AMERICAN HEALTH CONSULTANTS®

ED Management®

The monthly update on Emergency Department Management

Vol. 14, No. 1

Inside

In this issue:
Bioterrorism Watch

January 2002

Don't miss smallpox/plague outbreaks: Adapt strategies to track bioterrorism

Your ED can't afford to miss suspicious symptoms

If a bioterrorism attack occurs in your community, one thing is certain: The eyes of the world will be on your ED. You'll need to have effective strategies in place to make sure that an outbreak is not missed.

"The savvy nurse, nurse practitioner, or physician who notices multiple cases of ED patients with similar or unusual symptoms may be the key to early detection of a bioterrorism event," says **Ann Stangby**, RN, CEN, emergency response planner for San Francisco General Hospital.

You face three major challenges in doing this, according to **Eric Lavonas**, MD, FACEP, an ED physician and toxicology fellow at Carolinas Medical Center in Charlotte, NC: Recognizing unusual disease patterns early, notifying local health officials, and then informing staff about specific precautions to take for self-protection.

Here are effective strategies to ensure that potential acts of bioterrorism are identified:

• Provide staff with the right information.

Although most EDs have provided general awareness inservicing since the Sept. 11 terrorist attacks, that may be the wrong approach, argues Lavonas.

"In my opinion, a one-hour general talk on all aspects of ED response to chemical and biological warfare is too unfocused to help anyone deal with any single situation," he says. "In fact, I worry that a little knowledge is a dangerous

Executive Summary

Your strategy for tracking bioterrorism should focus on early recognition of unusual disease patterns, prompt notification of public health agencies, and informing staff about additional precautions to take if an outbreak is suspected.

- Instead of general awareness training, have a local expert address symptoms of a specific agent, such as smallpox.
- Post information about tracking patterns of illness in all clinical areas.
- Ensure that after-hours cases aren't overlooked by having staff report suspicions by computer or telephone.

thing. All one can take away from such a session is the worst-case scenario."

Instead, Lavonas recommends having a local expert focus on a specific agent, such as anthrax or smallpox.

Every ED staff member must know how to report, whom to report to, and where to access information, says Stangby. "In our ED, we have information on surveillance issues and watching for patterns of illness posted in all clinical areas," she says.

Invite local toxicologists, infectious disease experts, and ED physicians with training in chemical and biologic terrorism to give lectures, suggests **Robert Schafermeyer**, MD, FACEP, immediate past president of the Dallas-based American College of Emergency Physicians (ACEP) and associate chair for the department of emergency medicine at Carolinas Medical Center.

"State EMS medical directors have resources for training, response plans, and practice drills for use at facilities and in communities," he adds.

Lavonas recommends having experts "train the trainer" by teaching the charge nurse or other supervisory personnel. "This allows new information to be disseminated quickly," he says.

Lavonas uses a combination of one-page "key points" information sheets plus small group meetings. **(See Patient Information Sheet on Anthrax and Distinguishing Smallpox from Chickenpox, inserted in this issue.)**

"The big issues for nurses and technicians are isolation procedures and early recognition," he says.

In your information sheets, Lavonas recommends answering such questions as: "Can the patient give me this disease?"; "How do I prevent this patient from spreading the infection to other patients?"; "How do I handle linens?"; and "Exactly which patients need to go into an isolation room right away?"

The needs of ED staff are very different from other departments and should focus on triage and early identification of possible cases, the need for isolation, procedures for interfacing with EMS, security, and control of patient flow, according to Lavonas.

• Use a web site.

Obtain educational materials on recognition of bioterrorism from public health web sites and send it to staff electronically, Schafermeyer suggests.

"This could be done as simply as downloading the information into a Word document and posting a link to the documents on the Desktop Windows page," he says. "This allows anyone to access the information."

Because of changing recommendations, the information needs to be checked and updated on a regular basis, he adds. "Thus, someone must be designated as the responsible person to do the updates," says Schafermeyer.

• Consider after-hours reporting.

You'll need to ensure that your internal reporting structure is operational and active 24 hours a day, says Stangby.

"Often, current reporting structures are passive, and a report is filed to an infection control nurse who works days Monday through Friday," she says. "After-hours reporting should occur in an active manner, such as by computer, or a call to a live person at the health department."

This system should be developed in cooperation with your local and state health department, office of emergency management, safety officer, and infection control nurse, says Stangby. **(See related story on new system that tracks outbreaks in real time, p. 3.)**

You should be informed on how your local health department tracks outbreaks, says Stangby. "As a public health hospital, we are fairly familiar with this, but many private hospitals may not be," she adds. "Make contact with your hospital infection control nurse, epidemiologist, and local health department."

• Build relationships with key players in your community.

Take steps to get involved parties together before an incident occurs.

"You are not only planning together, but also establishing rapport and relationships on a personal and professional level," says **Craig DeAtley**, PA-C, associate professor of emergency medicine at George Washington University School of Medicine and Health Sciences in Washington, DC.

When planning strategies for bioterrorism, DeAtley advises involving "anyone and everyone you foresee yourself having to integrate with." He points to public health departments, public utilities, police, fire fighters, and EMS as examples.

COMING IN FUTURE MONTHS

- Update on needlestick prevention regulations
- Use point-of-care testing to reduce delays
- Effective strategies for quality improvement
- How to choose the right nurse manager

Sources

For more information about tracking bioterrorism, contact:

- **Craig DeAtley**, PA-C, Department of Emergency Medicine, George Washington University School of Medicine and Health Sciences, 2150 Pennsylvania Ave. NW, Washington, DC 20037. Telephone: (202) 257-4714. Fax: (703) 503-1361. E-mail: flightpa@starpower.net.
- **Eric Lavonas**, MD, FACEP, Department of Emergency Medicine, Carolinas Medical Center, 1000 Blythe Blvd., Charlotte, NC 28203. Telephone: (704) 355-4212. Fax: (704) 355-8356. E-mail: eric.lavonas@carolinashealthcare.org.
- **Robert Schafermeyer**, MD, FACEP, Department of Emergency Medicine, Carolinas Medical Center, 1000 Blythe Blvd., Charlotte, NC 28203. E-mail: Robert.Schafermeyer@carolinashealthcare.org.
- **Ann Stangby**, RN, CEN, San Francisco General Hospital, 1001 Potrero Ave., San Francisco, CA 94110. Telephone: (415) 206-3397. Fax: (415) 206-4411. E-mail: ann_stangby@sfgh.org.
- **Janet Williams**, MD, FACEP, Center for Rural Emergency Medicine, West Virginia University, P.O. Box 9151, Morgantown, WV 26506-9151. Telephone: (304) 293-6682. Fax: (304) 293-0265. E-mail: jwilliams@hsc.wvu.edu.

• Have a system to alert staff immediately if an outbreak is suspected.

Explain to staff that standard triage policies and procedures should be used until something unusual is suspected, says DeAtley.

"Once there is recognition that something out of the ordinary has happened, then give staff the plan for what, if anything, above the normal they should do," he advises.

This may mean taking extra precautions, asking additional questions, or bringing some patients directly to a new location, says DeAtley. Possible ways to disseminate this information include overhead paging, word of mouth, handheld pagers, or printed instructions, he says.

At West Virginia University's ED in Morgantown, staff receive an e-mail listserve from the hospital's infectious disease experts. "We are constantly communicating the latest developments or cases, to keep staff informed of any changes," says **Janet Williams**, MD, FACEP, director of the hospital's Center for Rural Emergency Medicine.

• Encourage staff to report all suspicions.

Staff should not hesitate to "raise the flag" if something doesn't seem right, says Williams.

"If there is a disease process that is not commonly seen, or if there are clusters of illnesses that are not typical, staff should be suspicious that there may be something unusual going on," she says. "You want to strive for overreporting, rather than underreporting."

Have a specific individual, such as a nurse manager, report high-likelihood cases to your county health department without waiting for laboratory confirmation, Lavonas recommends. He points to a patient who came to the ED with fever, hemoptysis, and shock.

"If his initial chest X-ray showed a widened mediastinum, or if tests for alternate diagnoses were negative, I would have drawn appropriate cultures for anthrax — but also called my county health department to let them know of a likely case," he explains, adding that in this case the patient turned out to have a pulmonary embolism.

• Consider patient confidentiality issues.

If a bioterrorism incident occurs, there will be epidemiological investigations that potentially could breach patient confidentiality, says DeAtley.

"Outsiders such as the health department and law enforcement personnel may need to evaluate patient records, which they normally wouldn't have access to," he explains.

Be aware of local and state regulations regarding medical record access, says DeAtley. " Clearly, there is some latitude in a public health emergency that is rightfully authorized [and] has to be used with discretion," he adds. "Your disaster committee needs to address this in consultation with risk managers who know what the rules allow in this particular situation." ■

Cutting-edge system spots outbreaks before you do

Experts agree that the ED is on the front lines of tracking a possible bioterrorism attack, but until now, that tracking has depended on individual clinicians reporting their suspicions.

New cutting-edge technology allows ED computer systems to tie into a public health network, according to **William H. Cordell**, MD, director of research for the department of emergency medicine at Indiana University and faculty physician at the Emergency Medicine and Trauma Center at Methodist Hospital, Clarian Health, both in Indianapolis. Cordell also

serves as a consultant for Cincinnati-based New Wave Software, which has developed the Trip Wire Public Health Network.

According to Cordell, Trip Wire will provide a "missing link" to the existing public health infrastructure: the ability to monitor EDs in real time.

"The network is ready to go today and could be rapidly installed and linked to existing public health computer networks," he reports.

Although the system has been presented to local, state, and federal public health agencies, the developers are waiting for funding to partner with public health agencies so pilot testing can begin.

To be used effectively, the software must be sponsored by a public health agency such as the Atlanta-based Centers for Disease Control and Prevention or a state board of health, says **Lev Milaychev**, president and CEO of New Wave Software.

"The scale of this project is beyond the reach of an individual hospital because it requires government support and coordination," he explains.

Here are some benefits of the system:

• Clusters of illness can be monitored instantly.

Data already entered into ED computer systems, such as chief complaints, vital signs, and diagnosis codes could be sent to central public health monitoring systems, with identifying information deleted, Cordell explains.

"Geographical areas could be monitored for clusters of illness, which could trigger further investigation by public health agencies," he says.

• Clinicians don't have to enter any additional data.

Clinicians are inconsistent in actively entering data, Cordell says. "Consider the unreliability of the reportable disease mandates."

The system uses data already entered as part of patient care, analyzes trends, and automatically notifies authorities, says Milaychev.

"The initial symptoms of some known and potentially some future bioweapons resemble those of the common flu," he notes. "So individual ED physicians will not realize the trend from the statistical pool of patients seen during a day, or even a period of several days, but the system will."

For each given attribute such as "high fever," the system will monitor increases and alert public health agencies as needed, he explains.

• Communication between ED staff and public health is facilitated.

The system would allow messages to be broadcast to ED physicians and nurses, should a public health emergency arise, says Cordell.

"For example, central monitoring agencies could flash a message on the screen that there is a cluster of more than 100 fevers in Anderson, IN. They could request that 10 tests for influenza and anthrax be obtained and mailed overnight to a central lab," he says.

All EDs in the network can exchange messages and information, Milaychev explains. "For example, the CDC can send a new symptom identification diagram to the whole network, or it can notify all neighboring counties if specific cases or trends have been spotted in the area," he says.

If there were a chemical spill on the interstate at a given city, information about the chemical, the decontamination procedure, and the treatment could be broadcast to the affected community EDs, he says.

Because clinicians are constantly interacting with the ED computer network, they instantly would see the alert messages on their screen. "It would 'hit them in the face,' as opposed to faxes or e-mails that may be missed for days or not picked up at all," says Milaychev.

• A public health network infrastructure could be established.

Today, the need is bioterrorism, Cordell says. 'Tomorrow, it could be an emerging infection," he says. "We need a network throughout the country that can track these things in real time."

He points to existing systems that send laboratory data to public health agencies, such as the Regenstrief Indiana Passive Surveillance System, a network of EDs developed by the Regenstrief Institute at Indiana University School of Medicine. The system receives data from 11 EDs in central Indiana, comprised of 369,000 visits each year, and tracks laboratory results to check for infectious conditions such as smallpox and tuberculosis.

Sources

For more information about Trip Wire, contact:

- **William H. Cordell**, MD, Emergency Medicine and Trauma Center, Methodist Hospital, 1701 N. Senate Blvd., Indianapolis, IN 46202. Telephone: (317) 962-8035. E-mail: wcordell@clarian.org.
- **Lev Milaychev**, New Wave Software, 10921 Reed Hartman Highway, No. 237, Cincinnati, OH 45242. Telephone: (513) 745-9700. Fax: (513) 745-0591. E-mail: sales@newwavesoft.com. Web: www.newwavesoft.com.
- **Marc Overhage**, MD, Regenstrief Institute for Health Care, 1050 Wishard Blvd., Indianapolis, IN 46202. Telephone: (317) 630-7400. E-mail: info@regenstrief.org.

Marc Overhage, MD, associate professor of medicine at the Indiana University School of Medicine, says, "If the result indicates that one of these conditions is present, the system adds information about previous conditions that the patient may have had and how to contact the doctor who ordered the test, and sends it to the local and state public health departments."

Laboratory information is critical, but there is a time lag, argues Cordell. "What is missing is front-line clinical information, such as symptoms like diarrhea, fever, or skin vesicles, that might be a harbinger of a smallpox attack," he says. ■

Here's what new ED ultrasound guidelines say

Do you encounter resistance from colleagues regarding ultrasound use in the ED? If so, new guidelines from the Dallas-based American College of Emergency Physicians (ACEP) may be a valuable tool.

"The guidelines demonstrate support of ACEP for ED ultrasound, which is a big step," says **Robert Jones**, DO, RDMS, FACEP, emergency ultrasound coordinator at Doctor's Hospital in Columbus, OH. "We now have specialty-specific criteria to go by."

The guidelines provide recommendations for training, scope of practice, quality assurance, and certification of ED staff in ultrasound, says **Michael Blaivas**, MD, RDMS, director of emergency ultrasound at North Shore University Hospital in Manhasset, NY.

"Many community EDs are being spurred on by these guidelines to pursue ultrasound implementation," he reports. **(See excerpt of guidelines, p. 6.)**

Here are things to consider regarding ultrasound use in the ED, according to the ACEP guidelines:

• ED physicians must complete a certain number of ultrasound examinations.

The ACEP guidelines recommend a total of 150 ultrasound examinations be completed before an ED physician is credentialed, including 25 trauma, 25 pregnancy evaluations, 25 cardiac, 25 aorta, 25 biliary, and 25 renal. **(See Emergency Medicine Ultrasound Course Curriculum, and forms for Ob/Gyn Ultrasonography and Gallbladder Ultrasonography, inserted in this issue.)**

However, Jones cautions that these numbers are not absolute. "The guidelines give us ballpark numbers to work with. But if someone reached that number of exams, yet their images were subquality or they were not coming up with the correct diagnosis, they won't be granted credentials," he says. **(See Credentialing Criteria for Independent Privileges in Emergency Ultrasonography, inserted in this issue.)**

The goal of the training period is to ascertain proficiency, but further exams may be needed before credentialing is granted, Jones explains. "We review all the studies done during the training exam period, and we continue to do that afterward so things don't fall through the cracks," he says.

• You need to have an effective system to ensure quality.

ED physicians should keep a log of all scans and perform their own quality assurance to improve accuracy and catch errors, Blaivas recommends. "This will also require some CME to further improve skill and knowledge," he says.

At Medical College of Georgia in Augusta, quality assurance is performed through a system of saving still images and reviewing them with a credentialed physician, says **Christopher DiOrio**, DO, the hospital's emergency ultrasound coordinator.

"Also, each exam is stored with interpretation and findings as noted by the performing physician," he adds. "Each physician using the ultrasound machine is critiqued, each exam performed is reviewed, and each picture is verified for validity."

After completing the criteria, not everyone will be at the same level, says Jones. "There is no guarantee that when you hit that number of 150 exams that you have expertise. There will be variability," he explains. "So you will need to have ongoing monitoring."

At Doctor's Hospital's ED, all studies are reviewed during the credentialing period and compared to the findings of "gold standard" studies, such as computed tomography scans or operative reports.

• Consider important issues in advance.

You'll need to work out all the details before you

Executive Summary

New ED ultrasound guidelines from the American College of Emergency Physicians give recommendations for training, scope of practice, quality assurance, and certification.

- The guidelines recommend that 150 ultrasound examinations be completed, but if an individual isn't proficient, more examinations must be required.
- All ultrasound studies during the credentialing period should be compared to gold standard studies, such as computed tomography scan or operative reports.
- You must be clear about the limitations of ED ultrasound examinations when consulting with specialists.

approach administrators about implementing an ED ultrasound program, advises Blaivas.

"This will be especially helpful when communicating with other departments, some of whom may see the introduction of ultrasound in the ED as a threat," he adds. **(See Letter to Radiology Department, inserted in this issue.)**

Blaivas recommends "picking your allies" to support your efforts to introduce ED ultrasound. "The most important thing is not to be short on answers when pressed by the medical board or other departments," he says. "It also helps to have things outlined in writing." *(For more information about implementing an ED ultrasound program, see "Ultrasound in the ED can mean dramatic improvement in care, research shows" in* ED Management*, March 2001, p. 25.)*

• One individual should head the program.

Jones advises having one physician act as a liaison and director for the ED ultrasound program.

"That individual should be someone who is passionate about this, whose training is above and beyond other clinicians, and who can offer education," he says.

• Be clear about your limitations.

You'll need to convey the specific indications for ultrasound in the ED to avoid confusion, warns Jones. **(See Scope of Practice, inserted in this issue.)**

"If a surgeon hears you saying in the middle of night that a gallbladder ultrasound was negative, they may mistakenly think it was done by radiology," he says.

Jones explains that this could result in a dangerous misunderstanding because the ED physician may be looking for stones, but no other pathology.

Jones suggests saying the following to avoid confusion: "Dr. Smith, we saw your patient with right upper quadrant pain in the ED. Because it was during off hours, I did an ultrasound exam myself, following our agreed-upon protocol. I did a limited gallbladder ultrasound and saw no stones, no tenderness over the

Suggested Optimal Guidelines for Implementation of an Introductory Emergency Ultrasound Course for Emergency Physicians (Excerpt)

Resources: Training courses in emergency ultrasonography require a substantial resource commitment and significant advance planning. The below are the basic components necessary for emergency ultrasound courses.

Instructors: Instructors should have expert knowledge in the material being taught and ideally should be trained emergency physicians. Substitution with other allied specialty physicians may be appropriate depending on the lecture material being taught. Registered sonographers can be used to assist teaching during the laboratory session. Because of the focused and clinical nature of emergency ultrasonography, it is recommended that a trained emergency physician be the course director.

Ultrasound laboratory: Appropriate machines and transducers will be necessary. To maximize the hands-on component, no more than five participants per machine should be allowed, and at least one instructor should be present at each station to assist in training.

Ultrasound models: Normal models and patients should be part of the training laboratory, with at least one model necessary at each training station. Appropriate patient models include those with pericardial effusions, cholelithiasis, aortic aneurysms, and chronic ambulatory peritoneal dialysis (CAPD) patients (to stimulate hemoperitoneum). Private areas for endovaginal ultrasound are necessary. Full informed consent should be obtained from all models, and a signed waiver of responsibility is recommended.

Syllabus: A syllabus or standard text is recommended for all courses. The material supplied should supplement the lecture presentations and meet the goals and objectives of each lecture.

Site: The ideal site will have two separate rooms to accommodate the lecture and laboratory stations without disassembly. Audiovisual equipment will be needed and will include 35-mm slide projectors, liquid crystal display projectors, and video display capability.

Didactic content: The standard two-day course will include the following topics and primary applications taught in a focused manner over an eight-hour period. In a single application course, the didactics should be taught over a three- to four-hour period and should include introduction, physics/knobology, and the emergency indication. The following goals and objectives of a core curriculum are listed in the Appendix.

Hands-on training: The technical laboratory is an integral component of any ultrasound course. The comprehensive two-day format should have a minimum of six to eight hours of skills laboratory. A single application will require at least two to four hours of laboratory training. In either format, the optimal ratio should be no more than five students per instructor per station. An instructor should demonstrate the proper application protocol for the emergency indication. Inclusion of special skills assessment stations at the end of the course can be a valuable teaching tool. ■

Source: American College of Emergency Physicians. ACEP Emergency Ultrasound Guidelines — 2001. *Ann Emerg Med* 2001: 38:470-481.

Sources

For more information about the American College of Emergency Physicians' ultrasound guidelines, contact:

- **Michael Blaivas**, MD, RDMS, Department of Emergency Medicine, North Shore University Hospital, 300 Community Drive, Manhasset, NY 11030. Phone: (516) 562-2927. Fax: (516) 562-2828. E-mail: blaivas@pyro.net.
- **Christopher DiOrio**, DO, Department of Emergency Medicine, AF2037, Medical College of Georgia, 1120 15th St., Augusta, GA 30912-2800. Telephone: (706) 721-4412. Fax: (706) 721-7718. E-mail: cdiorio@mail.mcg.edu.
- **Robert Jones**, DO, RDMS, FACEP, Department of Emergency Medicine, Doctor's Hospital, 1087 Dennison Ave., Columbus, OH 43201. E-mail: Jones8673@aol.com.

gallbladder, and the gallbladder had normal dimensions. So I will let her go home and follow up with you, and you can arrange for further testing."

Always clarify your limitations, says Jones. "You don't want to pawn yourself off to be a radiologist. They are looking for any sonographically detectable pathology they can find, whereas we are goal-oriented,' he says. ■

Does EMTALA apply during a disaster?

Suppose a crowd at a major public event is sprayed with an unknown chemical agent, and dozens of contaminated come to your ED. Would you be concerned about complying with the Emergency Medical Treatment and Active Labor Act (EMTALA)?

A letter sent by the Centers for Medicare and Medicaid Services (CMS) to its regional administrators suggests that if hospitals transfer patients to other facilities during a bioterrorism event, they will not be in violation of EMTALA provided the transfer is under specific circumstances.

The letter was prompted by hospitals seeking clarification of EMTALA in light of recent anthrax cases.

"In the new comments, CMS seems to authorize all of the patients to be sent to a central point for triage, decontamination, and dispersal as needed for care without worrying about EMTALA transfer and documentation rules," says **Stephen Frew**, JD, president of the Rockford, IL-based Frew Consulting Group, which specializes in compliance with EMTALA. "I am not prepared, however, to say that a hospital could refuse to provide life-saving care to a patient and send them away to the 'proper' hospital, especially if they are brought in by nonmedical personnel or families rather than EMS."

CMS is unlikely to risk compromising care in a disaster by insisting on compliance with paperwork, Frew argues. "By the same token, however, any hospital that turns its injured community away from its doors and lets them die because the hospital is unprepared is going to face issues much worse than EMTALA."

Here are key points to consider:

• Different standards do exist for mass casualty incidents.

There is a question of whether hospitals can use disaster triage standards to move patients to other locations based on initial triage only, says Frew.

"The answer has been uncertain up to now, but CMS has historically allowed a 'window' of looking the other way during a reasonable period following a mass casualty incident," he reports.

The new policy statement appears to clarify that transfer under EMTALA will not be enforced during a declared disaster, and that disaster plans for transferring out triaged patients will supercede general EMTALA restrictions on transfers, says Frew.

However, the relaxed standards would not apply for anthrax contamination, because it's identified only after medical examination, says Frew.

"You will not have dozens of ambulances racing to your facility with the victims," he says. "I do not believe there is any significant relief from EMTALA requirements for this level of incident."

• The same level of documentation probably will not be required.

"Obviously, in a disaster situation, documentation is a time-consuming luxury that can cost lives," Frew

Executive Summary

A statement from Medicare says that disaster plans for transferring triaged patients may supercede the usual EMTALA requirements, but this is true only in certain scenarios.

- During a disaster, it's unacceptable to transfer a patient to a more appropriate facility if doing so amounts to refusal of lifesaving care.
- Don't assume that patients will be diverted successfully to appropriate facilities after a large-scale disaster.
- The required level of documentation under EMTALA may not be possible during a disaster, but some type of documentation is necessary.

Sources

For more information about EMTALA compliance during a disaster, contact:

- **Gloria Frank,** JD, EMTALA Solutions, P.O. Box 1340, Ellicott City, MD 21041. Telephone: (800) 972-7916. Fax: (410) 480-9116. E-mail: emtala@home.com. Web: www.gloriafrank.com.
- **Stephen Frew**, JD, Frew Consulting Group, 6072 Brynwood Drive, Rockford, IL 61114. Telephone: (815) 654-2123. Fax: (815) 654-2162. E-mail: sfrew@medlaw.com.

says. "It appears from this statement and prior information from CMS that they will not automatically look for the same level of documentation during a declared disaster as during normal operations."

However, records of some sort will be necessary under standards of the Joint Commission on Accreditation of Healthcare Organizations, to keep track of who came into the triage system, where they were sent, and why, Frew warns. The CMS comments apply to mass casualty incidents, not to internal overload incidents caused by several patients presenting at the same time with significant acuity, he adds.

• There may be situations when you can refer patients before the medical screening exam (MSE).

CMS says that there may be situations where referral of a potentially exposed patient prior to an MSE is appropriate "if hospitals have coordinated plans with state and local government entities."

This statement suggests that CMS will take a hospital's formal emergency preparedness plans into consideration when determining violations, says **Gloria Frank**, JD, former lead enforcement official on EMTALA for CMS and owner of EMTALA Solutions, an Ellicott City, MD-based consulting firm.

"However, in Washington, DC, to my knowledge, hospital EDs were turning patients away before screening for anthrax, sending them to the public health department," she adds. "That does not seem like 'coordinated plans with state and local government entities' to me."

Do not interpret the CMS comments as meaning that you can send out patients without being seen at all during the aftermath of a terrorist attack, says Frew. EMTALA fundamentally prohibits turning patients away without assessment, and the CMS statement does not give a clear exemption from EMTALA, says Frew.

"Joint Commission requires all accredited hospitals to have decontamination capability of some sort. So merely saying 'we don't do bio' is not enough," he adds.

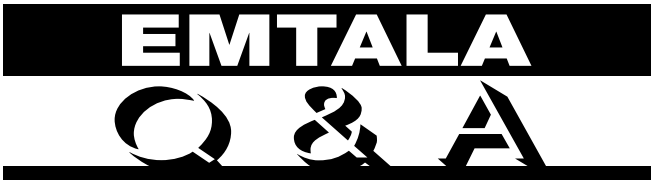
• Don't assume patients will be diverted.

Many communities have designated a particular hospital as a decontamination location and central triage point in their community disaster plans, Frew says.

"Under existing EMTALA laws, CMS would allow hospitals to divert EMS units to the central point, even if they were hospital-owned ambulances," he says.

Frew gives the example of a known exposure to a toxic substance, with a large number of seriously injured patients who are potentially dangerous to caregivers by contact contamination. These patients will not be successfully diverted, so you must be prepared to safely address these casualties, says Frew.

"Any belief that the central point triage and decontamination approach will prevent this type of patient from turning up at other hospitals is wishful thinking," he says. ■



[Editor's note: This column is part of an ongoing series that will address reader questions about the Emergency Medical Treatment and Labor Act (EMTALA). If you have a question you'd like answered, contact Editor Staci Kusterbeck. Telephone: (631) 425-9760. Fax: (631) 271-1603. E-mail: StaciKusterbeck@aol.com.]

Question: If a patient has a severe laceration that requires suturing by a specialist within eight hours, is it OK to discharge the patient from the ED to go to a private practitioner's office? And if so, may the patient be discharged to travel by a private car?

Answer: This question is specifically addressed in the *Code of Federal Regulations* 489.20(r)(2), says **Denise Casaubon**, RN, owner and president of DNR Consultants, a Fountain Hills, AZ-based company specializing in health care corporate compliance.

The regulation requires "a list of physicians who are on call for duty after the initial examination to provide further evaluation and/or treatment necessary to stabilize and individual with an emergency medical condition."

The interpretive guidelines for this section address services for which physicians are on call, says Casaubon. "They state that when a physician is on call in an office setting, it is not acceptable to refer an emergency case to their office for examination and treatment," she adds.

She reviews the scenario on the previous page: If a patient had a facial laceration that required treatment by a physician who specialized in plastic surgery, it was determined that the hospital had a plastic surgeon on call, and the treatment of laceration was considered emergent, then the plastic surgeon would be required to come to the hospital to treat the patient, and the patient should not be sent to the physician's office.

"I can only think of three examples where it would be acceptable in the above situation to send the patient to the physician's office," says Casaubon. They are as follows:

1. The physician is in a hospital-owned office that is contiguous to or on the hospital campus.
2. The hospital does not have a plastic surgeon on call, but the physician's office agreed to treat the patient after it was determined the patient was stable to be transported.
3. The patient is determined not to have a diagnosis that is considered an emergency medical condition.

She adds that the transportation issue is addressed in section 489.24(d)(2)(iv), which states, "The transfer is effected through qualified personnel and transportation equipment, as required, including the use of necessary and medically appropriate life support measures during transfer."

Casaubon says, "If the treating practitioner determines it is safe for the patient to go for treatment by private car, then that is acceptable as long as the documentation in the medical record supports this decision."

Question: Our satellite ED transferred a patient with an obvious clinical pneumothorax to the main site without calling in a technician to do a chest X-ray at 4 a.m. to confirm the diagnosis. We were cited for failure to complete a full medical screening examination (MSE). Is the satellite ED required to fully complete the MSE?

Answer: According to **Jonathan D. Lawrence**, MD, JD, an ED physician and medical staff risk management liaison at St. Mary Medical Center in Long Beach, CA, the citation seems inappropriate based on the facts presented.

"If a pneumothorax is clinically evident, an X-ray is not required to diagnose the emergency medical condition, unless protocols for the nonphysician MSE examiner require the X-ray," says Lawrence.

In other words, if a physician performs the MSE and determines that there is a pneumothorax, a certain degree of discretion is permitted as to whether an X-ray is ordered, he explains.

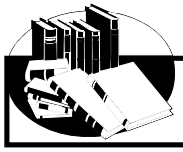
"No such luxury exists for nonphysicians if the protocol calls for an X-ray for chest pain or shortness of breath," he cautions.

However, if a chest X-ray is within the capabilities of the satellite and the protocol calls for the X-ray, it must be performed, says Lawrence. ■

Sources

For more information about EMTALA, contact:

- **Denise Casaubon**, RN, DNR Consultants, 16217 Balsam Drive, Fountain Hills, AZ 85268. Telephone: (480) 816-6695. Fax: (480) 836-8185. E-mail: casaubon@qwest.net.
- **Jonathan D. Lawrence**, MD, JD, Emergency Department, St. Mary Medical Center, 1050 Linden Ave., Long Beach, CA 90813. Telephone: (562) 491-9090. E-mail: jlawrens@home.com.



JOURNAL REVIEW

Keogh V, Lanuza D, Jennrich J, et al.
Characteristics of the trauma recidivist: An exploratory descriptive study. *J Emerg Nurs* 2001; 27:340-346.

More than one-third of ED trauma patients were recidivists, says this study from Loyola University — Chicago School of Nursing. A sample of 100 trauma patients was studied with a demographic chart review and a personal interview. The study found that the trauma recidivist was likely to be male, younger than 45, a member of a racial minority, single, uninsured, and have less than 12 years of education.

"Knowing the profile of the recidivist can give nurses the information they need to educate patients, families, and communities of this high-risk group," argue the researchers. They recommend the following interventions to reduce risks of further injuries:

- making counseling available to friends and family members of victims of a violent injury;
- implementing mandatory drug and alcohol screening for all trauma patients;
- offering drug and alcohol evaluation and intervention programs to trauma victims;
- developing a profile to identify potential recidivists;
- informing patients that they are at high risk of becoming a trauma patient again if they do not change the behavior that caused the first injury;
- giving appropriate medical, social, and community referrals to high-risk patients. ■

Don't stop restocking of ambulance supplies

Are you confused about whether you can legally restock supplies of paramedics who bring patients to your ED? Many EDs have stopped restocking altogether because they fear violations of the federal anti-kickback statute, but this is a mistake, argues **Robert E. Suter**, DO, MHA, FACEP, president of Texas Emergency Physicians, an ED physician practice group based in Dallas.

A recent advisory opinion from the Office of Inspector General (OIG) of the U.S. Department of Health and Human Services should help to clear up this misconception, he adds.

The advisory opinion affirms that a hospital may restock ambulance services with medical supplies and pharmaceuticals used to provide emergency prehospital services.

A "safe harbor" for EDs that restock ambulances was established by the Washington, DC-based OIG, which acknowledged that the practice ensures that ambulances are fully stocked with medications, sanitary linens, and other supplies. The safe harbor means that if you meet specific criteria, restocking will not constitute a violation of federal anti-kickback laws. *(For more information on the safe harbor ruling, see* ED Management, *September 2000, p. 97.)*

"[The advisory opinion] agreed that appropriate restocking was in the public interest," says Suter. "Restocking is OK if you stay in a safe harbor, and may be OK under other circumstances."

According to Suter, you must meet all criteria in one of two categories to comply with the safe harbor:

1) Ambulance provider pays fair market value for supplies, or

2) Supplies are provided free or at less than fair market if:

- you restock all ambulances equally;
- you are part of a coordinated effort overseen by a non-profit oversight entity;
- the restocking program is outlined in writing;
- the hospital does not bill any federal program for supplies or write-off as bad debt;
- the ambulance service does not bill for supplies;
- the hospital and ambulances keep records of restocked drugs and supplies;
- the hospital and ambulance providers comply with all other laws.

ED managers should not stop restocking, and that is not the intent of the Centers for Medicare and Medicaid Services, stresses Suter.

Correction

In the December 2001 issue of *ED Management*, we advised readers to determine their current supplies to treat biological agents. The story should have said "determine your current supply of ... antibiotic stores for biological agents." *EDM* regrets the error. ■

"Hopefully, this opinion will reduce the level of anxiety experienced by EDs involved in appropriate restocking efforts," he says. "The opinion supports a common sense, patient-oriented approach to restocking."

However, Suter warns that appropriate documentation is needed. "Do not leave your motives and rationale open for interpretation," he says.

Suter recommends documenting your policy and its relationship to the public interest in the minutes of the regional emergency medical services council, state advisory committees, and the department of health.

"When the policy has been validated by the community outside of your institution, it is difficult for the OIG to convincingly assign a criminal purpose to the activity," says Suter. ■

CE/CME objectives

After reading this issue of *ED Management*, the continuing education participant should be able to:

1. List three effective strategies to track bioterrorism outbreaks in the ED. (See "Don't miss smallpox/plague outbreaks: Adapt strategies to track bioterrorism.")
2. Name two ways to ensure an effective ED ultrasound program. (See "Here's what new ED ultrasound guidelines say.")
3. Identify three ways to comply with EMTALA during a disaster. (See "Does EMTALA apply during a disaster?")
4. Identify a true statement regarding trauma patients. (See "Journal Review.")
5. Name three criteria for restocking of supplies for paramedics. (See "Don't stop restocking of ambulance supplies.")
6. Explain how to comply with EMTALA for patients who are stabilized in the ED, then transferred to a specialists' office. (See "EMTALA Q&A.") ■

ED Management® (ISSN 1044-9167) is published monthly by American Health Consultants®, 3525 Piedmont Road, N.E., Six Piedmont Center, Suite 400, Atlanta, GA 30305. Telephone: (404) 262-7436. Periodical postage paid at Atlanta, GA. POSTMASTER: Send address changes to **ED Management**®, P.O. Box 740059, Atlanta, GA 30374-9815.

ED Management® is approved for approximately 18 nursing contact hours. This offering is sponsored by American Health Consultants®, which is accredited as a provider of continuing education in nursing by the American Nurses' Credentialing Center's Commission on Accreditation. Provider approved by the California Board of Registered Nursing, Provider Number CEP 10864, for approximately 18 contact hours. American Health Consultants® is accredited by the Accreditation Council for Continuing Medical Education to sponsor CME for physicians. American Health Consultants® designates this continuing medical education activity for 18 credit hours in Category 1 of the Physicians' Recognition Award of the American Medical Association. This activity was planned and produced in accordance with ACCME Essentials. **ED Management**® is also approved by the American College of Emergency Physicians for 18 hours of ACEP Category 1 credit. Physician members of American Health Consultants® 1999 Continuing Medical Education Council: Stephen A. Brunton, MD; Dan L. Longo, MD; Ken Noller, MD; Gregory Wise, MD and Fred Kauffman, MD, FACEP.

Subscriber Information

Customer Service: (800) 688-2421 or fax (800) 284-3291 (customerservice@ahcpub. com). **Hours of operation:** 8:30 a.m.-6 p.m. Monday-Thursday; 8:30 a.m.-4:30 p.m. Friday, EST. Subscription rates: U.S.A., one year (12 issues), $427. Outside U.S., add $30 per year, total prepaid in U.S. funds. Two to nine additional copies, $342 per year; 10 to 20 additional copies, $256 per year; for more than 20, call (800) 688-2421 for special handling. Missing issues will be fulfilled by customer service free of charge when contacted within 1 month of the missing issue date. Back issues, when available, are $71 each. (GST registration number R128870672.)

Editorial Questions

For questions or comments, call Joy Daughtery Dickinson, (229) 377-8044.

Statement of financial disclosure: To reveal any potential bias in this publication, and in accordance with the Accreditation Council for Continuing Medical Education guidelines, we disclose that Dr. Auer (editorial advisory board member) is a stockholder in Lynx Medical Systems; Dr. Bukata (advisory board member) is president of the Center for Medical Education and is the developer of EDITS software; Dr. Mayer (advisory board member) is a stockholder in Emergency Physicians of Northern Virginia Ltd. and Patient Care and ED Survival Skills Ltd.; Dr. Yeh (advisory board member) serves as a consultant to Dynamics Resource Group, a spokesperson for Medic Alert, and a member of the board of directors for Vital Solutions and MassPRO.

AMERICAN HEALTH CONSULTANTS™
THOMSON HEALTHCARE

CE/CME questions

19. Which is a recommended strategy to track bioterrorism, according to Ann Stangby?

A. providing only general awareness training to ED staff

B. having staff report unusual cases that occur after-hours by telephone instead of filing a report

C. giving ED staff the same training as other hospital departments

D. discouraging staff from contacting public health agencies unless they are certain an outbreak is occurring

20. Which of the following is an effective way to ensure a quality ED ultrasound program, according to Robert Jones, DO, RDMS, FACEP, emergency ultrasound coordinator at Doctor's Hospital?

A. aiming for the same level of diagnostic capability as ultrasounds performed by the radiology department

B. convey the specific indications for ultrasound in the ED to avoid confusion

C. granting credentialing based solely on the number of ultrasound examinations clinicians have performed

D. providing ultrasounds only for trauma patients

21. Which of the following is true regarding compliance with the Emergency Medical Treatment and Labor Act (EMTALA) during a disaster, according to Stephen Frew, JD, president of Frew Consulting Group?

A. During a disaster, it's acceptable to transfer a patient to a more appropriate facility under any circumstance.

B. No documentation is necessary for transfers that occur during a disaster.

C. The required level of documentation under EMTALA may not be expected during a mass casualty disaster.

D. EMTALA supercedes hospital disaster plans, even during a mass casualty incident.

22. Which of the following is true about trauma patients, according to a study published in *Journal of Emergency Nursing*?

A. trauma recidivists are more likely to be female

B. over a third of ED trauma patients were recidivists

C. no clear profile can be developed for repeat trauma patients

D. elderly patients are most likely to be trauma recidivists

23. Which of the following is true regarding ambulance restocking, according to Robert Suter, DO, FACEP, president of Texas Emergency Physicians?

A. Hospitals may restock supplies of ambulance services with no documentation.

B. Restocking is only permitted if the ambulance provider pays fair market value for supplies.

C. All ambulances do not have to be restocked equally.

D. The hospital cannot bill any federal program for supplies that are restocked or write them off as bad debt.

24. To comply with EMTALA, when is it acceptable to send a patient for suturing of a laceration to a physician's office, according to Denise Casaubon, RN, owner and president of DNR Consultants?

A. only if the patient is transferred by ambulance

B. only if no plastic surgeon is available on call

C. The patient is determined not to have a diagnosis that is considered an emergency medical condition.

D. in any case, as long as the transfer is appropriately documented ■

Patient Information Sheet: Anthrax

While there have been only a few cases of anthrax diagnosed recently in the United States, many people are concerned about contracting this infectious disease. The average American is extremely unlikely to acquire anthrax. Even if you do acquire anthrax, the most common form of the disease is almost 100% treatable. We are providing this educational handout in an attempt to answer some of the common questions people have about anthrax.

What is anthrax?

Anthrax is an infectious disease that is caused by a bacterium known as *Bacillus anthracis*. Anthrax most commonly occurs in animals such as cattle, sheep, goats, camels, antelopes, and other herbivores. The bacterium also exists as a spore that can remain dormant in the soil for over 40 years.

What do anthrax spores look like?

Since the anthrax spore is a bacterium, you cannot see the spore with the human eye. If anthrax spores are produced in mass quantity and are used as a biological weapon, they are often combined with a dry powder that may appear white or brown. In the recent events involving mailed anthrax spores, the material that has tested positive has a brownish, grainy appearance.

How can I become infected with anthrax?

Anthrax is acquired by three methods: 1) spores can be inhaled into the lungs (inhalational anthrax); it takes at least 8,000 spores for this form of anthrax to occur. 2) spores can contaminate an opening in the skin, a cut, or an abrasion in the skin (cutaneous anthrax); 3) the anthrax bacterium can contaminate meat that is then ingested without being cooked properly (gastrointestinal anthrax).

Is anthrax contagious?

Anthrax is almost never spread from person to person. The inhalational and gastrointestinal forms CANNOT spread from person to person. The cutaneous form of anthrax may have spores in the wound and theoretically those spores can be transmitted to another person with open sores on their arms.

What are the different kinds of anthrax?

Cutaneous anthrax — More than 90% of all anthrax cases are of the cutaneous type. Cutaneous anthrax begins as a tiny bump on the skin which later forms blisters and then becomes an ulcer with a dark black center (called an eschar).

Because of our immune system's reaction to the infection, the ulcer is surrounded by redness and swelling. In addition, the toxin produced by the anthrax bacterium causes further destruction of tissues. Treatment with antibiotics is successful in almost 100% of cases. Some cases are severe enough to cause the infection to spread to the blood.

Gastrointestinal (GI) anthrax — There are two forms of GI anthrax. One is associated with sores and ulcers in the mouth and throat just like the sores and ulcers seen on the skin. The other form is similar to severe food poisoning with high fever, abdominal pain, and bloody diarrhea. If treated early in the course of infection, GI anthrax can be treated effectively although up to 60% of people have died from this form of anthrax.

Inhalational anthrax — pulmonary anthrax is acquired after inhaling thousands of spores. Since only the smallest of the anthrax spores can reach the part of the lung required to cause infection, this form of anthrax is rare. Lung anthrax begins with flu-like symptoms such as fever, body aches and pains, a feeling of being tired and weak. Symptoms such as runny eyes and nose or a sore throat are NOT common in lung anthrax. Next, the patient would develop severe difficulty breathing, high fever, heavy sweating, and a heavy tight feeling in the chest area. Shock may develop and death can occur 24–36 hours later.

How can anthrax be treated?

The anthrax bacterium can be killed by numerous antibiotics including penicillin, amoxicillin, clindamycin, rifampin, vancomycin, and a group of antibiotics known as fluoroquinolones. Cipro is one of the more common antibiotics used to treat patients with anthrax and also used to prevent anthrax if you have been exposed to anthrax spores.

If I receive a package or letter containing a suspicious substance, what should I do?

The most important thing to remember is **DO NOT OPEN** the letter or package. Emergency response personnel should be contacted at 911 for further advice. If you do open the letter or package and the suspicious substance gets on you, wash your skin with soap and water.

What do I do if I think I was exposed to anthrax?

There are several options:

1. Contact the Poison Control Center at Carolinas Medical Center at 704-355-4000 or 800-848-6946.
2. Contact the Mecklenburg County Health Department at 704-432-0871, 704-336-6438, 704-336-5490, or 704-336-5398
3. Contact your personal physician for advice.
4. Other information is available from the Centers for Disease Control and Prevention at www.cdc.gov or from the county health department at www.meck-health.org.

How can I tell if I have anthrax or do I have "the flu"?

You may have to be evaluated by a health care professional to be sure. But, people with "the flu" or other respiratory viruses tend to have watery and itchy eyes, a runny nose, and a scratchy sore throat while patients with inhalational anthrax do not.

Can I get vaccinated against anthrax?

No. Although there is a vaccine used for military personnel and certain laboratory workers, health exports do NOT recommend that other persons receive the vaccine. It is associated with side effects that outweigh its general use in others.

Should I take antibiotics to protect myself?

Health experts advise that we should NOT take antibiotics without an active infection being present. If widespread, inappropriate use of antibiotics does occur, the door is open for resistance to emerge. As a result, the antibiotic then would no longer be effective should you need it in the future.

If you are part of an exposure to anthrax, you will be advised by the public health department, and they will provide you with antibiotics at no charge. ■

Source: Carolinas Medical Center, Charlotte, NC.

Distinguishing Smallpox from Chickenpox

Roger D. Lovell, MD
Hospital Epidemiologist
Carolinas Medical Center

Characteristic	Smallpox	Chickenpox
Mode of Transmission	Airborne droplets plus contact with lesions	Airborne droplets plus contact with lesions
Incubation Period	Average = 12-14 days (range is from 7-17 days)	Average = 14-16 days (range is from 10-21 days; prophylactic acyclovir and varicella zoster immune globulin extend incubation period to 28 days)
Prodrome Symptoms	• High fever, malaise, prostration, headache, and myalgias in the 48-hour period before rash develops • Vomiting is 50%	• Fever, malaise, and pharyngitis in the 24-48 hour period before rash occurs
Rash/Diagnostic Characteristics	• Rash begins as maculopapular lesions on face and oral mucosa • Spreads centrifugally to trunk and legs • Becomes vesicular within two days • Does NOT usually have surrounding erythema • Becomes pustular over next 2-3 days • May occur on palms and soles • Rash progresses uniformly -- all lesions have the same appearance • Lesions occur deep in dermis -- lesions feel "thick" or indurated • More pain than pruritis • Crusts begin to form on day eight or nine of rash • Scabs fall off by days 14-21; residual scar common	• Rash begins as pruritic papules on trunk • Centripetal rash -- more concentrated on trunk, then spreads to face/scalp followed by upper arms and thighs • May be present on oral mucosa • Becomes vesicular with surrounding erythema ("dew drop on rose petal") • Lesions are superficial • New crops of lesions appear over 2-4 days -- lesions at various stages can be seen at the same time on the same area of skin • Almost NEVER on palms and soles • Most lesions have crusted by rash day seven
Period of Infectivity	• NOT infectious until rash develops • Infectious until all lesions have scabbed over • About 60% of unvaccinated household contacts become infected	• Most infectious in the 48-hour period before rash develops • Infectious until all lesions have scabbed over • About 90% of unvaccinated household contacts become infected
Isolation Category	• Airborne-National Institute of Occupational Safety and Health Respiratory Required Precautions plus Contact Precautions • Negative pressure room with high efficiency particulate air filtration or direct exhaust • Continue isolation until all lesions have crusted	• Airborne plus Contact Precautions • Negative pressure room with high efficiency particulate air filtration or direct exhaust • Continue isolation until all lesions have crusted
Personal Protective Equipment	• N95 or other approved, fit-tested respirator • Gloves • Gowns • Dispose of personal protective equipment before leaving room	• Standard mask (may omit if known to be immune to varicella) • Gloves and gowns for contact with patient • Dispose of personal protective equipment before leaving room
Treatment	• Smallpox vaccine may prevent or lessen severity of illness if given within four days of an exposure • Cidofovir may prevent or lessen severity of smallpox if given within two days of an exposure (non-Food and Drug Administration approved use of this drug)	• Acyclovir decreases days of fever and number of new lesions • Currently, prophylactic acyclovir is NOT recommended after an exposure • Varicella zoster immune globulin may be required to treat immune suppressed patients, pregnant health care workers who are exposed to varicella, and neonates who have been exposed.

Distinguishing Influenza-like Illness from Inhalational Anthrax

Roger D. Lovell, MD
Hospital Epidemiologist
Carolinas Medical Center

	Influenza-like Illness	Inhalational Anthrax
Epidemiological Considerations	• Millions of cases of influenza-like illness occur each year • Seasonal occurrence is common: influenza and respiratory syncytial virus in winter; rhinoviruses and parainfluenza in fall and spring • Highly communicable	• At press time, only 10 cases in 2001 • No seasonal variation • No person-to-person spread occurs. Risk factors (known so far) include postal workers, media personnel, and persons exposed to letters or exposed to areas known to be contaminated by anthrax spores
Clinical Considerations	• Nasal congestion is common • Rhinorrhea and coryza are common • Pharyngitis is common • Chest X-ray with pleural effusion is uncommon • Chest X-ray with widening of mediastinum does NOT occur from influenza-like illness • Chest X-ray evidence of pneumonia is uncommon (exceptions: elderly and those with underlying chronic lung disease)	• Nasal congestion is uncommon • Rhinorrhea and coryza are uncommon • Pharyngitis is uncommon • Chest X-ray with pleural effusion is common • Chest X-ray with widening of mediastinum is common • Chest X-ray evidence of pneumonia is common
Diagnostic Considerations	• Rapid antigen detection tests are available for influenza and respiratory syncytial virus but associated with low sensitivity	• Blood cultures positive in all cases of inhalational anthrax (if did not take antibiotics prior to blood cultures) • At press time, peripheral blood smear has revealed bacteria in all cases in 2001 (if did not take antibiotics prior to test)
Prevention	• Influenza vaccine 70–90% effective in preventing influenza infections in healthy adults	• No vaccine is available for routine public use • Post-exposure prophylaxis with antibiotics such as ciprofloxacin, doxycycline, and amoxicillin are effective (if indicated based on public health recommendation)

Source: Roger D. Lovell, MD, Infectious Diseases and Hospital Epidemiologist, Carolinas Medical Center, Charlotte, NC.

EMERGENCY MEDICINE ULTRASOUND COURSE CURRICULUM

MEDICAL COLLEGE OF GEORGIA
DEPARTEMENT OF EMERGENCY MEDICINE

Lecture 1: Introduction –Indications, Applications and Uses

Lecture 2: Ultrasound Fundamentals –Physics of Ultrasound Technology

Lecture 3: Basic Ultrasound Skills – Machine Capabilities/Limits, Anatomical Considerations & Orientations

Lecture 4: Emergency Ultrasound of Abdominal Vascular Structures

Lecture 5: Biliary Disease

Lecture 6: Renal, Liver, Spleen and Pancreas Evaluation

Lecture 7: Emergency Cardiac Ultrasound

Lecture 8: Trauma Evaluation

Lecture 9: Gynecology Evaluation

Lecture 10: Obstetrical Evaluation

Lecture 11: ACEP Resources, Literature Guidelines & Professional Organizations

Lecture 12: Emergency Ultrasound Program Development

-Each of the above lectures will require approximately one hour.

-For lectures 1-10 above, skills laboratory and computerized proficiency models will be used to teach hands on ultrasound essentials. These laboratories will require added time of approximately two hours per topic.

-Each of the above lectures will be presented throughout the academic year in a didactic lecture format. An intense two-day ACEP accredited course will be given to all residents and faculty. This course is approved by ACGME and is designated 18 hours of Category 1 credit.

EMERGENCY MEDICINE ULTRASOUND COURSE CURRICULUM
QUALITY ASSURANCE AND DATA MANAGEMENT

MEDICAL COLLEGE OF GEORGIA
DEPARTEMENT OF EMERGENCY MEDICINE

Quality assurance will be maintained for each ultrasound performed in the emergency department (ED). Each physician who performs an ultrasound will be evaluated on his/her skills, technique and interpretation of the ultrasound. To assure this, I have implemented a quality assurance program that will need to be rigorously followed by each physician using the ultrasound machines.

1) Each patient must consent to the ultrasound. This consent must be documented on the patient's ultrasound QA sheet. Each patient will be told that it is a screening test and that the information gained by this exam may be used to make medical decisions regarding their care. They should also be instructed that a need may exist to confirm our findings with a formal ultrasound or other testing modality. Each patient has the right to refuse this or any test.

2) Each ultrasound performed must have the patient's name, MR, and DOB documented.

3) Each ultrasound needs to be attached to the appropriate quality assurance review sheet. Each sheet must be filled out entirely with ultrasound findings, confirmatory study and final diagnosis. Each patient's information (ultrasound printout and QA sheet) needs to be placed into the folder for my review. These are **not** to be included in the patient's official record.

4) Every ultrasound you perform will be documented and maintained. In addition, data will be maintained on the number and type or ultrasounds you performed throughout your training. This data will be reviewed with you on a quarterly basis.

5) During your 36 month tenure, a minimum of 150 ultrasounds need be attained. These will consist of at least 25 exams in each of the following categories. Although number does not assure competency it does permit a minimum proficiency in each of these areas.

Trauma	25
IUP	25
Emergency cardiac	25
AAA	25
Bleary	25
Renal	25

Source: Medical College of Georgia, Augusta.

OB/GYN ULTRASONOGRAPHY

MEDICAL COLLEGE OF GEORGIA
DEPARTMENT OF EMERGENCY MEDICINE

Doctors Name:_____ Date:_____

Patient Name:_____ MR#_____

1. Clinical suspicion: low med high

2. Confidence in U/S: low med high

3. Findings:

IUP:	yes	no
Intrauterine Sac:	yes	no
Size in mm:	_____	
Yolk Sac:	yes	no
Fetal Pole:	yes	no
Cardiac Activity:	yes	no

4. ED Diagnosis: _____

5. Final Reading of ***Confirmation Study***:

Ultrasound:_____ CT:_____ OR:_____

Other:_____

QA Review

Adequate views

Longitudinal: Yes No

Transverse: Yes No

Correct Interpretation: Yes No

Comments:

Please attach the following views to this data sheet and place in the collection box in the physician's workroom in the emergency department.

LONGITUDINAL VIEW OF THE ENTIRE UTERUS
TRANSVERSE VIEW OF THE ENTIRE UTERUS
ATTEMPT TO OBTAIN VIEWS OF BOTH ADNEXA

GALLBLADDER ULTRASONOGRAPHY

MEDICAL COLLEGE OF GEORGIA
DEPARTMENT OF EMERGENCY MEDICINE

Doctors Name:_____ Date:_____

Patient Name:_____ MR#_____

1. Clinical suspicion: low med high

2. Confidence in U/S: low med high

3. Findings:

Stones:	Yes	No
_____in mm		
Sludge:	Yes	No
Fluid around gallbladder:	Yes	No
U/S "Murphy's Sign":	Yes	No
Wall Thickness in mm: _____in mm		
Common Bile Duct size: _____in mm		

QA Review

Adequate views

Longitudinal: Yes No

Transverse: Yes No

Common Bile Duct: Yes No

Correct Interpretation: Yes No

Comments:

4. ED Diagnosis: _____

5. Final Reading of ***Confirmation Study***:

Ultrasound:_____ CT:_____ OR:_____

Other:_____

Please attach the following views to this data sheet and place in the collection box in the physician's workroom in the emergency department.

LONGITUDINAL VIEW OF GALLBLADDER
TRANSVERSE VIEW OF GALLBLADDER
COMMON BILE DUCT

Credentialing Criteria for Independent Privileges in Emergency Ultrasonography

All physicians applying for privileges to independently perform and interpret emergency ultrasonography in the Department of Emergency Medicine shall be licensed in the state of New York and have a thorough understanding of the indications and guidelines for ultrasound examinations as well as familiarity with basic physical principles and limitations of the technology of ultrasound imaging. As part of their medical training they will be familiar with alternative and complimentary imaging and diagnostic procedures, and should be capable of correlating the results of these other procedures with the ultrasound examination findings and be familiar with the anatomy, physiology, and pathophysiology of those organs or anatomic areas that are being examined. They will have an understanding of ultrasound technology and instrumentation, ultrasound power output, equipment calibration, and safety.

These physicians will be required to provide evidence of training and requisite competence needed to successfully perform and interpret diagnostic ultrasound examinations in their practice. The training should include methods of documentation and reporting of ultrasound studies. Additionally the physician applicant will meet the following:

• Be an attending physician with privileges in the Department of Emergency Medicine at North Shore University Hospital.

• Have completed 50 continuing medical education credits in ultrasound-related educational activity. Introductory ultrasound courses taken must contain not only didactic but also hands-on teaching components.

• Have 300 completed ultrasound studies documented in a log with hard copy or videotape documentation of each examination. Each of these ultrasound examinations must have been supervised by a qualified ultrasonographer or have been followed by an appropriate diagnostic study to verify the results of the ultrasound examination.

• Each applicant must demonstrate proficiency in each application for which he or she is requesting privileges. These minimums must be met for the physician to independently perform any of the applications listed.

• Descriptions of each application are listed in the scope of practice.

• Proficiency will be judged by the director of emergency ultrasonography and will be based on aforementioned minimal criteria as well as personal observation of the applicants' ability to correctly obtain and interpret images on patients.

• Any physician meeting minimum criteria of 300 ultrasound examinations as well as CME criteria must then be judged competent to perform each type of examination by the director of emergency ultrasonography. This determination shall be made by direct observation of the physicians scanning ability in a number of examinations to be specified individually by the director of ultrasound. ■

Scope of Practice

The scope of practice outlines for applications in the Emergency Department

All examinations will be performed consistent with established credentialing guidelines. Persons that are not credentialed to perform bedside emergency ultrasonography by the Department of Emergency Medicine will need to obtain follow-up confirmatory studies on all patients, until the physician is credentialed. The exception to this will be educational scans performed strictly for practice. For such studies there will be documentation that the patient was informed of the nondiagnostic nature of the examination, that no formal follow-up study will be obtained, and that the patient gave verbal agreement to helping aid in teaching the physician performing the educational ultrasound scan.

FAST (Focused Abdominal Sonography for Trauma): Performed during the secondary survey of a trauma patient. The study will consist of evaluation of Morison's pouch, right pleural cavity just above the diaphragm, right paracolic gutter, subxiphoid and — if needed — parasternal view, splenorenal recess, left pleural cavity just above the diaphragm, left paracolic

gutter, and suprapubic view in longitudinal and transverse views.

The goal of the examination will be to identify the presence of free fluid in the peritoneum, pericardium, or pleural space.

All examinations will be taped in entirety and recorded on the medical record.

Aorta: To evaluate the abdominal aorta for evidence of AAA (abdominal aortic aneurysm). Any patient arriving emergently with abdominal or back pain with hypotension will be evaluated emergently with bedside ultrasonography. Findings consistent with AAA will lead to immediate notification of a vascular surgery-attending physician. Any patient over the age of 50 who has back or abdominal pain and stable vitals will have consideration for a bedside abdominal ultrasound to evaluate the diameter of the abdominal aorta. Positive findings will be referred for abdominal computed tomography.

All examinations will be taped and recorded on the medical record. Diameter of the aorta will be measured in three points: proximal, middle, and distal.

Endovaginal and Transabdominal sonography: To determine the presence of intrauterine pregnancy. Determination of such will require identification of the bladder, uterine fundus, cervix, and vaginal stripe. The diagnosis of a live intrauterine pregnancy will be made only once all of the above have been identified and a gestational sac with fetal pole and fetal heartbeat are documented. M-mode will be used to document fetal heart rate when identified.

All examinations will be taped and recorded on the medical record.

Lower Extremity Duplex for deep venous thromboses: To determine the presence of deep venous thromboses in the proximal veins of the lower extremity. Venous compression and augmentation will be tested for at the common femoral and superficial femoral and deep femoral junction. Also tested will be the popliteal vein. If thrombosis is discovered, attempts will be made to locate and document its most proximal end. All studies will be videotaped and documented on the medical record. All patients with negative studies will be referred for a follow-up scan to check for propagation of distal deep venous thromboses in 5-7 days.

Cardiac Arrest/Resuscitation: To be performed at the bedside in a medical code. The study will be used to evaluate for myocardial contractility, pericardial effusion, global wall motion abnormalities, and general hydration status of the patient.

Vascular Access: To be used at the bedside for gaining vascular access in any patient with difficult access. These will include arrest patients who require central lines and patients with difficult peripheral access that requires ultrasound guidance for a peripheral intravenous. All examination will be videotaped and recorded in the medical record. Additionally, ultrasound-guided access will be recorded in the procedures section of the medical record.

Gallbladder: Evaluation of the gallbladder will be performed at the bedside for the detection of stones or sludge in the gallbladder. This test will be performed on patients presenting with right upper quadrant or epigastric pain. The operator will obtain multiple views of the gallbladder in transverse and longitudinal planes. The gallbladder dimensions and wall thickness will be measured and recorded. If noted, sludge, gravel, mass, stones, and pericholecystic fluid will be recorded. The examination will be recorded on video and documented on the medical record. Views of the common bile duct will be obtained and measurement of the diameter made.

Renal: Evaluation of the kidney or kidneys for presence of hydronephrosis. This test will be performed on patients presenting with signs or symptoms of renal colic. The operator will obtain longitudinal and horizontal views of both kidneys for comparison. The degree of hydronephrosis will be judged as mild, moderate, or severe. The examination will be recorded on video and in the ultrasound log. A note will be made in the patient's chart.

Urinary bladder: Evaluation of the urinary bladder will be performed on patients in whom the size of the urinary bladder needs to be known. Such patients will include, but not be limited to, urine retention or oliguria. Also evaluation of the urinary bladder will be used to confirm Foley catheter placement. The operator will obtain both longitudinal and horizontal views of the urinary bladder. ■

Source: Michael Blaivas, MD, RDMS, North Shore University Hospital, Manhasset, NY.

9/01/01

James V Rawson, MD
Interim Department Chairman
Medical College Of Georgia
Augusta, GA 30912

Dr Rawson,

During our recent telephone conversation, you expressed concern with our use of ultrasound technology in the emergency department. In light of your interest, this correspondence is intended to serve as a succinct explanation of our plans to utilize this technology at the Medical College of Georgia. During our conversation, you posed several noteworthy points and I hope to address each of these concerns as you relayed them to me. They were:

1. my personal experience and training in the use of ultrasound,
2. our goals, objectives and capabilities of ultrasound use in the emergency department,
3. our training methods for both resident and faculty in the use of emergency ultrasound and
4. the creation and structure of a quality assurance program.

First, my experience and training in emergency ultrasound are based on skills and knowledge I learned in residency training at University of South Carolina and Palmetto Richland Memorial Hospital. The program at USC is nationally recognized in emergency medicine ultrasound training and the faculty has developed a course that allows residents to become proficient in the use of ultrasound. I have enclosed a letter from USC's residency director describing such. Also, enclosed is a record detailing the number and type of ultrasounds I performed during this training period. The total number is over 220 exams. However, this includes only 1/3 of the entire amount of exams that I performed. The remainder of exams were placed in the patient's chart as part of their original record and are not included in this summation. I am also an instructor for an ultrasound-training course. Thus far, this course has been presented in three countries and attended by hundreds of physicians. These physicians include not only emergency medicine physicians, but also trauma surgeons, obstetricians and radiologists. The American College of Emergency Physicians and the South Carolina College of Emergency Physicians jointly sponsor this course. It is approved by the Accreditation Council for Continuing Medical Education and, upon its completion, is designated as 18 hours of Category 1 credit. We have taught physicians at the below mentioned hospitals and their affiliates:

Providence Hospital- Washington DC
King Fisal Hospital - Riyadh, Saudi Arabia
Washington University - St. Louis
Bay State Medical Center - Massachusetts
Team Health - Nashville, TN
Piedmont Emergency Medicine Associates - Charlotte, NC (2 courses)
Princess Margaret Hospital - Nassau, Bahamas
Hurley Medical Center - Flint Michigan
University of Michigan -Ann Arbor, MI
St. Vincent Hospital - Billings, Montana (April, 2001, June 2001)
North Hawaii Hospital - Big Island, HI (May, 2001)
Pensacola Medical Center and St Joseph's Health Center - Pensacola, Florida (May 2001)
University of Florida Hospital - Jacksonville, Fl (June 2001)
McAllen Medical Center - McAllen TX (June 2001)
Northridge Medical Center - Northridge Ca (July, 2001)
West Virginia Emergency Health System - Charleston, West Virginia (August 2001)
Cape Cod Hospital - Hyannis, MA (August 2001)
Carolinas Medical Center - Charlotte, NC
UMDNJ – Camden, NJ

Currently, there are plans to teach at 11 other institutions in the next three months.

The goal for implementing an ultrasound program in the emergency department is to deliver the best service and care to our patients. With the implementation of emergency ultrasound training, our ultrasound capabilities could be greatly expanded to meet a patient's 24-hour needs. Literature has supported the fact that emergency physicians with ultrasound capability can quickly evaluate a number of life-threatening medical conditions. With this in mind, we intend to use ultrasound capability in four primary situations. These are:

1) to aid in the diagnosis of intrauterine pregnancy (in essence to r/o ectopic pregnancy),
2) to aid in the diagnosis of pericardial fluid & impending tamponade,
3) to aid in the diagnosis of abdominal aortic aneurysm and
4) to aid in the diagnosis of hemoperitonium in the trauma patient

The utility of ultrasound in these settings is well documented and I refer you to the references contained herein. Please be aware, that each of the above interpretations will certainly require clinical interpretation and support. As well, we are using this technology as part of a screening exam in the emergency setting. Individual cases may necessitate us to obtain more confirmatory tests before clinical decisions are rendered. Our goals for using this technology in the emergency department are not to perform comprehensive or intricate exams, but rather to perform rapid, useful screening exams in emergency cases. With this unique necessity in mind, our machine's capabilities as well as our training goals are not geared toward the use of ultrasound for diseases such as DVT, testicular/ovarian torsion or cardiac valvular disease. A more thorough analysis and greater technique will be needed for evaluations of these illnesses and we are not pursuing a knowledge basis to perform these exams. Our foremost and primary concerns are to obtain useful information that will aid us in the diagnosis of impending life threatening illness.

Training for both residents and faculty will consist of not only the American College of Emergency Physician sponsored course (mentioned above), but also ongoing didactic and laboratory training modules throughout the year. I feel quite certain that our training program will exceed the current recommendations presented to the American College of Emergency Physicians and those recommended by the Residents Review Committee of our college. All residents will be required to perform a minimum of 150 supervised exams prior to his/her graduation. These exams will be reviewed for technical and interpretive accuracy. Also, each resident will be required to take an examination to evaluate his/her proficiency and knowledge in ultrasound technique and interpretation. These results will be compared and correlated with a national data base of other residents in emergency medicine training facilities. Should you be interested, I invite you to be involved in our program, lectures and training. Indeed, I certainly look forward to your contributions.

The issue of quality assurance will be addressed in two manners. First, each physician performing an exam will be critiqued. Secondly, every study performed will be evaluated. A specific tracking system is in place that will assess each resident quarterly and each exam on an individual basis. Residents will obtain feedback, gain insight and be critically evaluated on their performance and skill. Please refer to the enclosed QA evaluation forms.

Furthermore, it is essential that we realize ultrasound training in emergency medicine is a requirement of the American College of Emergency Medicine. Currently, greater than 80% of emergency medicine residency programs in the country have this technology and are teaching it to their respective residents. Ultrasound principles are a fundamental part of our curriculum requirements as mandated by our Resident Review Committee. This information serves as a core portion of our national board examination and our graduates will be tested on their knowledge, capabilities and skills in ultrasound training. With this in mind, I consider it vital aspect of our program here at MCG. The curriculum we are instituting here is a near replica of that taught at a number of other institutions already. These include Carolinas Medical Center-Charlotte, NC, Orlando Regional Medical Center, Orlando, FL, University of South Carolina, Columbia, SC, University of Florida –Shands Memorial Hospital, Jacksonville, FL and others. If you

should have questions regarding the above mentioned programs and their establishment of this curriculum, I could supply you with contacts for each.

I hope that this information serves to enlighten you of our plans to deliver improved emergency care to the people of our community. I feel that our common goal is to provide the best possible health care to any patient who chooses MCG as their provider and certainly feel that the establishment of an emergency ultrasound training program here will do just that. Research supports this testimonial, other programs & hospitals have demonstrated it and we should adopt it. I have enclosed references, information and guidelines regarding the national standard for emergency ultrasound use. If you should have any questions beyond this, please don't hesitate to contact me. I look forward to working with you and discussing this issue with you in the future.

Sincerely,
Christopher DiOrio, DO

Emergency Ultrasound Coordinator
Department of Emergency Medicine
Medical College of Georgia
1120 East 15th Street
Augusta, GA 30912
706-414-1787 Cell
cdiorio@mail.mcg.edu

Source: Medical College of Georgia, Augusta.

BIOTERRORISM WATCH
Preparing for and responding to biological, chemical and nuclear disasters

Ring of Fire: CDC plan to immunize around first smallpox cases has the devil in the details

Used successfully to eradicate smallpox in 1980

Should a bioterrorist strike with smallpox, the Centers for Disease Control and Prevention's (CDC's) recently released response plan calls for investigators to rapidly immunize a "ring" around the first cases. The ring concept calls for isolation of confirmed and suspected smallpox cases followed by contact tracing, vaccination, and close surveillance of contacts.

"Ring vaccination — sometimes called search and containment —- is identifying individuals with confirmed smallpox and then identifying and locating those people who came in contact with that person, and vaccinating those people in outward rings of contact," says **Harold Margolis**, MD, CDC senior adviser for smallpox preparedness. "This produces a buffer of immune individuals and was shown to prevent smallpox and to ultimately eradicate this disease."

Indeed, the ring approach was used to successfully eradicate smallpox from the world in 1980. The only officially acknowledged stocks of live virus remaining are in the United States and Russia, but bioterrorism experts have long feared that smallpox may have fallen into other hands.

But the ring concept was effective when the demographics of smallpox were very different, when few were infected and the vast majority of people were already immune. The CDC plan acknowledges as much, noting that several current factors could contribute to a more rapid spread of smallpox than was routinely seen before this disease was eradicated.

These factors include virtually nonexistent immunity to smallpox, increased mobility of the population, and delayed recognition of smallpox by health personnel who are unfamiliar with the disease, the plan states. Concerning the latter — similar to the fine line between initial symptoms of anthrax and influenza — one of the most confounding differential diagnoses for smallpox is chickenpox. **(See related story, p. 3.)**

Preemptive strike

While the ring strategy is a classic public health approach, some favor a more aggressive preemptive action in this new age of bioterrorism: Immunize response teams of health care workers throughout the nation.

"I would be in favor of a plan to prospectively immunize not only the strike force at the federal level, but [also] a cadre of people in each state," says **William Schaffner**, MD, chairman of preventive medicine at Vanderbilt University in Nashville.

Having groups of health care workers immunized in advance could also be critical if the "ring" is difficult to perceive, he notes.

"We think of it conceptually as a ring, but clearly people are not all in one geographic area," he says. "The people who may or may not have contact with this first case will be scattered all over the community. They went shopping

This supplement was written by Gary Evans, editor of *Hospital Infection Control.* Telephone: (706) 742-2515. E-mail: gary.evans@ahcpub.com.

there, had a church group here, and then they played bridge. The first thing we will be looking for is information from public health authorities about who is within the ring and who is outside the ring. If that is not articulated with great clarity everybody is going to be in deep trouble."

The CDC is certainly aware of such issues and concerns, and discussions are still ongoing within the agency about preemptively immunizing some health care workers. "We have to weigh the risks and benefits of vaccination for any group, and that would include health care workers. We are kind of working through those issues right now," **Lisa Rotz**, MD, medical epidemiologist in the CDC bioterrorism response program, tells *Bioterrorism Watch*.

The overriding factor in holding back immunization of health care workers is the hazards and side effects of the vaccine.

"In 1972 we actually discontinued routine vaccination [in the United States] because the risks of adverse events from the vaccine outweighed the risk of any one person coming down with smallpox, even though it was still occurring in other parts of the world," Rotz says. "I think that still holds true here. We are dealing with a vaccine that presents problems in and of itself."

Indeed, death occurs in about one per million primary vaccinations, usually as a result of progressive vaccinia, post-vaccinal encephalitis, or severe eczema vaccinatum. Other adverse events include inadvertent inoculation from the vaccinated site (e.g., to the eyes).

CDC will bring vaccine within 'hours'

In addition, the CDC has immunized approximately 100 of its personnel, who could be dispatched immediately to a stricken area and begin investigating and administering vaccine.

"We have people trained to respond to smallpox who can go rapidly to an area to evaluate a case, and then help the local and state officials begin implementing control measures," Rotz says. "That would include helping them implement surveillance, making sure we have identified people who need to be vaccinated right away and to start setting that up. We would get things started there until they get their own response up and running."

But instead of immunizing health care workers in advance, the CDC plan is to administer the vaccine after a case occurs. The CDC could deliver personnel and vaccine within "hours" to any area in the country, Rotz says. Moreover, the vaccine can be effective up to four days after infection sets in, and may prevent death in the patient.

Among the top priority for immunizations after smallpox is reported are "those involved in the direct medical care, public health evaluation, or transportation of confirmed or suspected smallpox patients," the CDC plan states. **(See story on priority immunization groups, p. 3.)** In addition, smallpox patients would be placed under airborne precautions similar to that used for tuberculosis patients, who are placed in negative pressure rooms (vented outside) and treated by workers with respirators.

Another important factor in favor of the CDC approach is that smallpox is not communicable in its incubation period, says **D.A. Henderson**, MD, director of the office of public health preparedness at the Department of Health and Human Services in Washington, DC.

"You have an incubation period of 10 to 12 days when the individual feels perfectly well and is not able to transmit infection," he says. "Then he gets a fever for a couple of days and then the rash. It's only when the rash begins that the individual transmits the disease. So, in fact, [those are] the people we're really concerned about isolating so that they don't transmit the disease. But just because somebody's infected does not mean that they're going to transmit infection during that incubation period. They won't do that."

Into the thousands very quickly

Still, while emphasizing that the CDC plan is a good starting point, Schaffner argues that it would make sense — and allay subsequent chaos — to immunize groups of health care workers before an event occurs.

"The immediate [CDC] public health strike team is like being out on the beach and walking in up to your ankles, but the next step you take gets you into water over your head," he says. "Because if you start thinking about [immunizing health care workers], you're talking about emergency personnel, ambulance drivers, infectious disease doctors, [and] nurses in hospitals who would be designated to care for such patients. It could get into the many thousands very quickly."

In addition, with the exception of the recently trained CDC personnel, few clinicians in the country know how to administer the smallpox vaccine using the "little pitchfork" bifurcated needle.

"That is one potential benefit of vaccinating a group of first responders around the country,"

Schaffner says. "You train these people how to administer the vaccine and all of sudden you have a bunch of trained people out there that we haven't had before. I think that would be a substantial additional benefit." ■

Health workers, contacts priority for vaccination

Others include lab personnel and waste disposal

According to the Centers for Disease Control and Prevention (CDC), the following groups should be a high priority for smallpox vaccination should a bioterrorism release of the pathogen occur:

1. Face-to-face close contacts (less than or equal to 6.5 feet or 3 meters), or household contacts to smallpox patients after the onset of the smallpox patient's fever. Although individuals with smallpox are not infectious until the onset of rash, vaccinating contacts from the time of the onset of fever helps provide a buffer and assures that contacts who may have been exposed at the early onset of rash, when the rash may have been faint and unrecognized, have been vaccinated.

2. People exposed to the initial release of the virus (if the release was discovered during the first generation of cases and vaccination may still provide benefit).

3. Household members (without contraindications to vaccination) of contacts to smallpox patients' (to protect household contacts should smallpox case contacts develop disease while under fever surveillance at home).

Household members of contacts who have contraindications to vaccination should be housed eparately from the other vaccinated household members until the vaccination site scab has separated (approximately two weeks) to prevent inadvertent transmission of vaccinia virus. They should also be housed separately from the contact until the incubation period for smallpox has passed and the contact is released from surveillance.

4. People involved in the direct medical care, public health evaluation, or transportation of confirmed or suspected smallpox patients (this includes personnel whose public health activities involve direct patient contact such as case interviewing).

5. Laboratory personnel involved in the collection and/or processing of clinical specimens from suspected or confirmed smallpox patients.

6. Other people who have a high likelihood of exposure to infectious materials (e.g., personnel responsible for hospital waste disposal and disinfection).

7. Personnel involved in contact tracing and vaccination, or quarantine/isolation or enforcement, or law-enforcement interviews of suspected smallpox patients.

8. People permitted to enter any facilities designated for the evaluation, treatment, or isolation of confirmed or suspected smallpox patients. (Only essential personnel should be allowed to enter such facilities.) Only personnel without contraindications to vaccination should be chosen for activities that would require vaccination for their protection. Personnel with contraindications should not perform duties that would place them at risk for smallpox exposure and should otherwise only be vaccinated if an exposure already has occurred.

9. People present in a facility or conveyance with a smallpox case if fine-particle aerosol transmission was likely during the time the case was present (e.g. hemorrhagic smallpox case and/or case with active coughing). Evaluation of the potential risk for aerosol transmission and initiation of vaccination for non-direct contacts will be done by CDC, state, and local public health personnel. The decision to offer vaccination to non-direct contacts of smallpox cases will be made jointly by federal and the state health officials. ■

Smallpox or chickenpox? How to make the diagnosis

Rash progression, location, will be different

Smallpox or chickenpox? That clinical question has been long confined to the academic dustbin in the United States, where the last case of smallpox (variola) was diagnosed in 1949 in Texas.

Smallpox has been vanquished yet is still feared; chickenpox (varicella) remains a fairly common pediatric infection. Continuing use of the varicella vaccine (recommended for use in the United States in 1996) should continue to reduce cases of chickenpox in the years to come. With

Smallpox vs. Chickenpox

	Variola	Varicella
Incubation	7-17 days	14-21 days
Fever prodrome	2-4 days	minimal/none
Distribution	face/extremities	trunk/clusters
Progression	synchronous	synchronous
Scab formation	10-14 d p* rash	4-7 d p* rash
Scab separation	14-28 d p* rash	<14 d p* rash
Lesions soles/palms	yes	no

** d p = days after rash onset*

Source: Centers for Disease Control and Prevention, Atlanta.

bioterrorism a reality and a whole generation of medical students having never seen a case of smallpox, the Centers for Disease Control and Prevention (CDC) is again emphasizing the classic distinctions between the two poxes.

Though similar at onset, the two rash diseases take distinctly different progressions that provide more than a few telltale signs, says **Lisa Rotz**, MD, medical epidemiologist in the CDC bioterrorism response program. **(See chart, above.)**

"The incubation period for both diseases spans similar time periods, but we do see a longer incubation period in the development of chickenpox as opposed to smallpox," she says.

Usually symptoms such as high fever, malaise, and backache will proceed development of rash in smallpox cases. On the contrary, fever associated with chickenpox generally appears in conjunction with the first signs of rash.

"You will also see a different distribution of lesions of the rash between the two diseases," Rotz says. "In general, smallpox lesions are much more numerous on the face and extremities."

In contrast, chickenpox lesions are more numerous on the trunk, and occur in clots or clusters. Moreover, as rash progresses in smallpox, the lesions in a particular area of the body progress along the same lines and appear similar.

"Whereas in varicella in any one area of the body you may see lesions in different levels of progression," she says. "You might see a vesicle next to a scab. Also the rash of varicella progresses much more quickly and resolves more quickly than the rash of smallpox. So the overall illness has a much shorter course for chickenpox vs. smallpox."

As opposed to chickenpox, smallpox also will reveal itself through lesions on the soles and palms of those infected. Despite the disease names, chickenpox lesions are usually smaller than those created by smallpox.

"It is difficult to distinguish early on between the two diseases, but they quickly diverge in their rash progression," Rotz says. "By day five a child with smallpox is showing increasing numbers of lesions still occurring on the face, while the child with chickenpox has about the same number of lesions on the face as appeared on day three. By day seven the rash is still progressing in the patient with smallpox but seems to be resolving in the child with chickenpox."

Though smallpox patient isolation measures are understandably more stringent, the patient isolation guidelines for the two diseases are actually very similar. The CDC recommends contact isolation for both (until scabs are gone) and airborne isolation measures for patients infected with either chickenpox or smallpox. Contact precautions include wearing gloves and a gown to enter the patient's room; removing gloves and washing hands with an antimicrobial soap prior to leaving room; dedicating noncritical care items to individual patients; and taking extra care to clean the patient environment.

Airborne precautions call for placing the patient in a private room that has monitored negative air pressure in relation to the surrounding areas; six to 12 air changes per hour; and discharge of air outdoors or monitored high-efficiency filtration of room air before the air is circulated to other areas in the hospital. Keep the room door closed and the patient in the room, the CDC advises. Health care workers immune to chickenpox need not wear respiratory protection, but the CDC is calling for workers to wear N95 respirators — typically used for tuberculosis patients — when caring for smallpox patients. ■