so they can perform filmless reads from the comfort of their own home."

Nurses can access patient films instantly on computer monitors in the ED, instead of having to ask someone to retrieve an old film, which could take up to an hour, Rice explains. "We can pull up the patient's previous film and compare them side by side on two computer monitors to see if there are any changes," he says.

- **You can change or enhance the image.**

Previously, you could only use a magnifying glass or lights to enhance an X-ray, Rice says. "But with digital X-rays, you can modify them. You can blow a section up or change the contrast, so you can pick up things that may have been missed."

For example, when looking at a cervical spine film, the fifth or sixth cervical vertebrae might be difficult to see. "Now, we can change the contrast so we see enough of an outline that it's not necessary to do the film over," says Rice. "By enhancing the film, we can see the bones clearly to ensure there is no fracture. Likewise, you can enhance films of long bone fractures to check for small cracks."

- **Patients need fewer X-rays.**

Because fewer films have to be repeated, digital X-rays are safer for patients. "If you have to expose a patient to only one film instead of several films, that is safer," says Rice. "There is about a 20% greater accuracy in reading films because of computer enhancement." ■



Digital X-rays are coming: Here's what to expect

By **Brian Duggan**, MSN, RN
Senior Consultant, Information Technology Aggregation
Premier
Charlotte, NC

Digital radiography is a technology that displays radiological studies on a computer screen for interpretation purposes. Another term often used to mean the same thing is computerized radiography.

The technology for digital radiography is not new. Magnetic resonance imaging (MRI) and computed tomography (CT) studies are generated by a computer. MRI and CT films are simply printouts of the digital images in the computer. These images are quite detailed, but take very little memory for computers to store. Although radiologists frequently use films, they are usually comfortable using a computer terminal to view those types of images.

What is new in this field is the use of digital images for other types of images, such as ultrasound, and traditional X-rays, such as chest X-rays. For traditional X-rays, films are passed through a scanner that converts the film to a digital picture. Once digitized, studies can be stored, e-mailed, sent through a network, and even manipulated.

Hospitals go 'filmless'

This technology has allowed 10 to 12 hospitals throughout the country to go completely "filmless." Celebration Hospital, in Orlando, FL, was one of the early adopters of digital radiography. Its doctors can go to any computer terminal and call up lab work, radiological images, and the radiologist interpretation. The facility does not even have a traditional "file room," since images can be sent anywhere electronically. Rooms for radiologists now have computer screens in the place of view boxes.

Cost of systems depends greatly on what is purchased. A luminous digitizer is \$55,000. This converts films to digital images. All the components for digitizing and transmitting images starts at \$160,000, and a complete computed radiography budget is about \$1.5 million.

SOURCES

For more information on the benefits of digital X-rays, contact:

- **Brian Duggan**, RN, MSN, Premier, 2320 Cascade Pointe Blvd., Charlotte, NC 28208. Telephone: (704) 733-5753. Fax: (704) 357-1469. E-mail: brian_duggan@PremierInc.com.
- **Matthew Rice**, MD, JD, Department of Emergency Medicine, Madigan Army Medical Center, Building 9040, Fitzsimmons Drive, Tacoma, WA 98431. Telephone: (253) 968-1250. Fax: (253) 968-2550. E-mail: matt_rice@teamhealth.com.

SOURCES

Here is a partial listing of vendors that offer digital radiography:

- **Canon USA**, 1 Canon Plaza, Lake Success, NY 11042. Telephone: (516) 488-6700. Fax: (516) 328-5069. Web site: www.usa.canon.com/indtech/medeq/drs.html.
- **Philips**, 710 Bridgeport Ave., Shelton, CT 06484. Telephone: (203) 926-7674. Web site: www.pmsne.com.
- **GE OEC Medical Systems**, 384 Wright Bros. Drive, Salt Lake City, UT 84116. Telephone: (801) 328-9300. Fax: (801) 536-4800. Web site: www.oecmed.com.
- **Eastman Kodak Co.**, 343 State St., Rochester, NY 14650. Telephone: (800) 242-2424. Web site: www.kodak.com/country/US/en/health/products/drProduct.shtml.
- **Siemens Medical Systems**, 186 Wood Ave. S., Islelin, NJ 08830-2770. Telephone: (732) 321-4500. Fax: (732) 494-2250. Web site: www.med.siemens.com/medroot/en/prod/diag/x_ray/aufnah/index.html.

As a result of this trend, rural hospitals linked with a major medical center will often send out their films digitally for interpretation when there is not adequate coverage in their own facilities.

Another trend has been the outsourcing of many studies to vendors that provide low-cost radiology physician assistants who can read the bulk of the most commonly ordered X-rays. An X-ray is taken, sent electronically to the vendor, and a result returns within minutes. The cost savings and efficiency of this type of process will force health care facilities to rethink their approach to providing a full range of radiological services in every facility.

X-rays can be viewed anywhere

Emergency departments will benefit greatly as this technology is expanded. Patients will be identified as soon as they arrive in the ED by any number of methods, including fingerprints or electronic cards that they carry. This will automatically link to the patient record and provide clinicians immediate access to previously stored radiology images.

X-rays taken during their ED visit can be sent electronically to radiologists at any time for rapid interpretation. Images can be shared between facilities,

which reduces unnecessary repeat studies. Some outsourcing vendors will even store images for access through the Internet. This reduces the capital costs for individual facilities to purchase storage and retrieval systems.

The future of digital radiography will bring access to images to any location. Portable wireless devices will allow interpretations from anywhere. As costs drop, the need for full radiologist coverage will be decreased, and outsourcing will become more common. All of this will lead to better service to patients at a lower cost.

[Editor's note: Premier is a joint venture of 230 independent not-for-profit health systems in 50 states. Duggan can be contacted at Premier, 2320 Cascade Pointe Boulevard, Charlotte, NC 28208. Telephone: (704) 733-5753. Fax: (704) 357-1469. E-mail: brian_duggan@PremierInc.com.] ■

Don't miss cardiac symptoms in the elderly

Approximately 85% of people who die of coronary heart disease are age 65 and older, notes **Odette Comeau-Luis**, RN, MS, CNS, a clinical specialist in cardiac care at Loma Linda (CA) University Medical Center.

"There are many health care issues unique to the elderly, and cardiovascular disease is no exception," she emphasizes.

Half of all heart attacks occur in the elderly, but 80% of deaths occur in that population, so there is a much higher mortality rate, says **Stephen Meldon**, MD, an attending physician in the ED at Metrohealth Medical Center in Cleveland. "Be aware that this is a unique population, and they don't play by the rules."

Cardiovascular system changes

Here are some ways in which elderly patients are unique:

• **There are age-related changes in the cardiovascular system.**

According to Comeau-Luis, age-related changes in the cardiovascular system include the following:

- Hypertrophy becomes evident as age increases. The left ventricular wall may have increased in thickness by 25% by age 80, compared to age 30.
- There is decreased compliance of the ventricular wall, causing a potential decrease in cardiac output.
- Heart valves become stiffer and thicker.
- There is a reduced heart rate response to stress,

EXECUTIVE SUMMARY

Elderly patients may not present with classic symptoms of chest pain, such as squeezing or pressure.

- Signs and symptoms to watch for include dyspnea, vomiting, diaphoresis, syncope, weakness, and delirium.
- Half of all heart attacks occur in the elderly, but 80% of deaths occur in that population.
- Unstable angina or congestive heart failure may be the initial presentation in a patient with coronary artery disease.

possibly due to reduced catecholamine response.

— There is decreased resiliency of arteries, promoting hypertension.

- **Squeezing or pressure may not be present.**

Elderly patients present with different symptoms, stresses Meldon. “Classic chest pain presentation, such as squeezing or pressure, occurs with decreasing frequency as you age,” he says. “In ages 65 to 75, about 60% have classic presentation; in ages 75 to 85, only half have a classic presentation, and the percentage decreases to 40% in patients over 85. In elderly patients, it’s less common to have chest pain with an MI.”¹

Don’t overlook life-threatening cardiac conditions, warns Meldon. “If you just dwell on chest pain, you’re going to miss it,” he says.

Signs and symptoms include dyspnea, vomiting, diaphoresis, syncope, weakness, and delirium.

- **A higher index of suspicion is needed.**

In the elderly, typical chest pain becomes less frequent with age, Meldon says. “With any elderly person with weakness or vomiting, you need to ask yourself, ‘Does this represent myocardial ischemia?’” he advises. “Obtaining an EKG may be the most important assessment you do.”

- **There are different risk factors.**

While risk factors continue to be an important prognostic indicator of cardiovascular risk, their relative importance changes with age, says Comeau-Luis.

For example, the predictive value of cigarette smoking compared to other risk factors is unclear, Comeau-Luis notes. Risk factors with strong predictive value for coronary artery disease in the elderly include hypertension, serum lipid abnormalities, diabetes, and obesity, she adds.

- **Elderly patients may present late in the course of the disease.**

This late presentation is because many elderly patients have limited physical activity, according to

Comeau-Luis. For example, unstable angina or congestive heart failure may be the initial presentation in a patient with coronary artery disease.

- **Dyspnea on exertion is a common manifestation of disease in the elderly.**

Aging causes an increase in stiffness of the left ventricle and end-diastolic volume. Those factors may lead to an increase in ventricular pressure produced by myocardial ischemia, causing dyspnea with activity.

- **Description of the pain course may be misleading.**

Thrombolytic therapy: 11 contraindications

Although some studies have shown an increased risk of cerebral hemorrhage in elderly patients receiving thrombolytic therapy, you need to screen closely for contraindications, urges **Odette Comeau-Luis, RN**, a clinical specialist in cardiac care at Loma Linda (CA) University Medical Center.^{1,2}

While there are no age contraindications for receiving thrombolytic therapy, the decision to treat should be based on a risk-to-benefit ratio for all patients, Comeau-Luis stresses. Contraindications for thrombolytic therapy include the following:

- major surgery or trauma within 10 days;
- history of central nervous system hemorrhage, tumor, aneurysm, or atrioventricular valve malformation;
- hemorrhagic stroke within six months;
- spinal or intracranial surgery within three months;
- coma;
- bleeding diathesis, i.e., thrombocytopenia, hemophilia, platelet dysfunction, etc.
- for streptokinase, prior administration within one year;
- prolonged cardiopulmonary resuscitation (>10 minutes);
- pregnancy;
- gastrointestinal or internal bleeding within three months;
- severe uncontrolled hypertension (>200/110).

References

1. Jahnigen D, Schrier R. *Geriatric Medicine*. Cambridge, MA: Blackwell Science; 1996.
2. Rich M. Therapy for acute myocardial infarction in older persons. *J Am Geriatr Soc* 1998; 46:1,302-1,307. ■

A misleading description is due to an inability to remember details and confusion with discomfort from other medical problems, such as arthritis and peptic ulcer disease.

• **Unique triage guidelines are needed.**

At Loma Linda's ED, triage guidelines for emergency cardiac patients include those for the "atypical" presentations of the elderly. In addition to chest, epigastric, and nontraumatic arm pain, any patient 65 years of age or older presenting with shortness of breath and/or syncope is "fast-tracked" to the cardiac room for immediate treatment and diagnostic workup, including an immediate 12-lead EKG.

A computerized 12-lead EKG retrieval system then allows for immediate comparison with previous EKGs, Comeau-Luis explains.

• **Elderly patients have a higher incidence of complications with acute myocardial infarction (MI).**

Those complications include pericarditis, arrhythmias, conduction disturbances, congestive heart failure, myocardial rupture, cardiogenic shock, cerebrovascular accidents, pneumonia, phlebitis, and drug toxicity, says Comeau-Luis. (See related story on **contraindications for thrombolytics, p. 49.**)

Watch for silent MIs

There are other considerations of elderly patients presenting with acute MI, Comeau-Luis stresses. "The incidence of silent MIs is higher in the elderly population, and a history of silent MI confers a three-fold risk of future MI."

While chest pain is still a common symptom of acute MI, it is less common in the elderly compared to younger patients, says Comeau-Luis. "Dyspnea is a

very common presenting symptom. Other common symptoms include syncope, mental confusion, and gastrointestinal complaints. In contrast, diaphoresis is an uncommon symptom in the elderly patient with an acute MI."

Reference

1. Bayer AJ, Chadha JS, Farag RR, et al. Changing presentation of myocardial infarction with increasing old age. *J Am Geriatr Soc* 1986; 34:263-266. ■



Sacchetti A, Warden T, Moakes ME, et al. Can sick children tell time? Emergency department presentation patterns of critically ill children. Acad Emerg Med 1999; 6:906-910.

Critically ill children present more uniformly throughout the day and do not have the same presentation patterns as ambulatory children, according to this study from Our Lady of Lourdes Medical Center in Camden, NJ.

Children show a consistent pattern of ED utilization, with increased visits in the late afternoon and evening hours. The purpose of the study was to determine whether this is equally true for critically ill children and ambulatory children, and what implications this has for ED staffing.

A total of 409,820 pediatric ED visits were examined with 688 critically ill children, and 28,344 ambulatory visits were studied. Children who weren't critically ill showed an increase in the late afternoon and evening hours, but critically ill children presented more erratically, with visits distributed throughout the day.

ED staffing patterns must consider different utilization patterns by critically ill and noncritically ill patients. The overall distribution of pediatric ED visits demonstrates a distinct diurnal pattern, with visits peaking during the evening and late-night hours. "At the very least, this study reinforces the premise that any ED caring for children must maintain the capability to manage critically ill children 24 hours per day," say the researchers.

Part-time pediatric EDs may facilitate the care of ambulatory patients, but they don't address the needs of critically ill children. "Emergency personnel managing pediatric patients should have the same level of clinical expertise regardless of the hours they practice," the researchers conclude. ▼

SOURCES

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Pena BMG, Krauss B. Adverse events of procedural sedation and analgesia in a pediatric emergency department. Ann Emerg Med 1999; 34:483-491.

The adverse event rate for procedural sedation and analgesia performed by pediatric ED physicians was 2.3%, with no serious complications noted, according to this study from Children's Hospital at Harvard Medical School in Boston.

The study targeted 1,180 patients who required intravenous, intramuscular, oral, rectal, intranasal, or inhalation agents for painful procedures or diagnostic testing. Only 2.3% experienced adverse events. The safety of children undergoing sedation and analgesia by nonanesthesiologists has become an issue of concern, as its use for outpatient procedures expands. This is the first study that distinctly separates ED physicians from the other groups of nonanesthesiologists practicing procedural sedation and analgesia in the outpatient setting.

The study showed a low adverse event rate. "All adverse events noted were transient, minor, and easily managed," say the researchers. "Our findings demonstrate that procedural sedation and analgesia is performed safely by pediatric emergency physicians." ▼

Weiss HB. Pregnancy-associated injury hospitalizations in Pennsylvania, 1995. Ann Emerg Med 1999; 34:626-636.

Pregnant women are more likely than nonpregnant women to be hospitalized for assaults, falls, and transportation-related injuries, according to this study from Allegheny University of the Health Sciences in Pittsburgh.

The study compared injury hospitalization between pregnant women and all women of reproductive age. The leading injury causes among pregnant women were transportation-related (33.6%), falls (26.4%), poisonings (16%), and being struck by or against an object (11.4%).

The study was the first to document an increase in assaults for pregnant women, with most of the assaults occurring in the youngest women, ages 15 to 24. Some limitations were noted, such as the fact that pregnant women are more likely to be hospitalized in general for minor conditions, so overall hospitalization rates might be higher.

The study also shows that transportation-related injuries are the leading cause of hospitalization for pregnant women, and also the leading cause of hospitalization for early or threatened labor due to injury.

Health care workers should be aware of the changes in injury risks to pregnant women, both intentional and unintentional. "Ultimately, these findings should be applied to better prioritize and target a diversity of

effective injury prevention efforts aimed toward young women for the benefit of the mother and the fetus." ▼

Houry D, Feldhaus K, Thorson AC, et al. Mandatory reporting laws do not deter patients from seeking medical care. Ann Emerg Med 1999; 34:336-341.

Mandatory reporting laws do not discourage patients from seeking medical care, according to this study from Denver Health Medical Center, Carolinas Medical Center in Charlotte, NC, and the University of Colorado Health Sciences Center in Denver. This issue has been a point of contention in the medical community for several years, note the researchers.

"Mandatory reporting laws are criticized because these laws may deter victims from seeking medical care and may exacerbate the violence," they note. Others argue in favor of laws and say that they lift the burden of reporting from the victim of domestic violence and establish legal ramifications for the perpetrator.

Of 577 patients, 55% were aware of the mandatory domestic violence reporting law. While 27% said they would be more likely to seek care because of the law, only 12% stated they would be less likely to seek care for a domestic violence-related injury.

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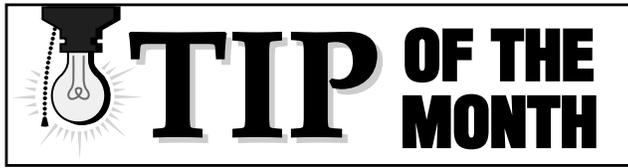
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Editorial Questions

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In summary, the laws rarely deterred patients from seeking care, which contradicts the commonly held belief that fear of retribution from the perpetrator would deter victims. "The benefits of mandatory reporting must be measured to ensure that they justify deterrence to a small minority of patients," the researchers conclude. ■



Try oral dehydration for pediatric patients

Children who are less than 10% dehydrated should not be subjected to the trauma of an IV insertion, argues **Jennifer Dearman**, RN, BN, charge nurse at the pediatric ED at Loma Linda (CA) University Medical Center and Children's Hospital. "If fluids can be replaced slowly orally, you can sometimes avoid use of IV fluids," she says. "But it does take time and patience from the nursing staff and parents."

The parent is given either a 10 cc syringe or a small medicine cup and Pedialyte and is instructed to give the child 10 ccs every five minutes. "If the child vomits, we wait another five minutes and start again. At this rate, the child would get two ounces in an hour," Dearman explains.

Usually when you administer fluid slowly, the child starts to feel better and can tolerate the fluids, so the rate can be increased after an hour or so, she says.

"However, this is not a formal guideline and is modified based on the situation," Dearman notes. "For example, sometimes we start with 5 ccs every five minutes for three doses and then increase the volume." ■

Readers are invited

Readers are invited to submit questions or comments on material seen in or relevant to ED Nursing. Send your questions to: Reader Questions, ED Nursing, c/o American Health Consultants, P.O. Box 740056, Atlanta, GA 30374. Or, you can reach the managing editor via e-mail: joy.dickinson@medec.com. You can also visit our home page at www.ahcpub.com. We look forward to hearing from you. ■

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CE objectives

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

1. Identify clinical, regulatory, or social issues relating to ED nursing. (See *New regs require you to use safer needle devices: Is your ED in compliance? Tip of the Month: Try oral dehydration in children, and Don't miss cardiac symptoms in the elderly* in this issue.)

2. Describe how those issues affect nursing service delivery.

3. Cite practical solutions to problems and integrate information into the ED nurse's daily practices, according to advice from nationally recognized experts. ■